

PROCEEDINGS OF THE
2012 LIBRARY ASSESSMENT CONFERENCE
BUILDING EFFECTIVE, SUSTAINABLE, PRACTICAL ASSESSMENT

OCTOBER 29–31, 2012
CHARLOTTESVILLE, VA

EDITED BY
STEVE HILLER, UNIVERSITY OF WASHINGTON
MARTHA KYRILLIDOU, ASSOCIATION OF RESEARCH LIBRARIES
ANGELA PAPPALARDO, ASSOCIATION OF RESEARCH LIBRARIES
JIM SELF, UNIVERSITY OF VIRGINIA
AMY YEAGER, ASSOCIATION OF RESEARCH LIBRARIES



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Conference Overview

We had a wonderful Library Assessment Conference in Charlottesville, Virginia, and thank the nearly 500 registrants (out of 560) who made it safely, despite the effects of Hurricane Sandy.

We are gratified that the conference is attracting registrants from a wide range of libraries and related areas. The trajectory of this event has been documented recently in an article written by Hiller, Kyrillidou, and Oakleaf¹ and is summarized in the following figure:

	2006	2008	2010	2012
Registrants	215	375	460	560
ARL institutions	70%	45%	47%	41%
North America libraries and organizations	97%	92%	95%	97%
Registrants with “assessment” in job title	15	31	62	82
Registration fee	\$375	\$390	\$390	\$425
Papers presented	44	60	66	68
Posters	20	40	82	84
Workshops	3	6	6	5

Our institutions are under great pressure to provide accountability and to demonstrate value. Our keynote speakers discussed the changes in the academic and information environments. They set the tone, and they were followed by fellow practitioners describing their efforts to develop, improve, and apply the findings of library assessment.

This conference attracts those with an interest in assessment from different areas within libraries and outside of libraries. We would like to applaud the organizations that have chosen to send a team of people to the conference. Real change takes an active, engaged community, and we believe that participation of a diverse team is beneficial both for the conference and for the organization. We organized the posters, papers, and workshops thematically so that teams from the same institution could get the most out of their time at the event. We also want to highlight our commitment to work collaboratively with our friends in the United Kingdom who host the Northumbria International Conference on Performance Management in Libraries and Information Services. Our conference takes place in alternating years as a result.

We deeply appreciate the efforts of the University of Virginia local arrangements group who were always there to assist and provide information to registrants. It was really great to finish the conference on Halloween and have fun on the Lawn at the University of Virginia—a special treat for those who were able to stay and attend this special day there!

Thank you for your active engagement!

Conference Co-Chairs,

Steve Hiller, University of Washington
Martha Kyrillidou, Association of Research Libraries
Jim Self, University of Virginia

Conference Planning Committee

Karen Diller, Washington State University Vancouver
David Green, Association of Research Libraries
Lisa Hinchliffe, University of Illinois at Urbana-Champaign
Vivian Lewis, McMaster University
Liz Mengel, Johns Hopkins University
Megan Oakleaf, Syracuse University
Kathy Perry, VIVA Consortium
Bill Potter, University of Georgia
Donna Tolson, University of Virginia
Stephen Town, University of York (UK)

Endnote

1. Steve Hiller, Martha Kyrillidou and Megan Oakleaf. "The Library Assessment Conference—Past, Present and Near Future!" *The Journal of Academic Librarianship* 40 (3-4) (May 2014): 410–412.

Living in the Cloud: Who Owns It, Who Pays for It, Who Keeps It Safe, and Will My Kids Inherit the Wind?¹

John Lombardi
University of Massachusetts, USA

Living in the uncertain world of university administration, I've always taken comfort in those solid tokens of academic reality: books and their libraries. Born and raised on a diet of librarianship, schooled in the unique place libraries hold in the lives and minds of an educated people, and sustained in academic life by the permanent inspiration and commitment captured in the university library, today's information cloud appears uncertain and unreal. It's as if a fantasy world of science fiction had descended, distorting reality in less than a generation. For you who serve this fantasy and try and reassure those of us wandering disoriented by the cloudy days, the turmoil of the academic library world must be exhilarating when it is not terrifying.

Searching for a referent for the future we will all inhabit within a decade or less, and in hopes of finding a vision for the future that resolves all doubts, I turned to the memory of my misspent hours watching various sci-fi classics for a vignette of what our future holds for libraries and information, if all goes well. The classic *Star Trek IV: The Voyage Home* is a film mostly about whales. However, it has an early scene where Spock appears retraining his mind before a computer terminal that has all the knowledge of the universe available. Clearly, by the 23rd century, knowledge and information are easily, universally, permanently, and reliably available through a utility device so ordinary it requires no explanation and simply serves as backdrop to an emotional plot element.²

Our cloud today, in the early 21st century, offers us an anticipation of this sci-fi future and posits the inevitability of the universal information appliance.

Absent the movie conceits that permit the resolution of complex problems by illusion, we in the 21st century struggle with mundane concerns about books, journals, articles, newspapers, media,

and other information items of our past, present, and at least immediate future. Our information world, built on a foundation of objects collected into physical spaces and organized by humans into sophisticated collections, no longer appears to follow the time-honored rules for preservation, access, authority, or utility. We once worked to bring the objects containing our knowledge into centralized places where their use, preservation, and organization could be managed by highly trained specialists who would ensure that the information would be there, in the right place, accessible whenever requested. Timeless, permanent, reliable, authoritative, accessible, and above all, physical characterized our knowledge universe, symbolized by our word Library, that place of books.

The transformation that brings us to the 2012 information world progresses at a pace, relative to the rate of change in academic life, nothing short of light speed. Old people like me see university libraries today that bear only architectural similarities to the institutions that supported our invention as academics. Other than some unusual materials, most of what I need is on-line somewhere. I love my librarians, but where I previously needed them, today I just log in. From time to time perhaps I'll get stumped, or the technology will not respond as I hoped it would, and I turn to a librarian (of course via e-mail or some other electronic form) who will resolve the issue for me and send me back to my screen. Like Spock (although with less talent), I try to absorb information from the electronic ether, but unlike Spock, I'm not so sure that everything is universally, permanently, and reliably available.

For the university, these transformations of the information universe present a host of unsolved problems. Universities rarely lead solutions but respond to problems and challenges. In the library world the invention of such services as interlibrary

loan, OCLC, and WorldCat solved problems. We expect libraries to collect, disseminate, save, organize, and structure the artifacts of human knowledge. Without this record of what we know, researchers would continually rediscover what is already known. Research requires the availability of past discoveries, and the traditional role of libraries in providing the record of those past discoveries is now fundamentally challenged by others with much narrower missions and shorter time frames.

Although the library's timelessness rests on a belief that knowledge is permanently valuable, an engine of immediacy fueled by the instant feedback of scientific research powers the digital revolution. This reflects a fundamental distinction between what we might call the vertical and the horizontal disciplines. Physicists and other scientists are vertical people. They build knowledge one item on top of another, each discovery or advance requiring the verification of the immediate previous discovery.

Our historians and other humanists are horizontal people. We build outward from any point on the chronology of human existence. We do not need to know what the Greeks and Romans did to study the Ming Dynasty. If our colleagues learn something new about the American Civil War, those who study the territorial divisions of the Second World War do not need to rewrite their histories. For historians and others with similar intellectual concerns, the total intellectual record housed in libraries, preserved in archives, and maintained by experts is critical, for we may need to build outward from any part of the record at any time. We want to read the latest journal article available on line from JSTOR or some other digital location, but we know that when our graduate student goes to study Shakespeare's sonnets from a new perspective, we will want to send her to the library to find all that has ever been written about Shakespeare and review every edition of those classic works.

Our digital gurus tell me that a focus on physical things misses the point. It will all be in the cloud, they say. The entire record of Latin American history will be available, they promise. You will not need to know about the Nettie Lee Benson Library at the University of Texas, remember the work

of Emma Simonson collecting Latin American materials for the Herman B Wells Library at Indiana University, or celebrate the preservation of the Jay I. Kislak Collection on the Culture and History of the Americans at the Library of Congress. Everything will be available online, instantly, permanently, reliably. This may work for Commander Spock in the 23rd century, but as a practical matter, the path to this glorious future is, as yet, unfinished.

Some parts of our information universe seem to be doing OK. The online journals are available thanks to our libraries and institutions spending large portions of their budgets on these virtual systems. Our library buildings, no longer essential for holding all our physical information objects, become homes for elegant spaces that in a previous and much less enlightened age we would have called study halls. Our library colleagues struggle with new mechanisms to consolidate purchasing, secure better prices from the purveyors of information products, and create sophisticated search strategies. New ventures emerge with exotic names that announce the end of the library, my favorite being the Hathi Trust. We watch with awe the emergence of this quasi-public not-for-profit with multiple and significant participation and distinguished leadership but not universal ownership funded primarily by powerful universities and foundation entrepreneurs. The enterprise captures the enthusiasm of university presidents (because it is the Next Big Thing), it earns the respect of the foundation intellectual caretakers of initiative, and it seeks to implement in real time, and with real process and legitimacy, the universal digital library of the future.³

Unfortunately for those of us in the real world, these initiatives, essential and valuable as they are, leave us uncomfortable because between the open stacks of yesteryear and Spock's information appliance lie an exceptional number of complications. Some are technical and theoretically resolvable, others are much less amenable to solution being based on human concerns. One of those is profit.

Profit is a terrible thing, especially when it is someone else's at my expense. Our university-based information ecology has always been part of a competitive environment. We compete to

purchase the faculty who publish books and journals, buy back their work from publishers for the library, and resell the use of those publications to students and faculty. Libraries compete within the university to capture a sufficient share of revenue, in part by persuading their institutions to value the biggest, broadest, most significant collections of materials possible. Bragging rights for large collections, big budgets, and magnificent buildings became part of the competitive universe of university prestige along with superstar professors, high SAT students, and winning sports teams.

Taking advantage of this competitive environment, we published books and journals, sold books and journals to the academic marketplace, and relied on the library to buy just enough of these items to bring the profitability of the journal and book business up to acceptable standards. "How many copies of my brilliant historical monograph will we sell?" I ask. "Oh, about 500, mostly to libraries" they answer. The usage statistics show that this brilliant monograph, resident happily in the stacks of 500 university libraries and on the home shelves of 10 scholars, circulated twice in each of three libraries during the last fifteen years. That makes it one of the more popular scholarly monographs in the collections of those three libraries since fifty percent of their items never left the quiet darkness of remote storage.

We supported this luxury of comprehensive library collections as part of the American research university branding and packaging scheme. This scheme packages high and low cost services under a single brand sold to multiple audiences at flat rates. The university, we said, is a prestigious physical place, a center of learning, a location where students come of age and become useful citizens, a venue where advanced training takes place, and a community where the knowledge of human kind is advanced. This is the package, the place we call the American Research University, and we sell it to our customers in undergraduate, graduate, professional, and research units.

The financial model underlying the packaging system establishes a baseline cost for the existence of the university that includes buildings, grounds, libraries, recreation centers, sports facilities, computing, and other general services such as

utilities and administration. We embed these charges into the cost of each of the branded units or products we sell. We then add a fee for the specific services associated with each product: So much for an undergraduate package, so much for a graduate package, and so much for a research package. This produces a revenue stream that pays the baseline cost as a priority and adjusts the fees charged for specific services as required. Our libraries compete within the institution to acquire their share of the baseline costs, presenting its assets as essential elements of all the products the university sells and as a prestige enhancement to the overall brand. This is a fine model. It built famous twentieth-century research universities with their libraries: Michigan, Indiana, Berkeley, UCLA, Harvard, Stanford, Duke, Texas, Florida, Chicago to name but a few.

The last decades of the 20th and these first decades of the 21st century have disturbed this model greatly. We have known for years that the duplicate purchases of seldom used materials by multiple libraries constitute a luxury cost. We justified it on the convenience demanded by the faculty. We wanted the book now, not at the end of the week by interlibrary loan. We also justified it on competitive grounds: if the Bancroft bought it then the Benson library had to have it. We tried specializing in purchasing, but the great libraries still wanted to own it all. We complained for years about the cost of serials and the predatory pricing of journal producers, conveniently forgetting that the predatory pricing reflects our insistence on each of our libraries having a subscription. We pay the price, our faculty insist on publishing in those journals, and then we act surprised at Elsevier's less than enthusiastic response to our self-righteous plea that they should be generous because we cannot get our act together.

The advent of the cloud as a real, operationally possible, digital ecology has seriously disturbed the relationships sustaining the traditional library model. To this group, whose recent life is reflected in the report *Redefining the Academic Library* from the Education Advisory Board, none of the indicators of this disturbance are new. You live them every day. The question for librarians and for the universities that support them is: What do we do now?⁴

Since I'm just a visitor here and have no authority or responsibility for anything, an admirable academic status, it's easy to provide some guidance.

1. The old game is over. The comprehensive almost complete physical collection of a university library, as a required prestige entity for major research universities, is a dying species.
2. The option to go it alone is mostly over, except perhaps for a time for the richest among us. Every university must join with every other university to buy access to required information services at the lowest possible unit cost. This is technically feasible and requires only an agreement among institutions. While some collaborative, statewide, or system-wide examples exist, they are small compared to what is necessary.
3. Initiatives to digitize everything should be supported. There are endless reasons why the digitized universe may not be all things to all of us, but it is a required element in the new world we live in. What is not digital will not be real within ten years or less. Some imagine that the digital is the copy, but in fact the digital is the item, which may exist in other forms as well for other purposes. I, like so many others of my era, have piles of Xeroxed articles on various topics extracted for one or another project. These no longer matter, they exist for real in JSTOR or MUSE or some other digital form. I have physical copies of my software reviews from the 1980s in my house, but the digital versions identified through Google are better. They are also better than the microform versions in my university library. Digital is the real thing.
4. The librarians and their universities must engage the issues of preservation and permanence. This, among all the many challenges to our digital future, is among the most pressing. Yes, the Hathi Trust has a plan, has backups, has servers everywhere, but their model is not yet sustainable. They are not the government or the Library of Congress. They are a small, intellectually powerful, but proprietary version of us: universities and not-for-profits following the Next Big Thing. When the budget crunch comes again (the next big one), when the digital world has a major technological shift (as it always does), and as the conversion to new digital widgets remains incredibly expensive, especially given the scale

of these projects, what happens to the digital representations that are the real thing? Over time, foundations lose interest. Universities have multiple priorities and new crises. The academic leadership of universities changes frequently, each cycle beginning with a new agenda and new ambitions. If the universal digital library has to end up somewhere reliable and permanent, perhaps we should co-opt the Library of Congress. Government often does the wrong things in the wrong ways, but the Library of Congress is permanent, it is ours as a nation, and if the digital library is universal it should have a final resting place as part of our national library, just in case the Hathi Trust's ambitious model falters in a generation or so.

5. The librarians, the universities, the foundations, and the Library of Congress MUST continue to take on copyright. Absent a reliable and stable resolution of the copyright mess, the digital library of universal access will not emerge, no matter how technically and academically clever we are. Ownership, ownership, and ownerships are the keys. Libraries prospered because whatever our other failings, we owned the material. We could loan it, copy it for academic purposes, and dispose of it. The digital artifact is only rented, and the ownership issues can prevent the emergence of a rational (not to mention affordable) digital library. Who has to fix this? We do. The market, the providers of the content, and the users of the materials are us. We have conflicting goals and incentives, but librarians must continue to educate and mobilize presidents, trustees, legislators, provosts, deans, and faculty on the destructive power of much of the current copyright process. Otherwise we will have a copyright war similar to the war over music, except we have MANY fewer consumers of our academic copyrighted materials. Our consumers, unlike the 12-year olds and their colleagues who broke the digital rights management system of music, are not likely to be the vanguard of an academic hacker elite. The Hathi Trust's magnificent ambitions fail faced with copyright, and the digital resources disappear out of the cloud, seen by all of us on the ground, and disappear into dark storage inaccessible but perhaps saved for a future more enlightened 23rd century world. Recent court cases appear to recognize the special

challenges here, and all of us must support the institutions participating in challenging restrictive copyright practices.⁵

6. Libraries, librarians, and their institutions must embrace and redefine special collections, as encompassing the remaining physical artifacts of knowledge, not just rare books and manuscripts. All surviving physical artifacts of books and manuscripts will become special collections. We must curate the physical books and journals, as long as they are being produced or are unavailable in digital form, as representatives of our intellectual heritage. When we look at the surviving physical objects as artifacts of our heritage, every library no longer needs a physical copy. Not every library needs a Gutenberg Bible, nor will every library need a printed copy of my wonderful digitally available monograph on Venezuelan history. One is enough, if preserved as the artifact that it is. The more that is reliably digitized, the fewer duplicate examples of physical artifacts we need in our collections. Librarians need to plan for this future, devise a collaborative process to dump the unused duplicates while preserving the artifacts of record for the future. This will reduce the cost of storage for the duplicate and unused items, now kept in anticipation of a request for physical access that the digital versions will make unnecessary.
7. Libraries must develop the logic, ideology, and rhetoric for the competitive value of the new library functions. Belonging to the universal digital library and paying its costs is a requirement of the competitive research university. Librarians and their associations must lead their universities in developing institutionally endorsed policies for buying access to digital information, for participating in and leading digital collaborations. Librarians must devise the strategy that invests in digital access while sustaining superb special collections of unique information artifacts. Absent librarians from the leadership of this conversation, other university priorities will dilute the investment in library capabilities and expertise, and technocrats will drive the solutions.
8. Libraries should avoid thinking they are primarily part of the teaching function or that their future is as support troops for e-learning. Librarians will do these things, but these functions do not convey power and prestige. Many support functions will migrate into

the cloud, outsourced to experts. Librarians must focus on leading the institution's interaction with digital collaboratives, insist on their associations' participation in the design and execution of big projects, and assert their preeminence in the allocation of funding to digital information infrastructure. If computer experts and non-librarian administrators control the digital information budget, the library will become marginalized within the university's grand design. Power and significance come from spending the university's money on important things. Digital information is an important thing that librarians should manage.

9. Libraries should continue to support learning commons coffee shop study halls, if only to plant the library's name on popular places and avoid geographic marginalization. But the learning commons is a charming enhancement not a fundamental competitive quality driver of research universities.
10. All of the transformations will continue to take place at the same time, although some more quickly, some more slowly. Librarians must play all the games all the time on all fronts, winning some, losing others, but always participating in every single game. To leave the business of information to computer gurus, foundation entrepreneurs, private enterprise providers, and ambitious administrators will guarantee the collapse of the library as a central university competitive asset. Librarians do not need to accept, adopt, or invest in every new idea or proposal, but they must be there at the decision points, both inside and outside the university.

* * *

These are interesting times, complicated by economic constraints and accelerated by technological innovation. Librarians, their associations, and their colleagues throughout the academic world must own the change. It will not be enough to innovate, offer suggestions, and provide useful services.

Graceful collegiality is useful, but aggressive engagement in the decision process is essential. If librarians are only called in at the end to help implement a decision about information management already made by computer techs and administrative entrepreneurs, the library slides

off center stage and becomes but an operational support unit for what may well be shortsighted quick-fix solutions. The library and its people are critically important to the continued significance of the American research university.

We need you, we rely on you, and we admire you.

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Notes

1. John V. Lombardi, Co-Director, The Center for Measuring University Performance, Arizona State University; President Emeritus University of Florida. Special thanks to Martha Kyrillidou, Senior Director, ARL Statistics and Service Quality Programs for access to ARL data and to Jay Schafer, Director, W.E.B. DuBois Library, UMass Amherst for library support.
2. *Star Trek IV: The Voyage Home* (1986; Paramount Pictures).
3. The Hathi Trust has about 500 university and consortia participants, including the Library of Congress. Based at the University of Michigan and drawing on the computing resources of Michigan and Indiana University, the achievements of this consortium since its founding have been remarkable. Issues of permanent ownership, universal access, copyright, sustaining funding, and succession planning remain under development. See Center for Research Libraries Report on HathiTrust Audit and Certification (2011), <http://www.crl.edu/sites/default/files/attachments/pages/CRL%20HathiTrust%202011.pdf> and Hathi Trust Digital Library website at <http://www.hathitrust.org/>.
4. *Redefining the Academic Library: Managing the Migration to Digital Information Services* (Washington, D.C.: The Advisory Board Company, 2011).
5. The Georgia State Case decision is here: <http://www.infodocket.com/wp-content/uploads/2012/05/GA-State-Opinion.pdf>. For the Google settlement see Jennifer Howard, *Chronicle of Higher Education*, "Publishers Settle Long-Running Lawsuit over Google's Book-Scanning Project," October 4, 2012, <http://chronicle.com/article/Publishers-Settle-Long-Running/134854/>. The case between the Authors Guild and the Hathi Trust, as well as the UCLA video streaming case, are reviewed in Steve Kolowich, "A Legal Sweep," *Inside HigherEd*, October 12, 2012, <http://www.insidehighered.com/news/2012/10/12/hathitrust-ruling-universities-fair-use-winning-streak#ixzz29ZNWS8JD>.

Dollars and Sense: the New Financial Realities of Higher Education

John Simon
University of Virginia, USA

Introduction

I want to thank Karin for the invitation to speak today and all of you for attending the conference. I was asked to touch on three topics this morning:

- some of the challenges facing higher education today (with a focus on public institutions),
- the challenges UVA faces about finding its next generation of faculty, how we as an institution are thinking about our future,
- and then, of course, last but certainly not least, what this means for the library.

As I was putting this talk together, I received two magazines: the October 11 issue of *The Economist* and the October 29 issue of *Time*. The articles contained in these two magazines shaped my message about the challenges being faced by higher education. Let me take these one at a time. In *The Economist*, there is a long and detailed special report on the world economy, and for America, there is an article entitled: "The rich and the rest: American inequality is a tale of two countries." In reading this article strong statements were made related to education, which I would like to share with you.

"What lies behind these widening gaps? A big reason, particularly in the bottom half, is education, or rather the lack of it. Just as the information-technology revolution demanded more skilled workers, the continuous improvement in Americans' education stalled. High-school graduation rates stopped climbing in the 1970s, for the first time since 1890. College completion rates also slowed. Many Americans were failing to match the new technologies with better skills. According to Harvard's Ms Goldin and Mr Katz, this explains 60% of America's widening wage inequality between 1973 and 2005."

In a section entitled: "College and/or bust," "Both the soaring cost of a college education and the shortcomings of America's schools system played a part. In the 1970s a year's tuition at a

public university cost 4% of a typical household's annual income; at a private university it took about 20%. By 2009 tuition fees had jumped to over 10% of median income for a public university and around 45% for a private one. Even with the surge in subsidized student loans, many potential graduates were priced out or dropped out early without a degree."

Then I received *Time* Magazine, with its special report on "Reinventing College: A Special Report on Higher Education."

The introduction by Richard Stengel, the managing editor of *Time*, states "the iron triangle is not from geometry class but from experts describing the three big, interrelated problems facing America's colleges and universities: access, cost, and quality. Only 3% of the students at the top 146 colleges come from families in the bottom fourth of household income. Fewer than 6 in 10 undergraduates finish four-year degrees within six years. Student-loan debt has topped \$900 billion. And employers need workers with a college education more than ever. None of these problems can be solved in isolation. Higher education has been the great engine of American prosperity, innovation, and social mobility, and we weaken it at our own peril. We must find a way to do better."

The article contains many facts that inform us of the challenges facing higher education today, and I will point out a few selected details.

- More than a quarter of federal financial aid goes to for-profit colleges, yet nearly half of the students at these colleges drop out within four months.
- The enrollment boom: 4-year schools, 5.1M in 1970, 10.6M in 2011.
- Pell grant recipients: 176,000 in 1973–74; 8.9M in 2010–2011.
- Ivy league for the masses—MOOCS (massive open online courses); three platforms launched

in 2012—Udacity, Coursera, and EdX, with 14, 198, and 7 courses, respectively. Enrollments, 400,000, 1.4M, and 350,000. (I will speak about online shortly.)

- What is the most important reason people should go to College—General population 40% to gain skills and knowledge for a career; that was only 21% of college leaders, their number 1 answer—to learn to think critically (36%), but only 12% of the general population think this.
- 68% of the general population thinks that much of the teaching on college campuses can be replaced by online courses.
- 80% of the general population responded that they think at many colleges, the education students receive is not worth what they pay for it.
- Yet by 2020, it is predicted that 60% of all jobs will require postsecondary education.

A few weeks ago, NSF released a new report that describes how funding cuts are threatening America's major research universities. State per-student funding for the nation's 101 major public research universities declined by an average of 20% in inflation-adjusted dollars between 2002 and 2010, while enrollment has grown. Among the 10 states that had the **largest** per-student funding cuts for their major research universities, Virginia was number 6, with a 34% cut in per-student funding, coupled with a 19% increase in enrollment.

So it is safe to say that these are challenging times for higher education, especially public universities. I would like to put a focus on this by considering our challenges here at the University of Virginia with respect to recruiting the next generation of faculty.

Faculty Turnover

At the core of the excellence of any great university is the faculty and as all of us know, the faculty have expectations of the library, even when they do not realize it is the library that is key to providing them certain materials and services that are taken for granted. It is the very freedom of faculty to ask questions and to challenge conventional wisdom that characterizes great universities, and such intellectual activity has fueled the advances and innovations that have contributed to the strength of our nation in virtually every field of scholarship or endeavor. Faculty want (and feel they need) access

to "all" information in their areas of scholarly interests, and they look to the library to provide it. As new faculty are hired, new demands are placed on providing "intellectual resources," because in many cases, new fields of scholarship are being added to the academy.

Let me put a fine point on this for the University of Virginia. Let's talk about the demographics of our faculty and the large turnover we anticipate experiencing between now and 2020. If we model the retirement age to be 68, and if there are no departures of current tenure and tenure track faculty for any other reasons, about 350 faculty would retire, or 35%. If we use a retirement age of 75, then this number reduces to about 160, or 16%. What these numbers tell me is that we will need to make a large number of faculty hires in the next five to seven years. We need to do this with the recognition that many of our peer institutions face similar challenges. Remember, this does not take into account any other loss of faculty (departure for another job, lack of achieving tenure—which is currently about 10 lines per year in the College) and does not include the effects of enrollment growth on faculty expansion. As we are also growing the undergraduate population, we must simultaneously manage faculty growth and faculty turnover.

This year alone, I authorized 57 searches at UVA. If all searches are successful, this would represent 6% of the total. (In 2011–2012 our yield on offers was about 70%.) Over the next seven years, who we hire will define this institution, and these individuals will define the scholarship and teaching done at the University of Virginia. We need to do it well and attract the best, offer competitive compensation, assure we have outstanding facilities for teaching and research, provide opportunities for our faculty to grow in their careers, and enable them to participate in the forefront of education and scholarship (and this means resources from the library). This is one of the reasons why this University has launched a strategic planning process. But I think the nature of the changes we and other institutions face means that we must also reframe what we mean by strategic planning.

Strategic Planning

I quote Max De Pree, CEO of Herman Miller, from his book *Leadership is an Art*: "In the end, it

is important to remember that we cannot become what we need to be by remaining what we are.” We are embarking upon a period of strategic planning at the University. Our past plans were much more about formulation than implementation, more about getting the analysis right about where the University was at a point in time than about defining a living strategy to guide forward movement. I am fortunate that Bob Bruner, the dean of Darden sends me books to read. He recently send me Cynthia Montgomery’s new book *The Strategist*, and in the early part of that book she writes “Strategy—the system of value creation that underlies an ‘organization’s’ competitive position and uniqueness—has to be embraced as something open, not something closed. It is a system that evolves, moves, and changes.” This construct must sit at the heart of how we think about moving forward as we develop our own strategic thinking. And as it directly involves the future composition of our faculty, and the accompanying changes in scholarship and teaching done at the University, academic planning must be done hand in hand with library planning.

Online Learning

One issue that we are focusing on in terms of our planning that will have interesting implications on our resources, including library resources, is the role of online education. The intersection with the library comes when we think about granting students (online students) access to proprietary databases and other online materials that may be required for them to complete assignments in such courses. At the University of Virginia, we offer an amazing array of technologically enhanced classes, and many of our “technologically innovative” programs are the result of a deep and meaningful partnership between the library and office of information technology. Let me give some examples of what we do in our library. In Alderman library, you can find our Institute for Advanced Technology in the Humanities, where faculty explore and develop information technology as a tool for scholarly humanities research, and our Scholars’ Lab, which supports digital research and scholarly analysis needs of faculty and advanced students in the humanities and social sciences. In Clemons library, you would find our Digital Media Lab, which focuses on the convergence of media and technology, providing expertise and support in areas such as digital imaging, audiovisual production and

post-production, physical interactivity, 2D/3D animation, and mobile technologies, as well as visualization and delivery of media content.

We also reach out with online learning opportunities in engineering and business. Our media studies department is front and center in efforts to educate students about digital literacy. The University, along with many other prestigious universities, has joined the Coursera partnership, to offer a small number of MOOCs. Some of our best faculty are stepping to the plate to offer a MOOC. This is an “experiment,” and all of us are not sure what role a purely online education, whether it is MOOCs or other types of offerings, will play in the higher education landscape over the next decade. We do not see online education replacing the residential and “high touch” education we do at the University of Virginia. To us, acquiring knowledge is only the first step. The discovery of knowledge, the opportunity to have research opportunities, access to primary scholarly materials in our libraries and special collections, to be able to participate in service learning and interdisciplinary projects, to extend one’s education opportunities to experiences in other cultures, to work as a team, and to develop leadership skills through the large range of co-curricular opportunities are just a few things that we are about. We do see technology playing an increasingly important role in the delivery of information. We are currently expanding our offerings of hybrid courses, venues where we “flip” the classroom to allow technology to “deliver the lecture” and face-to-face time is then used to explore the applications of that knowledge. We are convinced that technology can enhance learning, and we will have to experiment to determine how to use technology best—and I am sure that different disciplines will use it in different ways. Our students also need to develop the skills to differentiate between information and misinformation that can be accessed in the electronic world, and we have a responsibility to help them develop these skills. (I sometimes find this challenging myself!) Our “labs” in our library play a key role in enabling us to integrate technology into our educational offerings.

But it is important to acknowledge the limits of technology in replacing human interaction. This summer, I read *A Brave New World* by Aldous Huxley. This book is rich with themes, but for those of you who have read it, I ask that you think

about the parallels between his portrayal of a world in which the state uses the science of genetic engineering to build a technology that results in a seamless, happy, superficial world and one where online learning is perfected to be the mode of choice for acquiring knowledge. I would argue that Huxley's world is not one in which I would like to live, and that a world in which online education becomes the coin-of-the-realm for learning will be one in which people are not truly educated.

Library

Finally, let me expand more on what all this means for our libraries. I think the library will always play a central role in the educational experience (and actually an increasing role in the social experience, I am told). But one challenge is that faculty and students do not understand sometimes how they rely on the library. When I can point and click and get any scientific article from the privacy of my office, I do not immediately connect that I am using "library resources." We take the online materials for granted, yet they represent a large cost to our institutions every year. When students prepare projects in our Digital Media Lab, or conduct research using our Scholars' Lab, they often do not fully appreciate that they are using a "library" resource. As we launch new initiatives and think about the scholarship of tomorrow, we have to assure that the faculty and students not only have access to the books and journals that will support success in these areas, but support and access to the digital mediums that will define future scholarship, not to mention the challenges of "archiving" all of these new materials. Access and preservation will fall to the library, and so integration of libraries into academic strategic planning is key. So what can libraries do to make their case and explain their value to their many stakeholders?

- Align priorities with the strategic goals of your institution.
- Demonstrate what you do for faculty and students. As I said some don't even understand that most online resources they use are provided by their library.
- Ask yourself what you can let go of to pursue new directions, and reallocate accordingly. This is hard to do for everyone.
- Focus on users and meet their greatest needs,

and realize that this is a rapidly changing landscape.

- Look for ways to provide leadership. At UVa, the library is taking the lead in national solutions for digital preservation, supporting new methods of digital humanities scholarship, and providing technology-rich environments for teaching and learning.
- Collaborate with others, on-campus and off. Increasingly, the biggest problems we face can't be solved by one institution. Libraries are already good collaborators (buying consortia, collaborative projects for digital archives and preservation). Extend that to working with IT, industry, your local community, etc.

Karin recently gave me a two page summary of the purpose and strategic directions for the library in the 2012–2013 academic year. I want to share her wording of the purpose with you:

Contribute to the success of the University's mission by facilitating research, teaching, and learning now and in the future.

This purpose sits on top of three important legs:

1. Developing collections, services, and spaces that foster preeminent academic programs and research
2. Ensuring that important collections in all formats are preserved in perpetuity
3. Making new forms of scholarly engagement central to the Library's collections and service models

In my Convocation speech I stressed that I think students need to be "traditioned innovators." They will need to understand history, language, and culture so that they can see ways of bringing the past into the present in an innovative way. Libraries are the important enabler of this aspiration.

I thank you for the opportunity to talk this morning and wish you a great conference.

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Higher Education in a New Era of Public Accountability: What Does This Mean for You?

Judith S. Eaton

Council for Higher Education Accreditation, USA

The New Era of Public Accountability

Especially for the past six years, intensified expectations of public accountability from colleges and universities have become the norm. It is no longer adequate for higher education officials to assert “trust us,” particularly about transparency, student achievement and the value of a degree. While higher education, as with all social institutions, is routinely subject to some criticism, concerns about the credibility of higher education, its rigor, effectiveness and integrity, have grown. Tuition and fees continue to increase and, along with these rising prices, the evidence that the public is skeptical of the value of colleges and universities increases as well. Publications such as *Academically Adrift: Limited Learning on College Campuses* (2010) affirm, to some, that higher education is not serving students and society as well as it might.

The questioning and skepticism emerges from federal and state government, the press, employers and the public. The 2005–2006 U.S. Secretary of Education’s Commission on the Future of Higher Education set the tone for the current skepticism and these calls for greater accountability. This report, the first such major effort addressing colleges and universities by the U.S. Department of Education in two decades, offered major criticisms both of higher education and accreditation.

This new era of public accountability involves meeting four expectations. First, those seeking greater accountability want direct evidence of what students know and can do as a result of a collegiate experience as well as how well institutions perform. What do students achieve and what are their learning outcomes? How successful is a college or university in graduating students? Can students transfer with ease? How many undergraduate students go to graduate school?

Second, an institution must be transparent,

providing accurate, timely information about its operation and results that is readily understandable and easily accessible to the public. Third, government, the press and the public all want information about education for work. Does degree acquisition lead to a good job? How does an institution fare with job placement? Are the earnings of students commensurate with their investment in tuition and fees? Fourth, more recent tools used to indicate quality such as ranking systems and interactive, online databases that allow for comparisons of institutions are also used to judge whether a college or university meets accountability expectations.

Public Accountability and Accreditation

This questioning of the worth of colleges and universities extends to accreditation, higher education’s primary means of assuring and improving academic quality. Accreditation has traditionally been the most significant indicator of the legitimacy and reliability of colleges and universities. Recently, however, accreditation has been subject to significant criticism about its fundamentals: a mission-based approach to quality, the centrality of peer review and a firm belief in quality review driven by trust among academics as they review other academics.

The key factor driving accreditation in this new era of accountability is its relationship with the federal government, although accreditation was created and remains funded and managed by higher education institutions. The 85 independent institutional and programmatic accrediting organizations in the United States are nongovernmental bodies.

Many accrediting organizations are engaged with the federal government through a partnership described as “gatekeeping.” Since the 1950s, institutions that wish to be eligible for federal

funds for student grants and loans, research and program funds must be accredited by an accreditor that is reviewed and “recognized” by the federal government. Federal funds that go to accredited institutions now total \$175 billion annually. As the federal investment in higher education continues to increase, the questioning of worth has increased as well.

This recognition process involves accrediting organizations providing evidence that they meet standards in federal law and regulation. The review is conducted at least every five years. If an accreditor loses its federal recognition, an institution it accredits must find another federally recognized accreditor or lose eligibility for federal funds. The loss of federal funds can mean that an institution will not be able to continue to operate.

The federal review of accreditation, once involving a light scrutiny and reflecting an assumption that higher education can be accountable on its own, has given way to a more dominant role for government. This dominant role involves ongoing, detailed scrutiny of how accrediting organizations operate and the decisions that are made about accredited status. It involves moving accreditation toward a predominantly compliance role, in contrast to its traditional collegial approach to reviewing quality. It reflects an emerging preference that government, not higher education, decides academic quality and a diminished reliance on the leadership of faculty and academic administrators to judge quality. In the new era of public accountability, accreditation is being shaped by a federal agenda, with federally mandated performance measures and federal goals for federal funds.

Libraries and Public Accountability

Libraries are well positioned to assist institutions and accreditation in this new era of public accountability. This assistance can take a variety of forms and builds on the strengths and capacities of what libraries currently do.

Libraries can help institutions know more about themselves through working with faculty and academic administrators in the development of evidence of institutional performance, one of the accountability expectations described above. Research that addresses graduation, transfer of

credit or entry to graduate school is essential to the new era. Similarly, libraries can assist with framing this evidence in ways that contribute to greater institutional transparency, assuring that evidence is readily accessible and easily understandable to the public. Library colleagues can work with faculty to identify and examine effective practices in teaching and learning to affirm what students learn and can do. Libraries can provide leadership for accountability by helping the institution make the case for the added value of the college or university. Finally, libraries can effectively participate in accreditation by providing needed research, information and data to assure a useful and effective accreditation review and the sustaining of accredited status.

Libraries already play a major role in accountability through the current emphasis on their own assessment through Library Assessment Forums, Library Assessment Conferences and Library Assessment Blogs. Tools such as the StatsQUAL® gateway to assessment tools and OPAL’s cooperative professional development help assure the effectiveness of library and librarians and assure that information and practices for accountability is sustained and enhanced.

Libraries are part of sustaining strong accreditation by making effective use of what is learned in its own accreditation review to both sustain threshold quality and improve. They are also part of moving accreditation forward through provision of data and information not only for libraries, but also for the colleges and universities in which libraries are located.

Summary

The new era of public accountability is driven by skepticism and concern about the worth of higher education and in accreditation. As a result of the longstanding federal government-accreditation relationship, this call for accountability, in turn, is producing a larger role for government decision making about quality than at any time in the history of higher education and accreditation. This is at the price of institutionally based judgment about academic quality and the traditional approach to accreditation. This development affects institutions, libraries and accreditation.

Acknowledging that the new era of public

accountability is likely to be sustained, libraries can play a number of key roles. They can contribute to the evidence of outcomes, performance and transparency called for in the current climate. Libraries can be part of an appropriate accountability culture that addresses current expectations, but within the system of mission-

based peer review that has been part of traditional accreditation. By making effective use of their own accreditation, libraries are evidence of the value and robustness of peer review.

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What Do We Want to Know: Articulating a Research Agenda for the Value of Academic Libraries

Lisa Hinchliffe

University of Illinois, Urbana-Champaign, USA

Kara Malenfant

Association of College and Research Libraries, USA

Abstract

The Value of Academic Libraries: A Comprehensive Research Review and Report published by the Association of College and Research Libraries (ACRL) includes a detailed research agenda on a range of topics, discussing possible data sources and research questions. The comprehensive nature of the report sketched a broad and varied landscape that showed an expansive range of possibilities. Discussions during open forum meetings indicated appreciation for the breadth of the discussion but that there is a corresponding need for a discussion around the depth of each particular research area. This paper reports on an invitational working session held as a pre-meeting to the American Library Association Annual Conference in Anaheim in June 2012. The half-day working session brought together experts to discuss the possibilities for an in-depth, multi-year research agenda that the library research community could organize around and that could serve as the basis for pursuing grant funding for value research. The ideas and approaches identified during this working session now form a backdrop for the projects underway through ACRL's *Assessment in Action* IMLS-funded project.

Introduction

The Value of Academic Libraries: A Comprehensive Research Review and Report published by the Association of College and Research Libraries (ACRL) includes a detailed ten-part research agenda, discussing possible data sources and research questions.¹ The ten identified areas are: student enrollment; student retention; student success; student achievement; student learning; student experience, attitude, and perception of quality; faculty research productivity; faculty grants; faculty teaching; and institutional reputation or prestige. For each of these areas

the *Value* report articulates an essential question, surrogates for library impact, data sources, and potential correlations. The comprehensive nature of the report sketched a broad and varied landscape that shows an expansive range of possibilities. Discussions during open forum meetings after the report was disseminated indicated that librarians appreciate seeing the breadth but would like greater clarity about what research is most needed on a national level. In response to this stated need, the ACRL Value of Academic Libraries Committee hosted an invitational meeting to further explore the research agenda and how it might be most useful to the profession.

Invitational Meeting

To begin shaping a national research agenda as part of ACRL's Value of Academic Libraries initiative, ACRL invited library leaders to come together for a half-day working session during the ALA Annual Conference 2012 in Anaheim, California. Participants included leading researchers in the area of library value, particularly academic library value, individuals who have pursued conversations with ACRL about the research agenda component of the report, and members of the ACRL Value of Academic Libraries Committee (see Appendix A: Attendee List). Through a series of structured discussions and prioritization activities, participants contributed to exploring the possibilities for a detailed research agenda. Megan Oakleaf, co-chair of the ACRL Value of Academic Libraries Committee, facilitated the meeting, with the support of Lisa Hinchliffe, co-chair of the ACRL Value of Academic Libraries Committee and Kara Malenfant, Senior Strategist for Special Initiatives at ACRL.

The research agenda meeting purposefully focused on student learning, retention, and success, which are only three of the ten research areas identified in the *Value* report. In late 2011, through an IMLS National Leadership Collaborative Planning Grant, ACRL joined with three partners—the Association for Institutional Research, the Association of Public and Land-Grant Universities, and the Council of Independent Colleges—to host two summits. The summits convened representatives from twenty-two postsecondary institutions, including senior librarians, chief academic administrators, and institutional researchers, for discussions about library impact. Fifteen representatives from higher education organizations, associations, and accreditation agencies also participated in the summits. Throughout the summits, speakers and participants emphasized the importance of documenting library impact on student learning, retention, and success at all types of postsecondary institutions.² Summit participants emphatically urged ACRL to focus on the three areas of the *Value* research agenda as most promising and useful for individual institutions as well as the profession as a whole.

To ground the discussion at the June 2012 invitational meeting, participants were asked to read selected excerpts of the *Value* report in advance. They were specifically directed to those sections related to defining value, the review and analysis of the literature base on academic library impact, and the portions of the research agenda relating to student learning, retention, and success (pages 20–46 and 106–119). During the meeting, Megan Oakleaf provided an overview on the process of developing a research agenda and highlighted what is already documented in the library impact literature on student learning,

retention, and success. The following definitions of student learning, retention, and success were the basis for the discussions:

- Student Learning—achievement in school; the attainment of learning outcomes, but it also encompasses the concept of student “achievement,” which includes GPA and professional/educational test scores (Value Report, 114–119)
- Student Retention—persistence and completion; encompasses reenrollment rates (each semester, fall-to-fall), graduation rates (four-year, six-year, at institution of origin, at another institution), transfer rates, and certificate completion (Value Report, 106–108)
- Student Success—achievement after school; student ability to do well in internships, secure job placements, earn salaries, gain acceptance to graduate/professional schools, or obtain marketable skills (Value Report, 109–113)

For each research area, small groups identified and discussed essential research questions and sub-questions as well as potential research approaches (e.g., study design, methodology, potential data sources, study sites), research collaborators, and funding sources.

Ideas in Development

Detailing all of the ideas covered in two rounds of discussion by six small groups is beyond the scope of this paper; however, examples of the ideas being developed will serve to illustrate the process and complexity of exploring a research agenda. It must be emphasized that these charts represent ideas-in-process, not final articulations of vetted concepts as polished work cannot be expected of 30–45 minute discussions.

Possible Question: Does librarian involvement in courses with a research component contribute to student achievement of course learning outcomes?		
Library Service	Impact Measure	Collaborators
Librarian collaboration with faculty members on the design of course outcomes, lessons, and assessments (but without librarian participation in the classroom).	Faculty reports on student performance	Faculty Deans Administration Distance Learning program administrators
Librarian-provided direct instruction to the students for all or part of a course.	Common scoring rubrics	
Librarians co-teaching or being embedded within a campus or online course.	Student grades upon assignments Final course grades Observations of student research behavior	

Possible Question: Does a working relationship between career services and the library impact student career success?		
Library Service	Impact Measure	Collaborators
Collaboration between student affairs and/or the career center	Grades Career paths Data gathered from student affairs or the career center Data gathered from student affairs, the career center, and or the library	Career Center Student affairs Registrar Alumni Center Deans Administration Employers
Student attendance at library/ career instruction sessions with assessment of student learning outcomes.	Career placement statistics of students who received a combination of library/career instruction versus students who did not	Career Center Student affairs Registrar Alumni Center Deans Administration Employers

Possible Question: In what ways and to what extent do libraries contribute to successful campus practices and programs for retention?		
Library Service	Impact Measure	Collaborators
Librarians involved with First-Year writing or Communication Across the Curriculum programs	Faculty reports on student performance	Faculty Deans Administration First-Year Experience Office Academic Success Programs/ tutoring Academic Advising Academic ombudsperson
Librarian-provided direct instruction to the students for all or part of a course		
Librarians co-teaching or being embedded within a campus or online course.	Student grades upon assignments Final course grades Observations of student research behavior	Institutional Research Office Accreditation Office Student Retention Office Dean of Students/ student advocacy and accountability
Librarians involved in Residential Life programs, Honors Colleges, or Greek Life		

A Nascent Research Agenda

The discussions at the invitational meeting suggest the possibility of a nascent research agenda but one that is not yet able to be clearly articulated. Conversations delved deeply into advantages and disadvantages of different approaches to scoping the concepts of student learning, retention, and success as well as divergent beliefs about the utility of different research methods and what constitutes “proof” of library impact. Though the meeting did not end with an articulated research agenda as originally planned, participants expressed strong levels of appreciation for the opportunity to discuss these issues in a focused way. Furthermore, they believed that it will be possible to articulate a research agenda over time and that continuing to pursue this is an important priority for ACRL and the profession. As one participant expressed, “developing a broad-based coordinated research agenda will be challenging and perhaps elusive goal. . . on the other hand, though the ambition might prove overly idealistic, that very idealism will probably get us farther than a lack of it.”

Next Steps

After reflecting on the brainstorming and discussions at the invitational research agenda meeting as well as participant feedback gathered afterwards, the ACRL Value of Academic Libraries

Committee determined that a more grassroots approach to creating a research agenda is needed before a formal research agenda can be articulated and receive broad support and engagement from the profession. The research base is too limited and fragmented at this time to scope a focused research agenda at the national level. Instead ACRL should support and encourage broad engagement with local research and building librarian and library capacity for assessing library impact.

In September 2012, ACRL was awarded an IMLS National Leadership demonstration Grant “Assessment in Action: Academic Libraries and Student Success,” which builds from the previously mentioned planning summits held in 2011. *Connect, Collaborate, and Communicate*, the report from the summits, made the following recommendations:

- Increase librarians’ understanding of library value and impact in relation to various dimensions of student learning and success.
- Articulate and promote the importance of assessment competencies necessary for documenting and communicating library impact on student learning and success.
- Create professional development opportunities for librarians to learn how to initiate and design assessment that demonstrates the library’s contributions to advancing

- institutional mission and strategic goals.
- Expand partnerships for assessment activities with higher education constituent groups and related stakeholders.
- Integrate the use of existing ACRL resources with library value initiatives.³

Over the course of three years, the 300 institutions participating in the “Assessment in Action” project will each be developing and implementing a library value action research project in the area of student learning and/or student success. All of these institutions will document and articulate their approaches so that their methods and results can be disseminated for use by the wider academic library and higher education community. Each project report will include descriptive information: which students were included, what aspects of the library were examined (e.g., collections, space, instruction, and reference), what element of student learning (e.g., course, program, degree) or success (e.g., retention, completion, and persistence) was the focus, what tools/methods were used, limitations of the project, and resources used. Each report will also include discussion of results as well as what factors enabled or hindered the project.

In addition to gathering the individual project reports, ACRL has retained a project evaluator who will analyze the reports in order to identify innovative and promising library impact assessment practices, patterns among the enabling

and hindering factors, and common research methods and data sources. As the projects are analyzed, it is hoped that a research agenda will emerge that will enable the profession to grapple with and define the essential research questions which address the over-arching and most essential question: “what is the value of an academic library?”

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Notes

1. Association of College and Research Libraries, *The Value of Academic Libraries: A Comprehensive Research Review and Report* (Chicago: Association of College and Research Libraries, 2010), 101–139, available at http://www.acrl.ala.org/value/?page_id=21.
2. Association of College and Research Libraries, *Connect, Collaborate, and Communicate: A Report from the Value of Academic Libraries Summits* (Chicago: Association of College and Research Libraries, 2012), 11–12, available at <http://www.acrl.ala.org/value/?p=381>.
3. Association of College and Research Libraries, *Connect, Collaborate, and Communicate: A Report from the Value of Academic Libraries Summits* (Chicago: Association of College and Research Libraries, 2012), available at <http://www.acrl.ala.org/value/?p=381>.

Appendix A: Attendee List

Tom Abbott Dean of Libraries and Distance Learning University of Maine at Augusta	Mark Emmons Planning & Assessment Officer University of New Mexico	Patricia Iannuzzi Dean, University Libraries University of Nevada, Las Vegas
Steven Bell Associate University Librarian for Research and Instruction Temple University	Jen Fabbi Director, Research & Education Division University of Nevada Las Vegas Libraries	Bruce Kingma Associate Provost Syracuse University
Jeanne Brown Head of Assessment Univ. of Nevada Las Vegas	Terri Fishel Library Director Macalester College	Martha Kyrillidou Senior Director Association of Research Libraries
John Budd Professor University of Missouri	Craig Gibson Associate Director for Research and Education Ohio State University	Joan Lippincott Associate Executive Director Coalition for Networked Information
Debora Cheney Head, Library Services to the World Campus/Penn State Online and Larry and Ellen Foster Communications Librarian Pennsylvania State University	Debra Gilchrist Dean of Libraries and Institutional Effectiveness Pierce College	Kara Malenfant Senior Strategist for Special Initiatives Association of College and Research Libraries
Alice Daugherty Assessment Librarian Louisiana State University	Margaret Grotti Coordinator, library instruction University of Delaware Library	Joe Matthews President JRM Consulting
Mary Ellen K. Davis Executive Director Association of College and Research Libraries	Steve Hiller Director, Assessment and Planning University of Washington Libraries	Gina Millsap Chief Executive Officer Topeka & Shawnee County Public Library
Carrie Donovan Head, Teaching & Learning Indiana University Libraries	Lisa Hinchliffe Coordinator for Information Literacy University of Illinois at Urbana-Champaign	Eleanor Mitchell Director of library services Dickinson College
Christian Dupont Aeon Program Director Atlas Systems, Inc.	Sheril Hook Curriculum Development Coordinator University of Toronto Mississauga	Jennifer Nutefall AUL for Innovative User Services Oregon State University
James Elmborg Associate Professor, SLIS University of Iowa		Megan Oakleaf Assistant Professor Syracuse University
		Sarah Passonneau Assistant to the Dean of the Library, Assessment Librarian Iowa State University Library

Jennifer Paustenbaugh Associate Dean of Libraries for Planning & Assessment	Jennifer Rutner Senior Analyst ITHAKA S+R	Maureen Sullivan Professor of Practice Simmons College
Oklahoma State University Library	Roger Schonfeld Director of Research ITHAKA S+R	Carol Tenopir Professor University of Tennessee
Sarah Pritchard Dean of Libraries Northwestern University	Anthony Smith Senior Library Program Officer Institute of Museum and Library Services	Andrew Walsh Academic Librarian / Teaching Fellow University of Huddersfield (UK)
Carolyn Radcliff Reference and Instruction Librarian Kent State University	Joan Stein Head, Access Services Carnegie Mellon University Libraries	Scott Walter University Librarian DePaul University
Kathy Rosa Director for the Office of Research and Statistics American Library Association	Christopher Stewart Assistant Professor Dominican University GSLIS	Sarah Watstein University Librarian University of North Carolina Wilmington

Assessment of the Use, Value and ROI of All Academic Library Services

Donald King and Ariana Ricci
Bryant University, USA

Carol Tenopir, Ben Birch, and Liz Whitson
University of Tennessee, USA

Background

The University of Tennessee, School of Information Sciences obtained a three year grant from the Institute of Museum and Library Services (IMLS) to assess the value and return-on-investment of academic library services, referred to as LibValue. The project involves a number of specific projects performed at several universities and with the Association of Research Libraries (ARL).

These projects include:

- Scholarly reading (University of Tennessee). This project measures the value of reading by scholars and students of articles, books and other documents through surveys.
- Syracuse University study of the comprehensive value of the academic library including the economic, environmental and social value to faculty and students based on surveys.
- Teaching and learning (University of Tennessee). An experimental design to assess the impact of library instruction on student learning and success.
- Two New York universities that replicate the Syracuse University study and one the teaching and learning survey. Studies are designed and carried out at Syracuse University.
- Digital special collections (University of Tennessee). Examination of the role that special collections play in donations, recruiting of faculty and students and in generating goodwill and prestige for the university. Google analytics and weblogs are employed methods.
- E-books study (University of Illinois). This project is a follow-on of an earlier study to look at how faculty and graduate students value e-books and how they are used. Methods

include logbook analysis and surveys.

- ARL is to provide tools and guidelines made available and to support publications and presentations.

This paper describes a comprehensive assessment of the use, value and ROI of all 77 services provided by the library at Bryant University. The conference presentation will include results from Drexel University. The Bryant results include an in-depth analysis of the cost of each service and a survey of faculty and student use and value of each service.

Bryant University is a small, private Rhode Island school started in 1863 which emphasized business until recent years. It has Colleges of Business and of Arts and Sciences. Business students are required to take a minor in Arts and Sciences and Arts and Sciences students must take a minor in Business. It has developed a strong academic reputation with an exceptionally high retention rate, and over 96 percent of graduates consistently gain employment or go on to graduate school within six months of graduation. Bryant has 3,472 students including 256 in the Master's program. There are 164 full-time faculty and 64 part-time lecturers and adjunct faculty. They also have 465 staff ranging from President to facilities staff. The library staff consists of 17 persons, mostly professionals.

Some basic terms in this presentation are:

- **In-depth library cost** (i.e., **library investment**) of each service and other operational activities include the cost of library staff, space, shelving, furniture and purchases (e.g., journal

- subscriptions) and university overhead.
- **Operational activities (22 activities)** include collection development, acquisition, cataloguing, mail processing, administration, and so on.
- **Use of services** includes the annual number of times a service is used (e.g., number of reference searches performed) by faculty and students, or annual hours a service is used (e.g., number of hours using library workstations).
- **Values of services** are the **return** component of ROI determined by the value gained from using services:
- **Purchase value** is what users pay for using services in their time and/or money.
- **Use value** is the favorable consequences resulting from using services.
- **Contingent value** is the cost that would be required by users to obtain the information or results if the service was not provided, less the library cost/investment of the service (found only for faculty).
- **The university investment** is the library investment plus the user cost in their time and money covered by the university.
- **Library monetary Return-on-Investment** is the contingent value divided by the library investment/cost to provide a service.

Examples of use, values and ROI are given below for some of the 77 services.

Methods and Estimates of Use and Value

This section provides a description of methods and estimates of two types of services provided by the library: access to scholarly articles and reference searches conducted by library staff. The survey methods include survey response notes and a description of the critical incident method used. The question used is presented prior to each estimate. A section is given which summarizes the use, contingent value, library and university investment and library monetary ROI of all services.

The objective cost analysis for the Bryant

University Library is to establish the total cost of each principal service provided by this library. These costs will be added to costs incurred by faculty, staff and students in using the services to yield the total costs to the university to establish the investment component of Return-on-Investment of the library.

In addition, the detailed costs can be used to assess:

- The cost per use of each service.
- The cost of processing and providing access to each type of publication (i.e., book, journals, etc.) and other materials.
- The relative cost of different formats (i.e., print vs. electronic).
- The productivity or cost per output of each activity.
- The effect of changes in number of faculty or student on library cost.

These metrics can be used for library decision-making and/or planning.

The basic steps in the library cost analysis are as follows:

- Identify the principal services provided by the library.
- Establish the resources such as staff, space, shelving, furniture, supplies, etc. that are used to provide services.
- Establish basic data that are used in the cost analysis.
- Estimate the cost of the five resources necessary to provide each service.
- Sum to estimate the total cost of each service.
- An Excel spreadsheet is used for the cost analysis.

Students are notorious non-responders. To help with this, two surveys were given to students including one that dealt with obtaining articles, books and other publications from the library and one about all other library services. Student surveys were a combination of web-based and hand out in the library.

The initial survey responses were as follows:

	Population	Initial Responses
Full-time faculty	164	75
Part-time faculty	94	31
Student reading survey	3,472	91
Web-based		(73)
In-library		(18)
Student other services survey	3,472	143
Web-based		(48)
In-library		(95)
Total	3,730	340

Since part of the university's investment in library services involves the cost to faculty, staff and students (in addition to library costs), it is necessary to put a value on their time. Faculty compensation includes salaries and valued fringe benefits such as retirement, insurance, etc. Since faculty often work more hours than a normal work week, the total compensation is divided by 2,200 hours (an amount observed elsewhere). The average faculty cost is \$56.20 per hour and staff cost is \$36.00 per hour.

Student hourly rate is based on student tuition and corresponding time spent on university activities. The rationale for using tuition is that the university is responsible and invests in resources necessary to provide classes and other events for the amount that students pay. We asked students to indicate "Approximately how many hours do you spend in a typical week: In class, studying in the library, studying elsewhere, and in other university activities (attending a scheduled event, recreational activities, athletic events, volunteer services, etc.)." There are 35 weeks covered by tuition so the tuition is divided by that amount and then divided by the reported number of hours given by each student. Both web-based and in-library respondents answered this question with little difference resulting in an average cost of \$34.60 per hour.

The surveys of library users rely heavily on the critical incident method where the critical incident is the last visit, last use of a service (for example, circulation, reference, and access to other materials, workstations, space, and so on) or last reading of a publication (i.e., article, book or other publication).

From this point reference is only to a visit or use of a specified service. Survey questions include the number of visits made by the user within a specific time period, such as the previous month (30 days). That number represents a "cluster" of visits. Subsequent questions deal specifically with the last visit made during that month, such as how much time was spent during that visit and which services were used. When focusing on the critical incident, in a sense, the survey population shifts from people to total annual number of visits and other activities. Total visits are estimated by multiplying the average number of visits per respondent made in a month times the surveyed population total and then projected to a year total (as for example, times 7.4). Thus, estimates of total visits are based on the population of visitors (and non-visitors). However, when estimates concern the critical incident of the last visit, the survey population observed becomes all visits of the population surveyed.

The critical incident method is a powerful tool because one can develop observations from multiple cross-classifications, say, from the last reading of an article. Questions about the last reading observed may include how the article was identified, where it was obtained, its format, the purpose for the reading, and outcomes resulting from reading. The critical incident method can produce combinations of observations such as the age of the articles identified through an online search, obtained from a library, and used for research; or one could compare articles read from library sources versus other sources (such as personal subscription or from a colleague), in print versus electronic, and the respective time spent reading, and outcomes of the reading by source.

Scholarly Journal Article Reading by Faculty and Students

Amount of Reading

Journal article reading is defined as follows: "Articles can include those found in journal issues, websites, or separate copies such as preprints, reprints, and other electronic or paper copies. Reading is defined as going beyond the table of contents, title, and abstract to the body of the article." Respondents were asked for "Number of articles read (including skimmed) in the past month." They were then asked questions about the scholarly articles they read most recently, noting that "the last reading may not be typical, but will establish the range of reading patterns." The average annual amount of reading per faculty is

194.2 readings or 49,640 total. From this point on, assessment and discussion deals only with reading of articles provided by the Bryant library.

To initiate critical incident questions, survey respondents were notified that: "The following questions in this section refer to the SCHOLARLY ARTICLE YOU READ MOST RECENTLY, even if you had previously read the article. Note that this last reading may not be typical, but will establish the range of reading patterns."

In order to sort out readings from Bryant library provided articles, the following question was asked: "From where did you obtain this article you last read? Precoded responses."

Source of Articles Read by Bryant Faculty (N=258, n=106)

Source	Faculty Proportion (%)
Non-Bryant sources	
Personal subscription	20.0
Free Web Journal	5.3
Preprint copy of the article	1.1
Copy of the article from a Colleague, author, etc.	10.5
An author's website	4.2
Other website	5.3
Other (not Bryant-related)	4.2
Total	47.5%

A total of 26,060 (52.5%) of the readings by faculty are from Bryant sources. The Bryant sources are described below:

Bryant Article Sources Read by Faculty (N=258, n=73)

Source	Readings (%)	Number
Bryant library's print collection	9.1	2,380
Bryant library's electronic database	66.2	17,240
Interlibrary borrowing	20.5	5,350
School, department, etc. subscription	4.2	1,090
Total	100%	26,060

The print current periodical and other collection is combined due to a small number of responses. The electronic database values are determined by the format of the article reading. About 24,970 readings are provided by the library and 1,090 obtained by a school or department subscription.

Sources of student readings were observed from the following question: "From where did you obtain this article you last read? Five precoded responses." Results are given below:

Source of Articles Read by Bryant Students (N=3,472, n=91)

Source	Proportion (%)
Non-Bryant sources	
Personal subscription	2.4
A non-Bryant website	9.5
Someone other than your instructor/teacher	-----
Other (not Bryant-related services)	4
Bryant sources	
From the Bryant library or other university source	83.3
Total	100%

A total of 197,100 readings by students are from Bryant sources. Those from the library are found from the question: "From what Bryant source did

you obtain it? Seven precoded responses." These responses are:

Bryant Sources of Articles Read by Students (N=465, n=44)

Bryant Source	(%)	Readings Number
Current periodical room	9.1	17,830
Other library print collection	2.2	4,380
Electronic database/reserves	64.3	126,740
Interlibrary loan	4.4	8,740
Instructor/teacher	7.5	14,720
School, department subscription	12.5	24,680
Total	100%	197,100

Allocating the other responses, the proportion of the 197,100 article readings from the library is 80.0 percent or about 157,700 readings.

Faculty was asked, "What year was the last article you read published/posted?" Recognizing that the survey was conducted in late 2011, the years reported are as follows:

Year Read by Faculty and Students Year Read Article was Published or Posted

Year	Faculty (N=258, n=44) Proportion (%)	Students (N=3,492, n=26) Proportion (%)
2011	38.6	7.7
2010	20.5	15.4
2007–09	6.8	34.6
2002–06	6.8	15.4
1997–01	6.8	11.5
1992–1996	4.5	3.8
And 1990, 1989, 1983, 1976, 1964, 1935, and 1931.		1990, 1984, and 1861.

This pattern for faculty is consistent with that observed in other academic institutions world-wide and is almost like a nuclear decay curve.

The format of Bryant library provided articles tend to be electronic (78.6%) versus print (21.4%) for faculty, which is also consistent with other academic institutions which coincidentally show a very high proportion of articles read from personal subscriptions remain in print. Students relied on electronic format for 87.5 percent of readings and 12.5 percent in print.

The Value of Articles Provided by the Bryant Library

Use value in this assessment is determined from the following set of questions concerning the outcome of reading an article:

- For what purposes did you use, or do you plan to use, the information obtained from the last article you read?
- Which article is the principal purpose (from above)?
- How important is the information contained in this article to achieving your principal purpose?
- In what ways did the reading of the article affect the principal purpose? (Choose all that apply.)
- Did you cite this article or do you plan to cite it in another publication (e.g., article, report, book, published proceeding, etc.)?

Purchase value is assessed by what readers pay in their time to obtain, process and read articles

obtained from the Bryant library. Questions dealing with these values are as follows:

- How did you become aware of the last article you read?

The focus was on time spent browsing and searching versus another person told them, citation, etc.

- Found while browsing without a specific objective in mind, for example starting with a journal name, journal issue, table of contents, website, or other source of articles such as current periodicals.
- Approximately how much time did you spend browsing? (In minutes)
- Found while I (or someone on my behalf) was searching by subject, author's name, etc. from a web search engine, online or printed index, online journal collection, etc.
- Approximately how much time did you (or someone on your behalf) spend searching (in minutes)?

Since time spent browsing or searching can result in several articles being found, the total time was divided by the number of articles read.

- As a result, how many articles did you read and/or plan to read?

After you identified this article, approximately how much time (in minutes) did you spend on each of the following activities (if no time was spent, please enter "0")?

- Obtain, request, receive or download and display the article;

- Photocopy, scan or print the article;
- Other (please specify):

And finally,

- About how much time did you spend reading this article most recently (in minutes)?

Another “value” of articles obtained from the Bryant library is “contingent valuation.” This value is assessed from:

- If this article had not been available from the Bryant library or other university source, from

where would you have obtained the article/information?

- o I would not bother getting the information
- o I would obtain the information from another source (e.g., colleague, purchase, etc.)
- o Please specify source here
- In order to obtain the same article/information, if the Bryant source were not available, I would expect to spend: (If no time or money, please enter “0”)
- o In minutes
- o In dollars

Use Value Observations Made by Faculty and Students Purposes of Reading by Faculty (N=258, n=42)

Purposes of Reading	Purposes of Reading Proportion (%)	Principal Purpose Proportion (%)
Research	85.0	59.5
Teaching	52.4	16.7
Administration	-----	-----
Current awareness/keeping up	33.3	7.1
Writing proposals, reports, articles, etc.	23.8	9.5
Consulting, advising others	4.8	-----
Internal or external presentations	14.3	2.4
Other	4.8	4.8
Total	219.1%	100%

Research is clearly the most frequent purpose of reading articles provided by the Bryant library with teaching somewhat less so. The reading of an article averages 2.2 purposes.

Students were asked: “For what purpose was this article read? (Choose only the best answer.) Six precoded responses.”

Purpose of Reading by Students (N=3,472, n=41)

Purpose	Proportion
This article was required reading in a course	19.5
I read the article to help a course assignment or course paper	56.2
This article was for a class report	19.5
I read this article to keep up with the literature	2.4
This article was just of personal interest	-----
Other	2.4
Total	100%

Importance in Achieving the Principal Purpose by Faculty and Usefulness for Students

	Faculty (N=258, n=42) Importance Rating	Proportion (%)	Students (N=3,472, n=41) Usefulness Rating	Proportion (%)
1	Not at all important	-----	Not at all useful	-----
2	Somewhat important	19.0	Somewhat useful	9.7
3	Important	28.6	Useful	29.3
4	Very important	38.1	Very useful	48.8
5	Absolutely essential	14.3	Absolutely essential	12.2
Total		100%		100%

Over one-half of these readings by faculty are rated “very important” or “absolutely essential,” and “very useful” or “absolutely essential” by students.

The average rating is 3.48 for faculty and 3.63 for students.

Ways in Which Reading by Faculty Affected the Principal Purpose (n=258, n=42)

Ways Affected the Purpose	Proportion (%)
It improved the result	54.8
It narrowed/broadened/changed the focus	31.0
It inspired new thinking/ideas	40.5
It resulted in collaboration/joint research	7.1
It resulted in faster completion	16.7
It resolved technical problems	2.4
It added to my general knowledge	64.3
It saved time or other resources	19.0
Other	-----
Total	100%

The reading affected the principal purpose in a number of significant ways. In fact a reading encouraged respondents to record 2.4 ways per reading.

Students were asked to report: “In what ways did it help in learning? (Choose all that apply.) Four precoded responses.”

Article Cited by Faculty in Other Publications (N=258, n=42)

Cited or Planned to Cite (Precoded Response)	Proportion (%)
No	21.4
Maybe	31.0
Already did	40.5
Will in the future	7.1
Total	100%

The Purchase Value of Obtaining and Reading Articles by Faculty and Students

The cost of reading articles

Altogether, there were about 24,970 annual readings by faculty of articles provided by the Bryant library. Faculty spent an average of 33.2 minutes per reading or a total of 13,820 hours reading those articles. This is what they pay in their time for the information provided them. Since faculty averages \$56.20 per hour in compensation, the University pays about \$776,700 in faculty compensation for them to read articles provided by the Bryant library. It is noted that the library investment in scholarly journals allocated to faculty reading (versus student reading) is \$62,870.

Therefore faculty pay 12 times what it costs the library to provide access to these articles.

Students are observed to have 157,700 annual scholarly journal readings from library-provided articles or an average of 45.4 readings per student. They average 29.2 minutes per reading or a total of 76,750 hours. At a cost of \$34.60 per hour, the total annual purchase value is \$2,656,000, which is 5.4 times the allocated cost to the library of \$487,760.

The Cost of Browsing and Searching by Faculty and Students

Survey respondents were asked: "How did you become aware of the last article you read?"

Faculty become aware of the articles they need to read in many ways as follows:

Ways Faculty Became Aware (N=258, n=43)

Ways Faculty Became Aware (N=258, n=43)	Proportion (%)
Browsing without a specific objective in mind	25.6
Found while searching by subject, author's name, etc.	41.9
Found through citation in another publication	20.0
Another person told me about it	2.3
Other	9.3
Total	100%

About 6,350 readings by faculty are found by browsing and another 10,390 by searching or 16,740 total readings. Browsing and searching usually result in several articles that are read or planned to be read, but only one of which is the last article read. It is estimated that there were an average of 8.1 such articles read or planned to be read per browsing or search session.

The time spent browsing averaged 25.8 minutes or 2,730 total hours and time spent searching averaged 23.9 minutes or 6,670 hours for 9,400 total hours browsing and searching. Since this time averaged 8.1 articles read or planned to be read, the total time spent on the last articles read is 1,160 hours or \$65,190 total cost.

Students became aware of read articles as shown below:

Ways Students Became Aware (N=3,472, n=53)

Ways Students Became Aware (N=3,472, n=53)	Proportion (%)
Found while browsing without a specific objective in mind	17.0
Found while searching by subject, author's name, etc.	35.8
Found through citation in another publication	22.6
An instructor told me about it	5.7
It was in the course outline/reading list	11.3
Do not know, do not remember	5.7
Other	1.9
Total	100%

Students identified 26,810 articles from browsing and 56,460 from searching. They average 32.8 minutes browsing for a total of 14,660 hours each session browsing, producing an average of 3.8 articles read or planned to be read so the total time required for the last article read is 3,860 hours, at a cost of \$133,560. Average time spent searching was 21.1 minutes for a total of 19,860 hours. With an average of 16.1 articles read, the total time for last articles read is 1,230 hours at a cost of \$42,560.

Some time can also be spent obtaining, requesting, or downloading and displaying a read article. It is

estimated that faculty spends 1750 hours or \$98,350 (0.07 hours x 24,970 = 1,750 hours x \$56.20) in these activities. They also sometimes photocopy, scan, or print out a read article. For those activities they spend about 750 hours or \$42,150 in their time.

Students spend 27,730 hours actually obtaining the article (e.g., going to the library) and 18,560 hours displaying, downloading, and printing from an electronic source. The total cost to students of those activities is \$1,601,600 (46,290 hours x \$34.60). They spend about 2,440 hours scanning, photocopying, etc. from a read article at a cost to them of \$84,420.

The Total Time and Cost of Obtaining and Reading by Faculty and Students

The total time and cost are summarized below for faculty and student reading:

Source of Time and Cost	Faculty (N=258, n=42)		Student (N=3,472, n=33)	
	Time (Hours)	Cost (\$)	Time (Hours)	Cost (\$)
Reading	13,820	\$776,680	76,750	\$2,655,600
Browsing and searching	1,160	\$65,190	5,090	\$176,100
Obtaining, requesting, receiving, etc.	1,750	\$98,350	46,290	\$1,601,600
Photocopying, scanning, printing out	750	\$42,150	2,440	\$84,420
Total		100%		100%

Faculty pay 17,480 hours or \$982,370 in compensation to obtain and read information found in library provided articles. Since their time is such an important resource, they would not expend the resources on the information if not of significant value to them. Again, this purchase value is 15.6 times the cost of the allocated faculty investment by the Bryant library (\$62,870). Students pay 130,570 hours and \$4,517,720 for these activities, which is 9.3 times the investment by the library (\$487,760).

University Investment in Bryant Library Provided Articles

Bryant University invests in user costs and in library costs. Therefore, the total university investment in library provided articles is:

- Faculty cost to identify and obtain articles: \$205,690
- Library cost to provide articles to faculty: \$62,870
- Student cost to identify and obtain articles: \$1,862,120
- Library cost to provide articles to students: \$487,760

Total Bryant University investment is \$2,618,440 which is \$14.30 per reading. The library investment is \$550,630 or \$3.00 per reading. It is noted that the total library investment in print current periodicals is \$204,580 (\$10.10 per reading); access to journal articles on the library shelves is \$62,250 (\$14.20 per reading); access to journals through the database is \$265,230 (\$1.80 per reading); and interlibrary borrowing of articles is \$18,470 (\$1.30 per reading).

Contingent Value of Access to Library Provided Articles

Faculty was asked if the library had not been available, from where would they obtain the article or its information? Faculty said they would not bother getting the information for 40.5 percent of the readings. They would get the information from another source for 14,860 readings. They indicate that it would cost them an average of 27 minutes of their time or \$25.30 and \$2.20 in other costs to go to alternative sources. This comes to a total of \$408,650 to obtain alternative sources of the information. This is \$202,960 more than it now costs faculty to identify and obtain articles (\$205,690) which is considered the net benefit of the library provided articles.

Students were not asked about alternative sources of articles since it was felt that they would not know alternative sources.

Library Return-on-Investment (ROI) in the Scholarly Journal Services

All of the value measures assessed above are return components. However, the only dollar return is the net benefit of library articles provided to faculty calculated by contingent valuation (\$202,960). The library investment in faculty access to articles is \$62,990 so that the dollar return on this investment are 3.2 to 1 (i.e. $\$202,960 \div \$62,990$).

Other Bryant Library Services

There is a basic difference in the method used to allocate library costs to faculty and student use of publications and other library services. For use of publications the allocating of library costs is based on relative amount of readings of faculty and students as demonstrated previously. However, with other library services, the allocation is based on the amount of time faculty, staff and students spend using the services. For example, for services involving librarians (e.g., providing reference searches), the time users spend with librarians is a proxy indicator of cost of providing the services. When space (e.g., leisure/workspace) or other resources (e.g. workstations) are involved, the time spent using them is a better way to allocate than incidents of use.

Reference Searches by Librarians

Use and cost of reference searches conducted for faculty, staff and students

Faculty and staff were asked: "In the past year (12 months), approximately how many times did you use a librarian to conduct a reference search for you (catalog, database, getting access, etc.)?" A total of 115 faculty and staff responded to the question. Of this, 93 faculty responded for an average of 2.76 times per faculty member for a total of 712 searches over a year. It is estimated that 158 faculty used the service and spent an average of 1.22 hours working with the librarian on these searches (or 16.3 minutes per search) for a total of 193 hours. At \$56.20 per hour compensation meant that the total cost to faculty is \$10,850.

Students were asked: "In the past month (30 days), how many times did a Bryant librarian assist or conduct a reference search for/with you (catalog,

database, etc.)?" They average using the service 0.84 times in that past month for an annual total of 21,580 searches. A total of 1,420 students used the service the past month an average of 2.05 times. They averaged a total time of 24.2 minutes or 11.8 minutes per search or \$6.80 per search. The total student cost is 4,236 hours or \$146,560.

University investment in reference searches by librarians

The total university investment in reference searches by librarians is:

- Faculty cost of searches: \$10,830
- Library cost to provide searches to faculty: \$6,770
- Staff cost of searches: \$3,850
- Library cost to provide searches to staff: \$3,810
- Student cost of searches: \$146,500
- Library cost to provide searches to students: \$151,120

The total university investment is \$323,120 or \$15.00 per search. The library investment is \$161,700 or \$7.50 per search. The library investment is about equal the user investment/purchase value (\$161,420).

Savings value of reference searches

When asked: "If there were no library, where would you go to conduct the last search done by a librarian." Precoded responses are: "I would not bother, I would conduct the search myself and I would go to another source." Faculty said they would conduct the last search themselves or go to another source for 595 of the searches. They estimated it would cost them an average of 1.6

hours of their time or \$90 per search and \$46 in other costs. For the 595 searches for which they would use an alternative, it would cost faculty \$80,920. The current cost to faculty is \$10,830 for a net benefit of \$70,090.

Eighteen of the staff said they would conduct the last search themselves or go to another source at an average of 1.2 hours or \$43. This means that 223 searches would involve going to an alternative source at a cost of \$9,590. It currently costs them \$3,820 so that the net benefit is \$5,770.

Students were asked: "For the LAST TIME a librarian helped with a reference search, how much time do you think the librarian saved you (in minutes)?" The average time saved was 54.8 minutes or \$31.60 in their time. The savings to students is \$681,930.

The library Return-on-Investment in providing reference searches

The net benefit to faculty for this service is \$70,090 and the allocated library cost is \$6,770 so that the library ROI is 10.3 to 1.

The net benefit to staff is \$5,770 and the allocated library cost is \$3,820 so the library is 1.5 to 1.

The savings to students is \$681,930 and the allocated library cost is \$151,115 so the library ROI is 4.5 to 1. It is noted that another value/return was also estimated. Students were asked: "How helpful was the librarian to you?" Results are given below.

Rating of Helpfulness of Librarians with a Reference Search (N=3,472, n=94, n=57)

Rating	Proportion (%)
1 Not particularly helpful	-----
2 Somewhat helpful	-----
3 Helpful	10.5
4 Very helpful	68.4
5 Absolutely essential to me	21.1
Other	2.4
Total	100%

The overall ROI across the three types of users is:
total net benefit and savings of \$757,790 and library
investment of \$161,700 for a library ROI of 4.7 to 1.

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Tenopir, Ben Birch, and Liz Whitson

Summary of Use, Investment, Contingent Value and ROI						
Use of Library Services			University Investment		Library Con- tingent Value/ Savings	Library Monetary ROI
			Users	Library		
Article reading						
<i>Faculty</i>	94,970	readings	\$982,370	\$62,870	\$202,960	3.2 to 1
<i>Students</i>	157,700	readings	\$4,517,720	\$487,760	-	-
Book reading						
<i>Faculty</i>	21,020	readings	\$618,300	\$18,580	\$64,330	3.5 to 1
<i>Students</i>	95,700	readings	\$3,266,400	\$600,670	-	-
Other publication reading						
<i>Faculty</i>	2,680	readings	\$121,850	\$2,330	\$9,380	4.0 to 1
<i>Students</i>	106,800	readings	\$3,066,900	\$92,860	-	-
Reference services						
<i>Faculty</i>	712	times	\$10,850	\$6,770	\$70,090	10.3 to 1
<i>Students</i>	21,580	times	\$146,560	\$151,115	\$681,930	4.5 to 1
Support faculty research						
<i>Faculty</i>	84	projects	\$25,680	\$10,660	\$41,240	3.9 to 1
Remote services						
<i>Faculty</i>	3,460	times	\$19,330	\$14,350	\$70,630	4.9 to 1
<i>Students</i>	58,530	times	\$89,610	\$242,810	\$614,800	2.5 to 1
Formal instruction						
<i>Faculty</i>	69	hours	\$3,870	\$60	-	-
<i>Students</i>	32,230	hours	\$1,115,000	\$31,650	-	-
Informal instruction						
<i>Faculty</i>	200	hours	\$11,240	\$1,420	-	-
<i>Students</i>	4,820	hours	\$166,800	\$34,230	-	-
Access to equipment						
<i>Faculty</i>	114	times	\$1,070	\$365	\$1,570	4.3 to 1
<i>Students</i>	15,760	times	\$92,730	\$40,830	\$40,640	-
Access to audiovisual materials						
<i>Faculty</i>	420	times	\$35,970	\$4,070	-	-

Summary of Use, Investment, Contingent Value and ROI						
Use of Library Services			University Investment		Library Con- tingent Value/ Savings	Library Monetary ROI
			Users	Library		
<i>Students</i>	6,130	times	\$36,110	\$58,410	-	-
Access to other materials						
<i>Faculty</i>	208	times	-	\$1,360	\$3,480	2.6 to 1
<i>Students</i>	4,240	times	-	\$3,860	\$70,070	18.2 to 1
Access to workstations						
<i>Faculty</i>	64	hours	\$3,620	\$370	-	-
<i>Students</i>	48,900	hours	\$8,612,000	\$149,100	-	-
Access to duplication services						
<i>Faculty</i>	950	times	\$5,900	\$420	\$23,750	56.5 to 1
<i>Students</i>	11,860	times	\$44,980	\$8,450	\$13,160	1.6 to 1
Means of informing users						
<i>See "Means of informing users" sheet for chart</i>						
Access to leisure/workspace						
<i>Faculty</i>	915	hours	\$51,420	\$1,480	-	-
<i>Students</i>	178,400	hours	\$6,173,000	\$289,390	-	-
Access to library workrooms						
<i>Faculty</i>	1,990	hours	\$111,800	\$1,060	-	-
<i>Students</i>	148,700	hours	\$5,146,000	\$79,260	-	-
Space for special programs						
<i>Faculty</i>	1,560	hours	\$87,670	-	-	-
<i>Students</i>	-	-	-	-	-	-
TOTALS*						
<i>Faculty</i>			\$2,090,940	\$128,297	\$487,430	-
	Times	5,864		\$117,705	\$487,430	4.1 to 1
	Hours	4,798				
	Readings	118,670				
	Projects	84				
<i>Students</i>			\$32,473,810	\$2,308,681	\$1,420,600	
	Times	118,100		\$447,065	\$1,420,600	3.2 to 1
	Hours	413,050				

Summary of Use, Investment, Contingent Value and ROI						
Use of Library Services			University Investment		Library Con- tingent Value/ Savings	Library Monetary ROI
			Users	Library		
	Readings	360,200				
<i>ALL</i>			\$34,564,750	\$2,436,978	\$1,908,030	
	Times	123,964		\$564,770	\$1,908,030	3.4 to 1
	Hours	417,848				
	Readings	478,870				
	Projects	84				

*values in italics
were used to
calculate ROI

The Value of Our People: Towards a Scorecard for Human Capital in Academic and Research Libraries

J.S. Town, J. Black, I. Hall, and K. Smith
University of York, United Kingdom

Purpose and Approach

The purpose of this paper is to propose data and measurement elements to populate the value scorecard suggested by the first author at the 9th Northumbria International Conference on Library Performance Measurement and other international conferences in the summer of 2011.¹ The latter paper built on previous work on the concept of the transcendent library proposed by the first author in a keynote at the third Library Assessment Conference in 2010.²

The paper analyses the development of ideas of assessment and measurement methods for the human resource element of academic libraries. The concluding synthesis is an attempt to link the ideas of value, people and libraries within a structure for future assessment of the people component of our activities. This paper is conceptual and exploratory, and application of the proposed framework and measures in our organization and others will be required to test its efficacy. The authors believe that assessment should reflect the full value of our people as a developing and growing asset, rather than simply as a cost to be measured and controlled.

Our approach employs a mixed method research strategy (multimethodology), combining phenomenological observation of existing data collection and development concepts, survey data from staff from a case study of our own organisation, and exploration of quantitative capital assessment methods from other industries and sectors. Together these can be used to identify any gaps, and therefore missing elements, in current library people assessment methods. The multiple perspectives created are used to synthesize a single framework for evaluation of human capital and its development and growth. The aim is that these specific measures will be compelling and convincing to all institutional stakeholders, and can be used to populate existing

measurement frameworks in academic and research libraries.

One conclusion drawn is that these measures also need to be combined with other data to demonstrate correlation between our people and the quality and value of the services they provide. This link is widely assumed, but not necessarily always proven by data. Some libraries are able to demonstrate this link through the achievement of recognized standards, for example:

“The Customer Service Excellence assessor commented, ‘The University of Manchester Library has undoubtedly created a culture of openness, trust and empowerment which facilitates a customer focused approach. Staff morale and job satisfaction appear to be excellent and help people to buy into the customer first ethos.’”³

Human Capital Measurement: A Brief Review

This brief and selective review of human capital and related measurement ideas and concepts is provided to assess their potential relevance for application to the measurement and evaluation of people working in libraries.

A key idea here is that “human capital consists of the intangible resources that workers provide for their employers,”⁴ and that long-term survival of the organization depends on the motivation of its people to learn, innovate and create.⁵ In short, people are assets, but different to and more complex than other assets; they are not owned by their organizations. Human capital is frequently quoted (but without source) to “walk out the door each evening.” Added value is achieved through people, and therefore it is reasonable to assess this value through measurement and assessment. Data that relates to this will be about finding, keeping,

developing, and making the best use of this asset.⁶ The link to be established here is between human resources and their impact on organizational performance,⁷ and one of the aims of this paper is to encourage more work to establish these links in academic and research libraries. This idea is often reinforced towards a search for proof of causation; “Human capital measurement is about finding links. . . and, ideally, causation between different sets of data.”⁸

No perfect answer to human capital measurement has yet been established; there is “no convincing method of attaching financial values to human resources.”⁹ But the outcome measure is suggested to be that “sustainable competitive advantage is achieved when the firm has an HR pool that cannot be imitated or substituted by its rivals.”¹⁰ There is a caution expressed that “Measuring is not a good in itself. . . without rationale it will achieve little. . . its prime uses are to evaluate cost and to test the effectiveness of strategy, pointing the way to further improvement.”¹¹ Thus the link to broader strategic measurement frameworks will be of importance. It is clear from the literature that a limited quantitative data set is unlikely to deliver a full answer to people value measurement.

In spite of the difficulty and complexity in people measurement expressed above, there are measurement methods embedded in frameworks within business organizations on which libraries might draw. The importance of people to performance and strategy is a given, and it is widely recognized that “the most valuable resource of any organization is its staff.” Model examples are available (see, for example, the Royal Bank of Scotland framework¹³). The central Human Resource (HR) departments in the parent institutions of most academic and research libraries are likely to have either an implicit or explicit conceptual framework for the successful elements and measures of people-related management and strategy, drawing on this type of model.

In specific terms, the types of data collected for internal reporting of human capital might include.¹⁴

- Size, composition and profile of staff complement
- Attraction and retention
- Absence

- Motivation
- Skills and competencies
- Learning and development activities
- Remuneration and fair employment practices
- Leadership and succession planning
- Outcomes of opinion or job satisfaction surveys

The final point reflects that there has been a growing emphasis in recent years on moving beyond the basic human resource data towards an analysis of “the actual experience of employees” within organizations.¹⁵ As we turn to libraries in the next section this aspect will be more fully explored.

An initial assessment against this broader review might be that academic libraries are active on the spectrum of human capital measurement,¹⁶ and use measurement which is more than just anecdotal. However this is based perhaps in the main on reactive checks and broader standard institutional reporting, rather than on using more powerful benchmarked data to demonstrate correlations with other positive outcomes, to prove causation, and to provide strategic simulation and forecasting.

In conclusion, the view from other sectors is that we need to:

“ . . . get better at providing the information that will help to understand just what it is [our] people contribute [and] move towards strategic measures to identify drivers of success.”

and that:

“The use of quality people data is the key to good human capital management. . . human capital [provides] a challenge to identify relevant measures. . .”

Library People Measurement Activity and Frameworks

UK and Irish academic libraries spend 48% of their annual revenue resource total on staffing. For the larger research libraries in membership of the RLUK group the mean expenditure on people is 46% with a range of 36–54%.¹⁷ Thus in most academic and research library contexts people form the single largest category of expenditure.

This can be contrasted with the degree of apparent measurement and assessment attention conferred on this element. At the 3rd Library Assessment Conference in 2010 only five out of 68 papers (7%) focused on people measurement or value,¹⁸ and at the 9th Northumbria Conference in 2011 only three out of 65 papers (5%).¹⁹

It is fair to say of course that very many papers at these conferences were focused on the outcomes of what people do, and that there is a developing attention to organisational effectiveness in these and other library conferences. However, the awkward fact remains that there is very little literature on the coherent measurement of this major component of the expenditure of academic and research libraries, and few specific methods and examples published of the way libraries define, develop and measure their human capital. This is surprising given the prevalence of people related assessment components required within conceptual measurement frameworks for excellence such as the Balanced Scorecard, the EFQM, and the UK Customer Service Excellence and Investors in People standards. More than 20 UK academic libraries have achieved this last standard, and others employ these approaches, so there must be much unreported work of value and relevance within the sector.

A quick survey of people measurement activities in research libraries for this paper used the ARL-ASSESS list to seek specific staff measures used within measurement frameworks (particularly the Balanced Scorecard). This yielded quite limited results, and the following is a sample of responses:

- Knowledgeable employees (LibQUAL+® item)
- Percentage of staff with current training plan
- Scores from ClimateQUAL® relating to Learning & Growth dimension (several respondents)
- Number of professional development activities accomplished
- Events that encourage organization-wide professional development efforts
- Number of staff expressing satisfaction/agreement in the Performance Management System
- Time to fill open positions

Specifying the Balanced Scorecard might have limited the range of responses, which do tend to be

focused on the Learning & Growth dimension of that tool.

One response did provide a fully populated framework for people measurement, with the following elements:

- Attainment of core competencies
- On the job competency development
- Leadership performance
- Staff satisfaction
- Skills deployment

Some of this data comes from a staff climate survey which is benchmarked across other organizations, and we will consider this approach in more detail in the next case study section.

If the future depends on the creativity and motivation of our staff to develop existing and create new services relevant to our institutions, then measurement and assessment of these elements is surely both essential and paramount. It is also surprising that in a global context of resource constraint, and given that staff costs are often a place where either savings are sought, or that proposed new investments in people are rigorously scrutinized, that libraries have not sought to demonstrate their people value more strongly, coherently, persuasively, effectively and openly.

A Case Study: The University of York

Since the appointment of the first author as Director of Library & Archives at the University of York in 2007, a cultural journey has been in progress to create a positive people environment to support successive organizational strategies. This commenced with involvement with the ARL Effective and Sustainable assessment Program (ESP) in 2008 to assess existing evaluation efforts in the context of the overall management and strategy of a service supporting a world class University, and to ensure standards related to leading research libraries and reflected the global competitiveness of higher education.

The University of York conducts regular total market staff surveys on a three-year cycle, the first in 2008. These surveys generate both quantitative data and qualitative commentary (benchmarked across the institution and against

other participating institutions), provide an engagement index for individual departments, and require a specific local departmental action plan to remedy any apparent deficiencies. In 2009 Library & Archives at York were combined with the University's central IT Services to create a converged Information department; however both 2008 and 2011 staff surveys presented results based on IT and Library divisions.

The engagement measure seeks to define a single score which combines aspects of staff opinion around commitment to the organization and its values, willingness to help out colleagues (organizational citizenship), and which goes beyond job satisfaction, and reflects more than simple motivation.²⁰ The results from 2008 and 2011 showed some positive changes across the period as a result of action plans, but IT staff generated a higher engagement score than Library staff in both iterations, placing IT high within University departmental standings, and the Library comparatively low. Commentary also indicated different views between the two divisions of what might have been considered the same objective elements (for example of the same single senior management team in the 2011 survey).

Follow up meetings with staff in the department conducted by the Director in 2011–12 revealed the following:

- Library staff did not believe they were “disengaged,” indicating that the definition of what engagement is was either unclear or not shared
- Many simple practical issues were raised, indicating lack of escalation routes through normal management processes and meetings
- The expression of many library issues raised in the meetings was highly emotional, and in contrast to IT meetings, which were in the main rational in tone
- The key issues most commonly expressed by Library staff were related to listening, involvement, and empowerment
- Some library staff appeared to feel that they were victims of the existing culture rather than able to shape it positively for themselves

As a result of this apparent lack of progress towards our agreed culture and shared organizational values, and some issues which

seemed resistant to change, it was decided to take up the opportunity to join the initial SCONUL pilot cohort of the ARL ClimateQUAL survey. There was a concern amongst Library senior managers that the survey results would be skewed negatively by the ongoing library refurbishment, which was providing difficulty and stress for both staff and users, and affecting service survey measurements adversely. However the provision of a baseline score at this point in our development, and the opportunity for benchmarking against other UK and North American academic libraries directly were both seen to be of substantial benefit. Benchmarking against other libraries was not a feature available from the University staff surveys.

Our ClimateQUAL results²¹ firstly demonstrated that the survey was seen as relevant and useful by staff, and although containing elements of both North American and management terminology, was accessible and applicable to the UK market and context. Our response rate was 95%, which showed that our people had things to say and that they were able to do it through this medium. Scores set against other participating libraries demonstrated that all libraries generate a similar pattern of results across both the UK and North America; in other words, those things that libraries are good at, most libraries are good at, and those elements with which we struggle are also universal. Given the period of our survey and its coincidence with the refurbishment, some of our scores were lower than comparators, but this was expected. Other findings were largely consistent with the feedback from the Director's staff meetings.

Some very positive comments were received:

“... the library is a great place to work. . . supportive of personal development. It is one of the best organisations I have worked for in terms of support, fairness and working conditions.”

Other more numerous comments made it clear that the ultimate success of the refurbishment had a people cost which had not received adequate compensatory action:

“I feel that the recent award won by the library was a hollow victory. . . we speak of excellence and values. . . I believe this has been earned at the expense of staff.”

Both scores and comments indicated that the cultural journey was as yet incomplete, that emotions still ran high in the Library,²² and that perception of injustice and lack of consultation had perhaps been reinforced by the speed of decisions required during the dynamic refurbishment project, a finding also consistent with the literature at times of substantial change.²³ One of the issues with affect assessment is that affect itself is momentary,²⁴ and our staff have been keen since the end of the refurbishment to give us a revised opinion through a repeat of the ClimateQUAL survey.

All the findings from the successive surveys and meetings have now been incorporated into a new People Strategy component of the University's new Information Strategy 2013–2018,²⁵ and changes in organisational structure and management approaches for library staff at York are now in progress to achieve the desired culture and associated outcomes.

Consideration of the experience of others has been an important element in drawing conclusions for our own staff journey and for creating a framework for human capital measurement in libraries. Each staff survey methodology discussed above is based on a particular theory of staff affect, and therefore does not provide a single complete answer to staff experience measurement or a picture on which to base a full people proposition.

The papers on ClimateQUAL published in the proceedings of the 2010 Library Assessment Conference²⁶ provide a richer and contextualized picture of individual library's staff journeys. These also provide practical insights into cultural progress, and also seek to develop frameworks of understanding for future assessment and improvement. As such they provide important contributions to the idea of an overall people proposition, and consequently towards a complete and coherent measurement framework.

Mengel and colleagues reflect that many of us are "wrestling with ways to facilitate constructive organizational change," and that the timescale of people strategy and cultural change is an "odyssey."²⁷ A key point made in this paper is that "organizational level thinking is crucial"; whilst other kinds of assessment effort may take place

at operational level, the complexity, sensitivity and long term strategic nature of human capital requires a top management and library wide perspective.

DeFrank and Hillyer identified a list of general themes arising from their library's ClimateQUAL experience, and link these to specific climate data from the tool.²⁸ This list begins to form the basis for a staff proposition or framework closely associated with values:

- Staff Unity/Teamwork
- Communication
- Goodwill/morale
- Policy issues
- Leadership
- Respect
- Bullying

Phipps and colleagues take this further, using a systems approach to define a framework with "the intent of measuring whether articulated organizational values were achieved."²⁹ This framework includes:

- Leadership and team decision making
- The Performance Management system
- Hiring, merit and promotion
- The Communication system
- Learning, training, and innovation approaches

Much of this begins to look like an evidence-based reconstruction of Penna's hierarchy of engagement,³⁰ providing a link between climate and engagement survey methods, and creating a coherent framework for aspects of people related measurement in academic and research libraries.

In the next section we provide a full synthesis of our reviews and research within a full framework for library human capital assessment and evaluation.

A Proposed Framework for Human Capital Measurement

Before presenting our synthesis, it is worth recognizing the gaps in our existing measurement frameworks so that it is clear what we may be lacking.

There is no indication we have found that suggests

any academic library has a quantitative total valuation of its human capital in any form, let alone one that would be recognized by accountants, or would be useful for direct comparison with other departments, or with libraries in other institutions. Alongside that there is no agreed standard comparable view of staff efficiency measurement for any specific library process, although many of us operate the same services and processes in broadly similar ways. There is no commonly agreed method, quantitative or qualitative, for describing or evaluating the total capability of our people, despite the large investments we make in acquiring, creating and developing this asset.

There is similarly no consensus on capacity, and no specific sense of what might be the minimum critical mass required to operate either a new or existing service. This lack means that decisions made on whether to develop new services individually or collaboratively must of necessity be made on educated guesswork. There is now a route to a method for assessing change maturity in libraries, but no specific measures which might tell us, for example, how many development projects it is reasonable to expect in any year from any given library of a particular scale alongside its business-as-usual activities.

There is no clear method for making decisions on investing in staff as a tangible asset, as against investing in either other tangible or intangible library assets, or data available to tell us whether to outsource capacity and capability from elsewhere. It may of course be that we do not wish to either develop or share the answer to some or all of these questions, but that seems a risky strategy for a more constrained and competitive future. It is difficult to create a compelling narrative of library value when the main component of revenue expenditure is left out of the discourse.

Climate and staff opinion are measured in some libraries. Without good data on these questions it is difficult to see how best to judge when management interventions are required, or to measure the outcome of these interventions. Anecdotal evidence is collected around staff contributions to the wider institution in some contexts, but a stronger and more consistent narrative for staff worth is required when institutional savings are sought.

Work is being done in some places to identify methods and approaches to the issue of the human capital in libraries. In particular, Kostagiolis presents some lists, models and frameworks for the assessment of these assets, together with approaches which might allow these to be evaluated alongside other tangible and intangible assets.³¹ Our experience and research suggests that few of these methods have been strongly taken up in real world academic and research library contexts, although many libraries present some narrative of staff capacity, capability and development achievement in their annual reports. In a few cases these are linked to more transcendent value.

Our proposed framework is therefore based on four dimensions which together we consider to be necessary and sufficient to measure the value of our people. The sum of value added through these four should provide an indication that library staff overall have the breadth, depth and application to provide quality services and contribute to a library's transcendent value. These dimensions are:

- Capacity
- Capability
- Climate of Affect
- Culture of momentum

Specific measures and indicators will be required for each dimension. The proof that these dimensions are delivering value will come from linking the basic data associated with each of these dimensions with data on the related outcomes of these elements. This is explained further in the following section. Some comments on specific measures for each dimension follow here.

Capacity

It should be noted that capacity is not simply staff numbers; it is the ability to ensure the maximum possible deployment of these numbers. Thus a capacity measure should also encompass diminution or loss through absence of any kind; for example sickness, turnover, and other causes. This may begin to provide proof or otherwise of the received wisdoms of human resource theory or library management discourse around, for example, optimal levels of staff turnover.

Capability

The second major obvious element of capital

value is the existence of relevant capability within the staff volume defined by capacity measures. Many academic libraries already reflect the capability of their staff through, for example, their annual reports, in which staff lists provide the evidence for the raw intellectual power of their people in terms of qualifications, professional contributions, and published work. There does not appear to be an agreed systematic method for scoring numerically the combined capability of an individual library's people. Further work could establish such a scoring, as this would then provide a basis for measuring the growth of this asset over time, and so confirming the benefits of a library's staff development program. This in turn begins to quantify the growing capital value of the library's staff alongside the growth of its other assets. Growth of library content tends to be assumed as an unequivocal good; growth of library staff numbers is not always seen by stakeholders in the same way, so proof of a developing capital value through enhanced capability may be a useful measure to deploy for library advocacy.

It is also worthwhile considering this element of value from a group perspective as well as simply from that of the individual staff member. The concept of critical mass of staff in order to deliver a specific capability is a factor which requires consideration in planning for innovation, especially in smaller research libraries. Further work is required here to demonstrate the value of the development of a specific team to deliver a discreet capital outcome; for example, the delivery of a digital library development.

These first two elements of staff value are obvious dimensions to include. However the deployment of numerous and capable staff to create library value requires more than just raw numbers and the presence of relevant skills. Culture is critical to success, and therefore two further measurement dimensions are suggested which will demonstrate that a library has a positive culture in which all staff contribute, and that this culture produces a pace of competitive innovation.

Climate of Affect

Much of this paper has been given over to consideration of the measurement of staff affect through survey methods. This data is essential to demonstrate effective management and provide an

indication that strategic progress can be achieved through the library's culture. The key measurement areas related to value in this dimension are that staff empowerment and total involvement must both be strong for maximum efficiency of value creation, and that a high people engagement index with services, strategies and values is also critical. Many of the other dimensions of, for example, ClimateQUAL are also important to a systematic and coherent people proposition.

Culture of Momentum

Staff may be numerous, capable and largely content, but they only deliver competitive value when the pace of library innovation exceeds that of the competition. It is therefore essential to make some measurement or assessment of the library's ability to maintain a high momentum of change. Supporting factors to assess in this dimension include program and project management capability. The library's management maturity is also critical here, so use of a meta-level measurement of quality capability, such as the tool proposed by the first author with Wilson³² is suggested.

Outcome Proofs

The measurement elements proposed above will not be sufficient on their own to deliver proof of beneficial outcomes. The datasets produced need to be combined with other institutional or library data to demonstrate positive outcomes. Direct cause and effect will be difficult to prove, but correlation between staff data and outcome results does need to be established, so that conclusions about the positive effect of staff changes and interventions (for example in restructuring) can be drawn.

- **Capacity** data needs to be combined with market data to demonstrate a fit with the existing market. Capacity may be measured in simple numerical capital terms, but only has real meaning in relation to a judgment about the correct capacity for service delivery or activity within a specific institutional context. The sustainability of this asset is also relevant. Librarians often discuss what level of staff turnover is good or bad, but without linking this to any other measure which might provide the answer. Beyond service delivery achieved through raw staff capacity is the question of the higher order effects of this asset. Both capacity and capability need to be linked to market-related impact data to demonstrate the

- specific value of the library's people assets.
- **Capability** data in a similar way needs to be linked to strategy and strategic achievement to prove its worth. Staff capability is only beneficial if it generates either quality improvement in service or innovation and new product development. Therefore there is probably a narrative story to tell here about that link, as it is not easy to conceive of simple numerical benefit measures which will provide compelling proof. This story will also unfold over longer periods than more traditional data collection as better fit of people to strategic intent is built up.
- **Affect climate** data on its own provides some basis for a "happiness" or "feel good" index of the library, and consequently a source of either celebration or concern for library directors. Again in people asset value terms this needs combining with other measures to prove real benefit. This will demonstrate that the library is not simply either a contented but complacent country club or a highly productive sweat shop. There is proof needed here to justify the received wisdom that people with positive affect deliver more and better; consequently affect data needs to be combined with data on productivity (for process tasks) or creativity (for innovative development) to provide real proof. The other potential link to explore here is that between the datasets generated by ClimateQUAL and LibQUAL+ surveys in the same institution. Can these begin to demonstrate a link between staff affect and user satisfaction?
- **A momentum culture** data can demonstrate the effective working of the people asset, but the link of this measure to prove real benefit is that to competitive impact. Innovation for its own sake at high pace might be destructive to the overall people asset, unless there is a proof that the institution is deriving real benefit. The generation of new services with a proven link to enhanced library or institutional reputation, and thus a competitive impact is what is sought here.

Conclusions and Further Work

The conclusions to be drawn from this paper are that some academic and research libraries are collecting data and evidence on and from their staff. This has been extending from simple numerical data towards opinion and satisfaction

measures collected through survey instruments. The Balanced Scorecard and other quality and excellence frameworks used by libraries have driven some further consideration of staff evaluation. The ClimateQUAL instrument has added another valuable strategic tool provoking some deep and serious consideration about people as an organisational asset, and requiring a framework of new measures and concepts.

In the final section above it is suggested that simple measures on their own will not provide proof of the worth of the very large investment libraries make in their people. Links between different data sources built into a compelling and persuasive narrative are what is required. There is still some work to be done to link and prove the contribution of our people to the transcendent value of libraries. We suggest and provide a framework for measurement in the belief that the value of our people is intrinsic to the value of our libraries. There is more work to do to convince our stakeholders, through the correlation of good people data with resulting positive library outcomes.

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The ARL Investment Index Revisited: In Search of Reliable and Valid Indicators of Extensiveness of Research Libraries in the 21st Century

Martha Kyrillidou

Association of Research Libraries, USA

William Grey Potter

University of Georgia, USA

Brinley Franklin

University of Connecticut, USA

Colleen Cook

McGill University, Canada

Bruce Thompson

Texas A&M University, USA

Abstract

ARL Statistics 2011-2012 is undergoing a major revision process¹ that has implications for the calculation of indices that ARL has been producing. The ARL Membership Criteria Index (or as we will often refer to it, the historical index) captured in an objective way the underlying characteristics that ARL research libraries had in common in the 20th century—large collections as reflected in volumes held and number of serial subscriptions, and complex organizations as reflected in the extensiveness of staffing and expenditures. The ARL Membership Criteria Index, though, was not an adequate indicator in the 21st century—the surge of electronic resources, the plethora of digital information, and the need to rely on large-scale collaborative activities for specialized expertise and resources have marked the beginnings of the collections shift in research libraries. Large print collections are becoming a liability rather than an asset, distinct collections are not manifested via massively marketed electronic e-book and e-journal packages, and the value of the content is morphing into different products and services hard to capture

with stable, reliable and valid indicators. We document the methodological advantages of the ARL Investment Index, its limitations, as well as its political and philosophical significance. The end result is that the ARL Investment Index prevails as a reliable and valid indicator of the extensiveness of a research library in the 21st century. This paper examines the relation between the two indices and identifies ways the ways in which their relationship is changing. Finally, the paper suggests emerging indicators surfacing from the ARL Profiles analysis and the need for capturing the elusive nature of Special Collections. The analysis concludes with an examination of how the work on the new roles of documenting collections can inform the future development of quantitative and qualitative indicators of research library extensiveness, quality, and value.

Introduction

ARL Statistics 2011-2012 is undergoing a major revision process that has implications for the

calculation of indices that ARL has been producing. The ARL Membership Criteria Index (or as we will often refer to it, the historical index) captured in an objective way the underlying characteristic that ARL research libraries had in common in the 20th century: large collections as reflected in volumes held and number of serial subscriptions, and complex organizations as reflected in the extensiveness of staffing and expenditures. The ARL Membership Criteria Index, though, was not an adequate indicator in the 21st century—the surge of electronic resources, the plethora of digital information, and the need to rely on large-scale collaborative activities for specialized expertise and resources have marked the beginnings of the collections shift in research libraries. Large print collections are becoming a liability rather than an asset, distinct collections² are not manifested via massively marketed electronic e-book and e-journal packages and the value of the content is morphing into different products and services hard to capture with stable, reliable and valid indicators.³

ARL implemented the recommendations of the Task Force on New Ways of Measuring Collections back in 2007 with the development of the ARL Library Investment Index (originally known as the Expenditures-Focused Index).⁴ For a number of years ARL has continued to produce the new Library Investment Index while also calculating for limited distribution among member libraries only the ARL Membership Criteria Index—a name that evokes the original use of that index as a threshold for membership in the Association. With the current revision of the ARL Statistics, the production of the ARL Membership Criteria Index will come to a halt. The historical index is comprised of five variables: Volumes Held, Volumes Added Gross, Current Serials, Total Expenditures, and Professional plus support staff. The historical index variables are not strong predictors of the underlying elusive concept of a research library as they used to be in the earlier century. The utility of the collections indicators in the index is weakening. The end result is that the validity and reliability of these collection indicators has been questioned. With the conclusion of the 2010-2011 ARL Statistics data we will collect for the last time Volumes Added Gross and Current Serials according to the preliminary recommendations forwarded to the ARL Board and the ARL membership. The historical index therefore will be calculated for one last time in the

form it currently exists. Its weakening explanatory power has been documented in earlier studies⁵.

We document the methodological advantages of the ARL Investment Index, its limitations, and its political and philosophical significance. The end result is that the ARL Investment Index prevails as a reliable and valid indicator of extensiveness of a research library in the 21st century. This paper examines the relation between the two indices and identifies the ways in which their relationship is changing. Finally, the paper suggests emerging indicators surfacing from the ARL Profiles⁶ analysis and the need for capturing the elusive nature of Special Collections. The analysis concludes with an examination of how the work on the new roles of documenting collections can inform the future development of quantitative and qualitative indicators of research library extensiveness, quality, and value.

A Chronology of the ARL Statistics

An extensive chronology of the ARL Statistics is available on the www.arlstatistics.org website, but we will highlight here some recent developments rather than going back to 1908, when Gerould, library director at that time at the University of Minnesota, initiated this well-known data collection. Many articles cover the early history. We will primarily focus on the following landmark events:

- 1986 ARL Membership Criteria Index
- 1994 Interactive edition of the ARL Statistics on the Web
- 2005 New Ways of Measuring Collections Task Force
 - Recommendations based on interviews with ARL directors
- 2006 Investment Index
 - Also qualitative complementary approach was explored based on focus group with library directors
- Challenges with serials and volumes continued
 - ARL Profiles: Research Libraries 2010
- 2010 Board Task Force on Reviewing the ARL Statistics, Supplementary and Salary Survey
 - Interviews with ARL directors and subgroups were tasked to provide recommendations based on these interviews
- ARL Statistics 2011-12 revised form and the story of two indices

The ARL Membership Criteria Index was developed by Kendon Stubbs in 1986. Both technical reports and two thoughtful articles Kendon published capture much of the debate that took place and reflected in the minutes of the various membership meetings. The business meeting minutes were transcribed and published at that time as part of the proceedings of the ARL meetings. The interested historian would find a treasure trove of useful information, and David State (as well Julia Blixrud and Lee Anne George in later years) have tried to capture and revive some the historical milieu through their work in documenting the history of the Association of Research Libraries. The debates are very interesting as they shaped what data elements are being included and for the most part, up until 2011-12, ARL was mostly adding descriptive data elements in the annual data collection. Initially they included a variety of collection formats, followed by service transactions, and more recently by metrics of the electronic environment, either in terms of digital library development or in terms of usage statistics for electronic resources and related expenditures. A noteworthy development was the appearance of the electronic edition of the ARL Statistics on the Web as soon as Mosaic was developed at the University of Illinois in 1994. Martha Kyrillidou had just arrived from the University of Illinois at Urbana-Champaign to the ARL offices where the view of Dupont Circle was great but the technology poor. In collaboration with Kendon Stubbs and the digital centers at the University of Virginia, we developed the first interactive edition, which has evolved to the current Analytics interface. So the old was modernized but its ontological foundation fiercely criticized for volumes and serials were becoming irrational counts as we were adding hundreds of thousands of government documents, hundreds of thousands of electronic resources, and access was proliferating in ways that we really could not know how many serials we had nor, for that matter, what a serial was after all in this changing new world.

So, through a qualitative interviewing approach with ARL directors we developed a plan with a variety of recommendations. The most important issues that surfaced through the interviews were that (a) the data was not expressing uniqueness of materials; (b) relevance to teaching, learning, and research was not adequately reflected; (c) collections go beyond printed volumes; (d) a

research library is more than collections—we should include its services and our data do not tell the story of the modern research library; (e) we are spending increasing amounts of money on electronic resources, and moving from ownership models to access and collaborative models; (f) we are seeing increasing numbers of consortial relationships/cooperative collection development approaches (Google books and Hathitrust were in their infancy); (g) shared storage facilities appeared; (h) duplicate serials came into our collections because of bundling and redundant content among many different aggregations; (i) the need to reflect the character and nature of special collections; and, (j) ultimately the fact that the ARL Membership Committee wasn't basing membership on Membership Index anymore and was open and encouraging of a multiplicity of approaches.

Among the recommendations were action items to engage experts in qualitative and quantitative methods. We hired Bruce Thompson and Yvonna Lincoln who studied where we are and offered their version of thoughtful recommendations and actions for next steps. One of those recommendations was the development of the expenditures-focused index on the quantitative side (the focus of this paper), an index we termed as the library investment index once we operationalized it at ARL (the latter name was a suggestion by Fred Heath, library director at the University of Texas).

Beyond Yvonna Lincoln's report, the qualitative work also continued with another landmark approach in capturing ARL libraries in the 21st century—the ARL Profiles work and publication.

Following a short period where the two indices co-existed in 2010, time had come for a major revision of the annual statistics in a way that the number of data elements was reduced dramatically this time. Note this is also happening at the recession period when libraries had staff cutbacks and internal consolidations. The purpose of this revision had a slightly different character—it was guided by four principles: (a) focus on the evidence that enhances the relevance for 21st century research libraries, (b) increase the usefulness and utility and return on investment, (c) diminish survey burden and make the survey easier to complete, and (d) be

strategic. Indeed a successful revision took place in that it was welcomed as a step forward in the right direction and the new survey was implemented in 2011-2012.

The revisions basically reduced the collections section to three key items—volumes, titles and e-books. Expenditures moved away from tracking serials and monographs to now tracking one-time resource purchase and continuing resource purchase (note that it used to be only serials that came as a subscription but bundles of electronic content changed that thus making the shift towards continuing resource purchasing more useful).

And, we separated fringe benefits as an increasing number of ARL libraries were assuming the paying of fringe benefits but the practice was not uniform across all libraries. On services we dropped total circulation and collected only initial circulation. And, we moved from the supplementary statistics into the main survey two statistics regarding the usage of electronic resources. As a result the membership criteria index will not be calculated any more as we no longer collect volumes added gross and current serials.

So, the variables of the two indices are as depicted in Table 1.

Table 1. The Story of Two Indices: What do they measure (or the ontic in the ontology if you wish)

Membership Criteria Index:	Library Investment Index (Expenditures-focused)
• Volumes Held • Volumes added gross • Current Serials • Total Expenditures • Professional plus support staff	Salary Expenditures Materials Expenditures Total Expenditures Professional plus support staff

In studying the correlation among the two indices we can see that it's very strong – r -square = .88; one might be question if they are measuring the same ontology (the concept of extensiveness basically). The answer is positive, yes, they are both measuring extensiveness (see Figure 1). However as we can see in Table 2, the ARL Membership Criteria index is increasingly explaining less and less of the concept of extensiveness (the percent

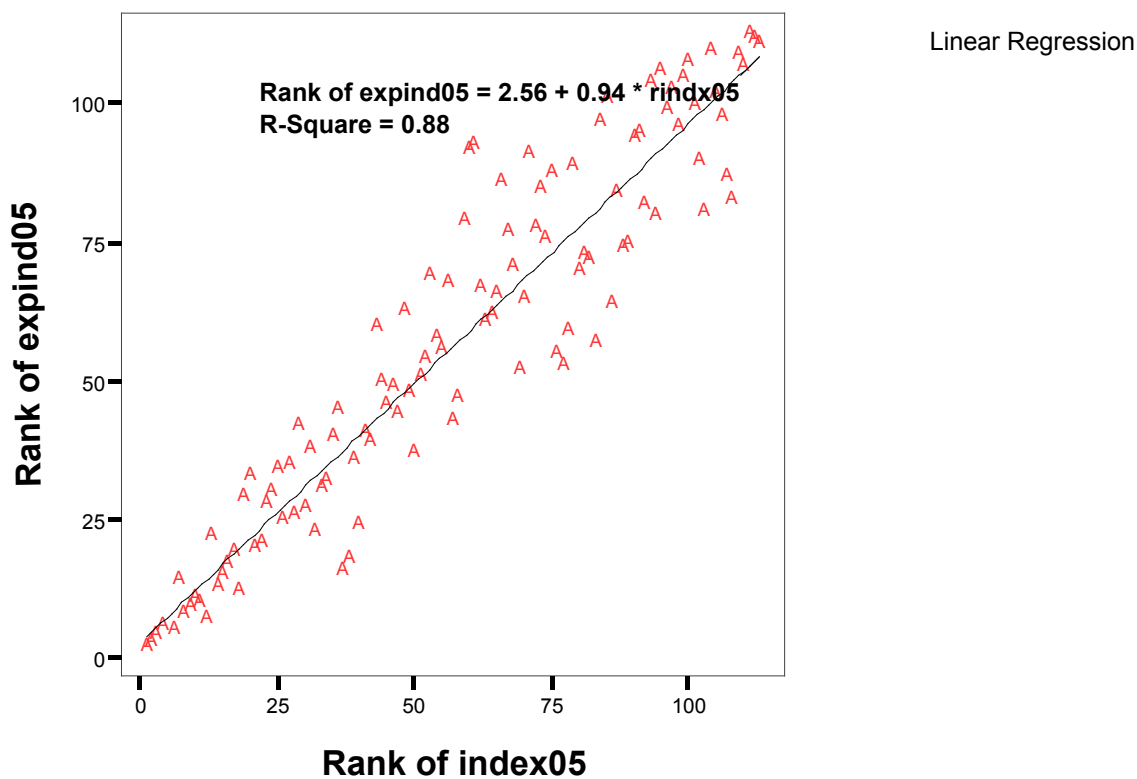
of variance explained is declining from 90.5 percent in 2002-03 to 76.7 percent in 2010-11). The relationship of ARL Investment Index though has remained steady with the underlying concept that we label 'extensiveness' as can be seen from the fact that percent of variance explained was 92.8 percent in 2002-03 and pretty much the same in 2010-11 (see Table 2).

Table 2. Principal Component Analysis

	Historical % of Variance	Investment % of Variance
2002–03	90.5	92.8
2003–04	89.2	93.1
2004–05	87.9	92.4

	Historical % of Variance	Investment % of Variance
2005–06	87.9	92.5
2006–07	81.7	92.8
2007–08	80.7	93.7
2008–09	81.9	93.3
2009–2010	77.5	92.6
2010–2011	76.7	92.1

Figure 1. The correlation between the ARL Membership Criteria Index and the ARL Investment Index



This analysis confirms that dropping the volumes held and serials variables and stopping to calculate the ARL Membership Criteria Index is basically rational and reasonable. What other measures are possible? Of course one can come up with many different desired concepts, capturing them with a

measurement, though signifies a level of legitimacy in the eco-system of libraries and research libraries in particular. For example, the concept of the digital library is a legitimate one but has not been captured yet in a way that would move us beyond the 'I know it when I see it' or 'It is a digital library

because I call it a digital library.’

So, for the purposes of this paper, we will simply offer some additional suggestions for the concept of extensiveness and such include for example staffing and expenditures in special collections, the square footage or seats in facilities, number of PhD fields, possibly usage statistics, and research library outcomes such as global reach, prestigious awards and nominations for awards, placements and grants pursued and secured among others.

At the same time, there is a lot to be studied in the new 2011-2012 ARL statistics—questions like the relationship among volumes, titles and e-books, the relationship between one-time and continuing expenditures, what do service variables measure, and how do the special collections staffing and expenditures variables relate to other variables.

Conclusion or “The Outlook in Thirty Seconds”

The concluding statements in the issue brief issued by ARL summarize well where we stand in developing organizations that are relevant and vibrant in the new environment and we will finish our article with these words:

“Research libraries are well positioned to take a strong role in the development of new business and selection models. Publishers that emphasize data- and user-driven approaches will attract a growing proportion of collection dollars. Research libraries able to see their collection activities through this analytical lens have the brightest prospects to make the full range of collections available to users; to be effective partners with faculty and students in teaching, research, and learning; and to be the most successful long-term custodians of the scholarly record. - March 10, 2012”⁷

—Copyright 2013 Martha Kyrillidou, William Grey Potter, Brinley Franklin, Colleen Cook, and Bruce Thompson

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Measuring the Impact of Electronic Library Materials on the University's Research Mission

Michael Rawls

Virginia Commonwealth University, USA

Abstract

This study examines the scholarly output of US doctoral universities to determine if the number of journal articles produced by the faculty of each institution correlates with their libraries' investment in electronic materials. This inquiry is based on the concept that the speed of access and convenience of use offered by electronic library materials creates efficiencies that should increase research productivity by saving the researcher's time. Thus the expectation is that institutions investing more in electronic materials should generate more journal articles over a given period. This theory is tested using ordinary least squares regression analysis to explore the relationship between electronic library material expenditures and journal article output, while controlling for a number of other pertinent university and library characteristics presumed to influence scholarly productivity. The findings indicate that expenditures for these materials have a positive and statistically significant correlation with journal article production—stronger than that of other library materials. In fact, a drop in research productivity was observed when expenditures for nonelectronic materials increased relative to that of electronic materials. This reduction in productivity is interpreted as an opportunity cost to the university's research mission.

Electronic Library Materials and Research Productivity

An attempt to enumerate the advantages that electronic library materials hold over traditional library materials is to engage in the statement of the obvious. That these resources can be accessed from almost anywhere precludes the need for a trip across campus to the library or even more distant travel to far-flung archives.

That these materials can be read and stored on a variety of electronic devices replaces piles of photocopies and notes with highly organized

computer files. That many of these materials can be accessed by multiple users ensures the material's constant availability. Electronic materials can be word-searched, their citations can populate bibliographies automatically, and their quotations can be copied and pasted. Most of all, the mere time-motion spent wandering through the stacks, locating a title, identifying the correct volume, and leafing through to the desired article to access just a single work is a staggering consideration when juxtaposed against a single well-worded search providing instant access to multiple relevant titles.

Productivity is measured in economics by the ratio of outputs to inputs, and efficiency is anything that increases that ratio by raising the former and/or reducing the latter relative to one another.¹ The common theme above is that each of the advantages offered by electronic materials saves time. It is not difficult to argue that the researcher's time is among the most important—and often most expensive—input components of a scholarly publication. Given the likelihood that these materials create efficiencies by saving time, this study asks if those efficiencies are significant enough to noticeably hasten the translation of research into scholarly literature. And if so, is the cumulative, campus-wide effect of these efficiencies so great that it is empirically detectable, whereby more expenditures per year equates with more journal publications per year?

Based on the supposition that the answer is "yes," this study holds that there are good reasons to test this hypothesis despite the fact that the advantages of electronic materials are already fairly apparent. The first good reason is that the advantages of electronic materials offer a theory to be tested. Regression analysis only shows us correlations and is unable to establish causality in a study that relies on a quasi-scientific design such as this one. Yet, a good theory allows room for some discussion of

causation by providing a context through which to interpret the results. In this instance, the theory not only suggests that there should be a correlation between electronic material expenditures and journal articles, but that correlation should be stronger than that of other material types due to this theory of improved efficiency. In the theory's absence, discovering a correlation between electronic library materials and scholarly research productivity would be less meaningful. The second good reason to explore this possible connection is to evaluate the ongoing sea-change that the world of academic libraries is experiencing as they become increasing digital. The institutions in this study increased their electronic materials expenditures by 92% from 2005 to 2010. During this same period the proportion of electronic materials expenditures to total library material expenditures grew on average from 45% in 2005 to 70% in 2010. It would be beneficial to be able to communicate to stakeholders and decision makers, in quantitative terms, the value that this enormous shift in spending priorities brings to the university.

Antecedents

The research design of this project was influenced by two unrelated works by John Budd and Sharon Weiner. Budd conducted a set of studies beginning in the 1990s that compared the number of journal publications by institution to its library's volume counts.² Budd relied on citation indexes (as does this study) to establish the rate of scholarly publication at ARL and ACRL institutions in search of whether a correlation to volume counts could be discerned. More recently, Weiner's work sought to determine how libraries contribute to the reputation of their host institutions.³ In developing a regression model to answer this question, she employed a variety of both library and institutional measures to serve as independent variables in an attempt to explore the relationship those various institutional dimensions had on her dependent variable—a university's reputation as ranked by *U.S. News and World Report*. This study amalgamates Budd's comparison of library holdings to scholarly output with Weiner's use of a regression model that weighs both library and other institutional dimensions to determine their relation to campus-wide outcomes. Implicit to both studies is the awareness that by examining large groups of institutions, one can develop generalized understandings of library impact that could not be obtained by studying a single institution.

Research Design and Methodology

The study employs a cross-sectional research design to test the hypothesis that increased expenditures on electronic materials will result in a higher number of journal publications. Utilizing ordinary least squares linear regression analysis, the study designates the total number of journal articles produced by each US doctoral institution from 2005 to 2010 as the dependent variable. The model's independent variables, collected over a similar timeframe, consist of those institutional factors that can be reasonably assumed to affect the output of journal articles by the faculty of each university. Discussed in greater detail below, these independent variables include factors such as research expenditures, number of faculty, total library expenditures, and a variety of other measures—in addition to, of course, electronic library material expenditures.

Because the data covers a range of years, it lends to the appearance of a longitudinal study. Unlike longitudinal studies, however, this research design does not to examine change over time. Instead, the choice to study a span of years rather than a particular year is predicated upon the reality that there is no precise way to link a particular year's publications to a particular year's library or institutional expenditures. For example, would library materials purchased in 2008 most likely benefit research published in 2008? Or, is it more probable that it would influence publications in 2009? What about subsequent years? The most fitting answer seems to be "all of the above." Lacking a precise answer, the decision was made to establish a sort of institutional profile by gathering data for each variable over a short range of years rather than a single year. The data for each variable was then aggregated into a single number to represent the entire span. The thought is that such a number can serve as an adequate indicator of the extent of a university's investment in libraries, research, faculty size, and so on, over the medium run. By arranging the independent variable data in this fashion and comparing it to total journal article output over the same stretch, it is argued that a more reasonable basis of comparison was obtained.

Dependent Variable Data

The Web of Science citation index was used to establish the total number of journal articles each institution produced between 2005 and 2010. This was accomplished by employing the

“organization” field tag which enabled search results to be limited to individual institutions. The index’s databases for sciences, social sciences, and arts and humanities were selected, while conference proceedings were excluded. The number of journal articles produced by each institution for the entire span of years was entered into the dataset as a single total.

Independent Variable Data

Library Characteristics:

Data representing library characteristics assumed to influence research outcomes was obtained from the ACRL’s annual Academic Library Trends and Statistics survey from the years 2005 through 2010 using Counting Opinions’ ACRLMetrics tool.

These variables included:

- electronic material expenditures
- volumes added
- volumes held
- titles held (beginning in 2009)
- electronic serials de-duplicated (beginning in 2008)
- print serial purchased
- current serials
- current serial expenditures
- monograph expenditures
- library material expenditures
- professional salaries
- total salaries
- total library expenditures
- number of professional staff
- total staff
- interlibrary loans, borrowed

To account for the fact that several institutions were missing one or more years of data, averages were used as the basis for aggregation as opposed to totals. Institutions missing more than two years of data were dropped from the dataset.

Institutional Characteristics:

The Integrated Postsecondary Education Data System (IPEDS) was used to gather data representing institutional characteristics presumed to be of importance to research outcomes to serve as extraneous variables. The following were included:

- research expenditures
- research salaries and wages
- instruction salaries and wages
- instructional-research-public service faculty

FTE

- doctoral degrees awarded
- total revenue (both FASB and GASB)
- instructional salaries
- year-end value of endowment assets
- grant funding

Again, averages were used as the means for aggregating the IPEDS data in order to be consistent with the library variables.

Data Limitations

All three sources of data (Web of Science, IPEDS, and ACRL) contain some important limitations to be considered. The prime limitation regarding the WOS citation index is that it is not comprehensive.⁴ In particular, Thomson-Reuters acknowledges that its representation of professional disciplines, especially business and engineering, is less exhaustive than its coverage of humanities, sciences, and social science citations.⁵ WOS also excludes some lower-impact and regional journals from its citations. As for the IPEDS data, despite its comprehensive nature in providing institution-level data for most every higher education entity in the nation, it has a variety of limitations relating to its complexity, scope, and survey instructions that call its overall accuracy into question. As mentioned above, the primary issue with the ACRL survey data was that several institutions were missing one or more years. This led to the removal of 35 institutions from the dataset. Two others were dropped due to concerns that scholarly output was not properly attributed to them via the WOS “organization” field tag search methodology. This left a total dataset comprised of 234 of the 271 Carnegie-classified US doctoral institutions.

Regression Analysis

The job of regression analysis is to estimate how different variables relate to one another. It accomplishes this by observing how each of the independent variables changes relative to the dependent variable from one case to the next across a large set of data. This process produces a coefficient for each independent variable that serves as a mathematical expression of that variable’s relationship to the dependent variable. A coefficient of 2.5, for example, would indicate that for each additional unit change in the independent variable the analysis observed a 2.5 change in the dependent variable. Likewise, a -2.5 would signal a

negative correlation where the dependent variable decreases as the independent variable increases. So the regression output will signal whether each independent variable is positively or negatively correlated to the dependent variable (the sign of the coefficient) as well as provide a parameter estimate of that relationship (the value of the coefficient). The end product is a regression equation where the actual values of a given institution's independent variables can be multiplied by each variable's coefficient and then totaled. The resulting sum is the predicted value of the dependent variable (in this case the predicted number of journal articles produced) under that particular model.

Regression analysis was performed using SPSS. The library and institutional variables discussed above were entered as independent variables while the total number of articles produced by each institution was designated as the dependent variable. Due to the issues of statistical significance and multicollinearity, however, no model could be specified that simultaneously accommodated all of the independent variables—meaning that some variables listed above had to be dropped. Regarding statistical significance, those variables that failed to meet the p-value threshold of .05 or lower were dropped for not having a clear and evincive correlation to the dependent variable. As for presence of multicollinearity, which occurs when one or more independent variables are too highly correlated to each other, it necessitated dropping some variables in favor of others. This substitution of independent variables for one another can be necessary when two or more measure essentially the same thing, such as the number of professional library staff and professional library staff salaries. Because the two variables fluctuate so similarly from one institution to the next, the regression analysis is unable to distinguish one variable's relationship to the dependent variable from the other—leading it to produce unreliable coefficients. This problem existed for many of the library and institutional variables.

Hence the central task was to pare down the number variables in such a way as to eliminate multicollinearity and maintain statistical significance, while at the same time, hopefully, retaining enough of the relevant variables that the model would remain representative of the major factors that ought to impact publication levels.

This hurdle necessitated a good deal of shuffling variables in and out of different iterations before the clear understanding of which ones could be considered as viable candidates for a final model. A disappointing casualty of this process was that the expenditure variables for electronic library materials, total library materials, and total library expenditures could not be included together in the same model—disallowing a direct comparison of the relative strength of some of the major library expenditures categories to journal article production. Another of the major library variables, professional staff FTE, could be included only with the electronic materials expenditure variable. Despite these collinearity issues, the statistical significance of each of these major library variables tended to be strong and consistent throughout a variety of different iterations. This was less true for other library variables (e.g. volume counts, title counts, and serial or monograph expenditures). These more specific variables tended to lack significance and were often too correlated to the more significant total library material expenditures variables. Some library variables, particularly interlibrary loans borrowed, failed to demonstrate a significant relationship to journal article production in any model. This does not mean that variables do not have a role to play in supporting research—because we know they do. It means only that the relationship was not pronounced enough to be detected in this large-view study. Finally, during this process it became clear that off-the-charts library expenditure and staffing levels reported by Harvard were exerting an enormous outlier effect that was skewing results. This was remedied by creating an indicator variable, or dummy, for Harvard.

Model 1.

After exploring a variety of independent variable combinations, the first model to be considered as a “best fit” candidate consisted of electronic material expenditures, professional library staff FTE, university revenue, faculty FTE, research expenditures, and the Harvard dummy variable (see Table 1). Each of the variables had a statistically significant and positive relationship to the number of journal articles produced. The r-squared value, which measures the overall fit of the model, was .922 out of a possible 1.00. Furthermore, it contained a compelling mix of variables representing each university's investment in research, investment in library materials and the

library personnel who shepherd that investment, and number of faculty, as well as an overall indication of available resources. Each major component that ought to affect journal production is in some way represented and controlled for in this model. Although grant funding may appear to be missing, it is indirectly represented as a component of university revenue and, more importantly, recorded as research expenditures.

While this combination of variables offers a fairly satisfying explanation of scholarly research

productivity—one that shows a convincing correlation between electronic materials and article output—it does not provide a comparison of electronic materials to other library materials. If the study's theory is to be supported, electronic materials ought to be more highly related to scholarly productivity than other materials. To explore this, a variant of the model was run where the total library material expenditures variable was substituted for electronic materials. The results show that the total materials variable has a p-value above .05, meaning a statistically significant relationship was not detected.

Table 1.

MODEL 1	ELECTRONIC MATERIALS			TOTAL LIBRARY MATERIALS VARIATION		
Independent Variables	Coefficients	Sig.	VIF	Coefficients	Sig.	VIF
Constant	-1224.087	n/a	n/a	-1009.529	n/a	n/a
Electronic Lib. Mat. Exp.	.000511	.000	4.320			
Library Materials Exp.				.0000599	.440	6.792
Total Library Exp.						
Prof Library Staff FTE	18.084	.005	5.746	29.394	.000	8.044
University Revenue	.000001757	.000	6.702	.00000164	.000	7.180
Faculty FTE	.709	.038	6.173	1.216	.000	5.634
Research Exp.	.0000176	.000	4.542	.0000183	.000	4.666
Harvard	23265.670	.000	2.011	19074.719	.000	1.971
<i>R-Squared</i>	.922			.915		
<i>Adjusted R-Squared</i>	.920			.912		
<i>Sig.</i>	.000			.000		

To summarize, model 1 indicates that for each additional dollar spent on electronic materials, the analysis observed a .000511 increase in journal articles. Stated another way, 511 additional journal articles were observed from 2005 through 2010 for each additional \$1,000,000 spent on electronic materials on average per year. Meanwhile, a variant of the model featuring total material expenditures found no significant relationship to the number of journal articles for each university. However, this finding seemed odd given that electronic materials are becoming an increasingly large component of total library materials. This uncertainty led to further exploration of new models that might facilitate the comparison of electronic materials to other material types.

Model 2.

Model 2 is essentially the same as model 1 except

that the librarian FTE variable was removed. Its presence was discovered to be causing some sort of trouble for the total materials and, upon its removal, total library materials became statistically significant. This allowed for comparison between electronic materials and total material expenditures using standardized coefficients. Because different variables are measured on different scales (e.g., faculty may be measured in the thousands of persons at a university while total library materials are measured in the millions of dollars) standardized coefficients are used to measure which independent variables exert the greatest strength in a model relative to one another regardless of scale. It should be noted that these coefficients are generally intended for comparing the relative values of variables *within* a single model, not across separate iterations as is the case below. However, the comparison is reasonable under the circumstances that these

iterations represent a process of substitution to determine which library variable is the best fit for

a model that can only accommodate one due to multicollinearity.

Table 2.

MODEL 2	<u>ELECTRONIC MATERIALS</u>			<u>TOTAL LIBRARY MATERIALS</u>		
Independent Variables	Coefficients	Sig.	Std. Coefficients	Coefficients	Sig.	Std. Coefficients
Constant	-1102.929	.000		-889.202	.003	
Electronic Lib. Mat. Exp.	.000667	.000	.241			
Library Materials Exp.				.000259	.000	.170
University Revenue	.00000212	.000	.245	.00000174	.000	.202
Faculty FTE	.697	.045	.094	1.246	.000	.168
Research Exp.	.0000177	.000	.369	.0000195	.000	.404
Harvard	29675.932	.000	.239	27257.255	.000	.219
<i>R-Squared</i>	.959			.954		
<i>Adjusted R-Squared</i>	.919			.909		
<i>Sig.</i>	.000			.000		

As Table 2 indicates, the electronic materials coefficient is .241, while total library materials came in at just .170. Thus, according to this dataset, electronic materials have a stronger correlation to scholarly productivity than that of total materials. This discrepancy is understated when taking into consideration that electronic materials make up a significant portion of the materials budget. This means that much of the relationship strength between journal articles and total material expenditures is likely attributable to its electronic materials component.

To explore this further, model 3 introduces a derived variable designed to pare out the nonelectronic materials portion of the total library materials variable. This was achieved by subtracting the electronic materials expenditures from total materials expenditures for each institution, the logic being that the difference was spent on materials not deemed “electronic.” This creation of a nonelectronic material expenditure variable allows the total library materials variable to be discarded and replaced by its two components—electronic and nonelectronic materials. The results of model 2 suggest that when the two were combined in the single variable total library materials, the effect of the electronic component on scholarly productivity was being constrained, while the effect of the nonelectronic materials was being inflated. Breaking the total library materials expenditures variable into these two components provides an opportunity

to test the study’s underlying theory in a more meaningful way, by including distinct measures of both material types in the same model.

Model 3.

Nonelectronic materials proved to have a statistically significant, negative relationship to journal articles in model 3, while electronic materials expenditures continued to have roughly the same positive correlation as in previous models (see Table 3). This reveals that the number of journal articles published decreased as universities dedicated more funds to nonelectronic materials. These results should not be interpreted to suggest that print or other materials hold negative research value. Not only does that fail to pass on face value, it ignores the manner in which the nonelectronic variable was derived by subtracting electronic expenditures from total material expenditures. This means that electronic and nonelectronic variables rise or fall at the expense or gain of the other, while the total materials expenditures variable remains the same overall. It is analogous to slicing a pie, where the total amount of pie is unchanged regardless of how the slices are portioned. Therefore, as nonelectronic expenditures go up for an institution, electronic material expenditures necessarily go down. When viewed in this context, one interpretation is that each additional collections dollar spent on nonelectronic resources is a choice made at the expense of the university’s research mission.

An additional feature of model 3 is that the professional librarian FTE variable was able to be reintroduced without encountering multicollinearity problems with either of the materials variables. Its standardized coefficient is not only greater than electronic materials, but is second only to research expenditures in the model. While librarian FTE is not directly germane to the theory that electronic materials create efficiency, the strength that this library personnel variable has to scholarly productivity certainly warrants attention and is somewhat pondered in the

conclusion.

The inclusion of the nonelectronic materials variable produced what is arguably the best-fit model for illustrating how electronic library materials relate to scholarly output. It controlled for all of the major factors that ought to influence scholarly output: number of professors, research expenditures, and total university resources, as well as the library's total investment in materials and professional staff.

Table 3.

MODEL 3				
Independent Variables	Coefficients	Std. Coef- ficient	Sig.	VIF
Constant	-1401.941			
Electronic Lib. Mat. Exp.	.000519	.184	.000	4.441
Non-Electronic Lib Mat. Exp.	-.000264	-.096	.007	3.506
Prof Library Staff FTE	30.987	.218	.000	7.993
University Revenue	.00000184	.213	.000	8.203
Faculty FTE	.783	.105	.029	6.451
Research Exp.	.0000163	.339	.000	4.824
Harvard	21924.605	.180	.000	2.063
<i>R-Squared</i>	<i>0.927</i>			
<i>Adjusted R-Squared</i>	<i>0.925</i>			
<i>Sig.</i>	<i>0.000</i>			

Conclusions and Next Steps

The results of the nonelectronic variable go almost as far as those regarding the electronic variable in supporting the study's theory that electronic materials create noticeable efficiencies in scholarly productivity. The specter that looms over studies such as the present one is the adage that correlation does imply causation. There is every possibility that these findings do not measure how different university and library characteristics impact scholarly productivity, but instead only establish that these variables covary with the number of articles produced by each institution. It could be simply that the universities that have more have more of everything—more money, professors, librarians, etc.—and it only follows that they also produce more scholarship. In that case, this study might serve only as an illustration that a rising tide lifts all boats. Certainly, this runs counter to the argument that electronic materials actually impact research productivity.

While the extent to which this model measures causation, correlation, or some combination thereof remains unknowable, the fact that the nonelectronic variable's coefficient is significantly negative implies some degree of causation on the part of electronic library materials. Why else would scholarly productivity decrease with each additional dollar spent on nonelectronic materials other than the fact that each of those dollars is spent at the exclusion of electronic resources? Otherwise, one would expect nonelectronic materials to be either positively related or unrelated to journal articles. Certainly the presence of physical materials on the library's shelves does nothing to hinder researchers in their work. But when viewed in the context that the two variables together represent the ratio by which each institution's total material budget is apportioned between electronic and nonelectronic materials, it makes sound sense. The suggestion that those libraries choosing to dedicate a higher ratio of

their collections budget to nonelectronic materials do so at the expense of the university's research mission fits in neatly with the theory that electronic materials are more efficient in the production of scholarly research.

As an example, model 3 predicts that a university that attracts an average of \$1 billion per year in revenue, employs 3,500 faculty members, 100 professional librarians, spends \$200 million on research, and spends \$5 million apiece on both electronic and nonelectronic library materials is predicted to produce 1,801 articles each year. However, if \$2 million of the materials budget is reallocated to electronic materials from nonelectronic, the model predicts that the university would produce 261 additional articles per year—or 1,568 over the entire 2005 to 2010 span.

Of course, before reading too much into these results, it must be remembered that this is a single dataset accompanied by the limitations of its sources and the presence of random error. It would be much more meaningful if the findings could be corroborated by additional research. To that end, the next step in this project will be to employ a similar research design to a slightly different population and dependent variable data source. Academic Analytics is an institutional research tool that, among other things, tracks the number of journal articles and book titles attributable to the faculty members of each doctoral program at most major US universities. This tool can be used to replicate the current study in a somewhat different fashion, as Academic Analytics draws its journal citations from a different index (Scopus) over a slightly different timeframe and includes only the works of faculty members associated with the doctoral programs. Otherwise, the same library and institutional variables will be drawn from ACRL and IPEDS. If these new findings bear resemblance to the results contained here, it would make this study's conclusions much more compelling.

Finally, this study also found a pronounced correlation between professional librarian FTE and research productivity. Unlike electronic resources, this study does not include a theory through which to interpret this linkage, except to the extent that this finding might imply that

electronic resources work best in conjunction with an adequate number of professional library staff. In this sense it could reflect the degree to which the proper amount of liaison activity, instruction, reference assistance, development of online search tools, etc., are essential to getting the most out of the library's investment in electronic collections. Nevertheless, it is unnecessarily limiting to view this interesting relationship between librarians and research productivity through the lens of electronic resources only because it turned up in a study on that topic. It may be more useful to study this relationship in qualitative fashion that asks how the librarians at those institutions with the highest research productivity are focusing their efforts. One means of identifying such universities would be to utilize model 3 to calculate the predicted number of publications for each institution in the current dataset. This can be accomplished (and was) by plugging the real values of each independent variable for each institution into the regression equation. Those institutions whose actual publications exceed their predicted number by the greatest amount could be deemed the most productive. Appendix A contains two lists of top-25 overproducing universities—one by the gross and the other by the percentage of actual articles produced over the number predicted by this model.

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Notes

1. Alan V. Deardorff, *Terms of Trade: Glossary of International Economics* (River Edge, NJ: World Scientific, 2006), 221.
2. John M. Budd, "Faculty Publishing Productivity: Comparisons over Time," *College & Research Libraries* (2006): 230–239; and John M. Budd, "Increases in Faculty Publishing Activity: An Analysis of ARL and ACRL Institutions," *College & Research Libraries* (1999): 308–315.
3. Sharon Weiner, "The Contribution of the Library to the Reputation of a University," *Journal of Academic Librarianship* 35 (2008): 3–13.
4. Dorothy C.P. Char and Isola Ajiferuke, "The Usefulness of Related Functions in Web of Science and Scopus," *Evidence Based*

Librarianship and Information Practice 6 (2011):
41–52.

5. William Sickler, e-mail message to author,
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APPENDIX A. TOP OVER-PRODUCING INSTITUTIONS PER MODEL 3.

The tables below list those universities that exceeded the predicted journal output of model 3 by the greatest amount. The first table is ordered in terms of gross number articles and consists of some the largest research universities, 80% of which belong to the Association of Research Libraries. The second table orders the institutions by the percentage increase of actual articles over predicted articles. The second table includes a more diverse group of institutions in terms of size, 40% of which are ARL members. The highlighted institutions are those that are on both lists.

INSTITUTION	Gross Articles Above Prediction	INSTITUTION	% of Articles Produced Above Prediction
1 University of California-Berkeley	8,514	1 University of Arkansas at Little Rock	767%
2 Purdue University-Main Campus	6,686	2 Colorado School of Mines	712%
3 University of California-Davis	6,377	3 University of Missouri-St Louis	233%
4 Cornell University	6,102	4 Lehigh University	166%
5 University of Florida	5,648	5 Tennessee State University	132%
6 California Institute of Technology	5,425	6 North Dakota State University-Main Campus	110%
7 Northwestern University	4,852	7 University of Massachusetts-Boston	107%
8 University of Washington-Seattle Campus	4,727	8 Michigan Technological University	80%
9 University of California-San Diego	4,622	9 University of California-Santa Barbara	74%
10 University of California-Santa Barbara	4,533	10 University of California-Riverside	70%
11 University of Michigan-Ann Arbor	4,243	11 Oklahoma State University-Main Campus	70%
12 University of California-Los Angeles	4,203	12 Purdue University-Main Campus	62%
13 University of North Carolina at Chapel Hill	4,164	13 Northeastern University	59%
14 Boston University	4,145	14 California Institute of Technology	59%
15 University of Illinois at Urbana-Champaign	4,043	15 Brown University	57%
16 University of Arkansas at Little Rock	3,831	16 Rensselaer Polytechnic Institute	55%
17 Brown University	3,705	17 University of Maine	53%
18 University of California-Riverside	3,081	18 Tufts University	51%
19 University of Colorado at Boulder	2,858	19 University of Arkansas	50%
20 Tufts University	2,855	20 University of California-Santa Cruz	48%
21 Northeastern University	2,720	21 University of Idaho	46%
22 Virginia Polytechnic Institute and State University	2,689	22 University of California-Berkeley	43%
23 University of Arkansas	2,613	23 Rice University	43%
24 University of California-Berkeley	2,472	24 University of California-Berkeley	40%

Assessing the Library's Influence on Undergraduate Outcomes with Student Usage Surveys

John Stemmer and David M. Mahan
Bellarmine University, USA

Introduction

Bellarmine University Library has conducted user surveys of faculty and students as a matter of course since 2007. These surveys grew out of the culture of assessment being developed by the university administration and are a direct result of the need to provide assessment measures to outside stakeholders, in our case for SACS accreditation review. They were used as a focused supplement to benchmark studies that had already been conducted. In many ways this practice reflects the state of traditional library assessment—generally input/output oriented and more recently operationally oriented. In both of these cases benchmarks of inputs/outputs (collection size, staff size, expenditures per student FTE) or operations surveys (student and faculty user satisfaction surveys whether locally or nationally (LibQUAL+®)) the assessment has remained focused on the library and its internal operations.

The library's user satisfaction survey is used to gauge the effectiveness of the library's operations as seen by its users. Traditional library assessment has little correlation with the outcomes and positive work of the institution; rather it has provided data that indicates strengths and weaknesses on the library's part that the library administration can then take efforts to further develop or correct as the case may be. Operationally these surveys can be helpful to a library administration; they can provide valuable data that the library and its resources and services are being used and even appreciated. However, they do not demonstrate to institutional stakeholders the impact of the library on institutional goals and objectives.

Increasingly academic libraries are being called on to provide data and assessments that demonstrate the library's connection with the institution's desired outcomes. They are facing increasing demands for accountability to a broader audience than ever before. We have moved from being

the only information resource to being a quality information resource. In our current economic straights our parent institutions seek to save every dollar they can and face difficult budget choices, often including decreased library budgets. The political climate calls for increased accountability and greater connection between the university's efforts and student learning and student success. This is the changing environment faced by higher education institutions and therefore academic libraries.

In response, over the past few years, library assessment activities have shifted away from library-centric assessment and towards connecting the library's assessment efforts to institutional goals. The need for library assessment efforts that show the influence of the library in terms of institutionally relevant outcomes, such as student learning and student success, was highlighted in the ACRL report *The Value of Academic Libraries*.¹ Much work and many attempts have been made to demonstrate the library's direct impact on student learning and other student outcomes. More thought and effort has been put forth to developing appropriate assessment measures that address the library's impact on students, particularly the impact on student outcomes and student learning. Derek Rodriguez is developing a protocol for Understanding Library Impacts,² and his first results are promising.³ In the UK, the Library Impact Data Project has also been examining the issue of developing appropriate measures to assess the library's role in student learning and outcomes. It has found significant correlation between library usage and student attainment of the final degree.⁴

Methods and Results

Increasingly librarians are seeking to identify areas where they can demonstrate a relationship exists between a student's library interaction and student outcomes that will be relevant to a wider audience

at the university and beyond. Joseph Mathews has pointed out recently that success in efforts to link the library and student outcomes will require the use of individual student data.⁵ One of the reasons that student unit data is such a constant issue in these efforts by librarians is that generally, libraries do not track what or how students use library resources and services. As a matter of professional ethics, personally identifiable information is often deleted or not even collected to maintain an individual's intellectual freedom. So while offices of Institutional Research have access to large amounts of individually identifiable outcome data, most libraries do not.

Like many academic libraries, Bellarmine University library uses a student user survey as part of its assessment efforts. Since 2007 it has conducted three such surveys and now does one every other year. The survey provides data on why students come to the library and how often they use the library. The library survey asked questions in two groupings. The first was on reasons a student came to the library with a list of 18 reasons with checkboxes. Respondents were asked to check all reasons that applied. The second group of questions requested information on how often a student came to the library and how often the student used the library online, with response options ranging from daily to never. Most importantly, the survey is not anonymous. The library can identify how students report using the library at an individual level. (The relevant sections of the most recent library questionnaire are appended).

The library survey data was then paired with Office of Institutional Research student data to first determine if there were any significant relationships between a student's self-reported library usage and known student outcomes. This was done using a logistic regression of all the library input variables against a selected student outcome (retention, graduation, etc.). It was also determined that the data would be viewed in undergraduate-class-based cohorts to minimize variations among the respondent experiences. In addition to the library variables a number of demographic factors drawn from institutional research data were also tested against selected student outcomes to identify the most significant demographic factors for the individual cohorts. Using these control factors and the library

variables, three specific research questions were developed:

1. Does library usage influence whether a freshman student returns in his/her next year of undergraduate study?
2. Does library usage influence whether a freshman student graduates within four or five years in undergraduate study?
3. Does library usage influence cumulative GPA for freshmen and seniors?

The research was conducted using undergraduate students participating in a library survey in the year of 2007, 2008 and 2010. Bellarmine University is a small, private, Catholic university located in a large Midwestern city, Louisville, Kentucky. Total university enrollment is approximately 2,000 undergraduate students and nearly 800 graduate students. There were over 1,000 students living in the residence halls. The institution currently offers over 50 undergraduate degree programs (all bachelor's degrees) and over 20 graduate programs, mostly master's degrees; three doctorate practitioner degrees (physical therapy, known as DPT; nurse practice [DNP]; and Education [PHD]) are also offered. The most popular undergraduate degree programs are nursing (BSN), business administration, psychology, biology and exercise science (in preparation to apply for DPT). Over 80% of Bellarmine's undergraduate students attend full-time and are under 25 years of age.

Each fall, approximately 600 new full-time freshmen matriculate at Bellarmine University. Because of the importance of the first-year experience on student success, the freshman cohorts of 2007, 2008, and 2010 were collapsed and studied together each of the spring of the first year. Measures of demographics and academic preparedness are consistent across freshman cohorts:

- 24–25 ACT composite average
- 65% from KY, 35% out of state
- 40% first-generation students (defined as neither parent earning a bachelor's degree)
- 20–30% Pell recipients
- 10–15% students of color
- 1% international students

Similarly, seniors attend full-time and typically graduate in four to six years. The senior respondents to the library surveys in 2007, 2008,

and 2010 were collapsed because of similar demographics across multiple cohorts.

Due to the limited number of full-time undergraduate students at the institution, sampling was unnecessary, because the entire population could easily be requested to participate. On designated years, the institution invited the undergraduate populations to participate in the library survey. Most of the freshmen and senior populations enrolled at the university as first-time, traditional age freshmen; however, all freshman students and senior students were invited, regardless of whether they enrolled as traditional freshmen, transfer, or readmitted students.

To summarize variables considered, *Full-time/Part-time Status*, *Session GPA*, *Race* and *ACT composite score* were related to outcome variables whether a student graduated or cumulative GPA ($p < .05$). These variables were controlled in our analyses

to consider whether library usage variables independently influenced student outcomes. All variables considered are appended.

Second year Retention of Freshman Students

1. Does library usage influence whether a freshman student returns in his/her next year of undergraduate study?

Researchers conducted a forward entry logistic regression using freshmen student data only ($n=370$), considering any significant library variables related to the outcome variable, retained in his/her second year. There were 336 freshmen returning in the second year (91%), and 34 students did not (9%). The omnibus test of model coefficients was significant: chi-square was 8.227 ($p < .05$). One library variable was determined to be a significant positive predictor of returning for the 2nd year: *Access library on-line*. The Nagelkerke R-squared was 0.048.

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	accesslibraryonline	.432	.158	7.504	1	.006	1.540
	Constant	1.242	.388	10.236	1	.001	3.463
a. Variable(s) entered on step 1: access library online.							

A second logistic regression was conducted, this time in two steps. First, control variables were entered as follows: *Full-time/Part-time Status*, *ACT composite score*, and *Session GPA*. These were selected because correlational analysis revealed significance relationships to *Return* ($p < .05$). Second, forward entry technique was used to consider library variables after the control variables. The

omnibus test of model coefficients was significant: chi-square was 31.021 ($df=3$, $p < .001$). *Session GPA* significantly predicted *Return*. After the control variables were entered, the library variable *Access library on-line* again significantly predicted whether a student returned in his/her second year using forward entry method ($p < .05$). The Nagelkerke R-squared was 0.206.

Variables in the Equation							
		B	S.E.	Wald	Df	Sig.	Exp(B)
Step 1 ^a	FTorPT	-21.868	40192.701	.000	1	1.000	.000
	ACT	.074	.067	1.238	1	.266	1.077
	SessGPA	.998	.224	19.859	1	.000	2.712
	accesslibraryonline	.311	.157	3.947	1	.047	1.365
	Constant	18.721	40192.701	.000	1	1.000	1.351E8
a. Variable(s) entered on step 1: access library online.							

Analysis Two: Graduation of Freshman Students from the Same Institution

- Does library usage influence whether a freshman student graduates within four or five years in undergraduate study?

Researchers conducted a forward entry logistic regression using freshmen student data only (n=220 after combining freshmen from spring surveys in 2007 and 2008), considering any library variables related to the outcome variable, graduated within four years for 2008 freshman survey respondents

or five years for 2007 freshman respondents, to identify any significant library variables related to graduation. These are predominantly traditional aged freshmen, primarily full-time students. There were 156 freshmen who graduated (71%), and 64 students who did not (29%). The omnibus test of model coefficients was significant: chi-square was 4.584 ($p < .05$). One library variable was a significant predictor of graduation: *Access library on-line* ($p < .05$). It was a positive predictor; agreement with this was associated with students graduating. The Nagelkerke R-squared was .029.

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	accesslibraryonline	.245	.117	4.411	1	.036	1.277
	Constant	.240	.335	.513	1	.474	1.271
a. Variable(s) entered on step 1: accesslibraryonline.							

A second logistic regression was conducted; this time in two steps. First, control variables were entered as follows: *Full-time/Part-time status*, *ACT score*, *Session GPA*, and *Race*. These were selected because correlational analysis revealed significance relationship to *Graduate* ($p < .05$). Second, forward entry technique was used to consider library variables after the demographic

control variables were entered. The omnibus test of model coefficients was significant: chi-square was 37.943 ($p < .001$). After the control variables were entered, the library variable *Access library on-line* still significantly predicted whether a student graduated, using the forward entry method ($p < .05$). The Nagelkerke R-squared was 0.255.

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	FTorPT	22.999	40193.183	.000	1	1.000	9.736E9
	ACT	.065	.054	1.440	1	.230	1.067
	SessGPA	1.090	.282	14.892	1	.000	2.974
	Race3	.954	.437	4.766	1	.029	2.595
	accesslibraryonline	.262	.131	3.986	1	.046	1.299
	Constant	-28.586	40193.183	.000	1	.999	.000
a. Variable(s) entered on step 1: access library online.							

Analysis Three: Freshman Cumulative GPA

Researchers conducted an analysis of freshman student data only (n=370), considering any significant variables correlated with outcome variable, *cumulative GPA*. The method used was a forward entry ordinary least squares (OLS) regression to consider what if any variables predict

cumulative GPA. Two significant library predictors, *Study alone* and *Use of printer or photocopier*, were identified. Both were positive predictors; agreement with them was associated with a higher *cumulative GPA*. The adjusted R-squared was .030. If ACT Composite is entered in the model before library survey items, the R-squared is .15 for the ACT variable; however *study alone* and *use of printer and photocopier* have similar adjusted R-squared as

the model presented.

Additional library survey items were not significant in the model, but had significant

positive correlations with cumulative GPA at the end of the freshman year ($p < .01$):

- Access library online
- Use computer for academic purposes
- Consult a reference librarian

Model Summary ^c									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.152 ^a	.023	.021	.6047941	.023	8.755	1	369	.003
2	.187 ^b	.035	.030	.6020043	.012	4.428	1	368	.036
a. Predictors: (Constant), *study alone									
b. Predictors: (Constant), *study alone, use printer or photocopier									
c. Dependent Variable: cum_gpa									

ANOVA ^c						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.202	1	3.202	8.755	.003 ^a
	Residual	134.971	369	.366		
	Total	138.174	370			
2	Regression	4.807	2	2.404	6.632	.001 ^b
	Residual	133.367	368	.362		
	Total	138.174	370			
a. Predictors: (Constant), *study alone						
b. Predictors: (Constant), *study alone, use printer or photocopier						
c. Dependent Variable: cum_gpa						

Coefficients ^a									
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		Std. Error	Beta				Partial	Part	
1	(Constant)	3.005	.077		38.812	.000			
	*study alone	.251	.085	.152	2.959	.003	.152	.152	.152
2	(Constant)	2.934	.084		34.833	.000			
	*study alone	.207	.087	.126	2.387	.018	.152	.123	.122
	use printer or photo-copier	.150	.071	.111	2.104	.036	.141	.109	.108
a. Dependent Variable: cum_gpa									

Analysis Four: Senior Cumulative GPA

Researchers conducted an analysis of senior student data only ($n=360$), considering any significant library variables correlated with the outcome variable, *cumulative GPA*. The method used was a forward entry ordinary least squares (OLS) regression to consider what if any variables predict *cumulative GPA*. Two significant library predictors were identified: *check out books* and *use of group study rooms*. *Check out books* was a positive predictor;

agreement was associated with a higher *cumulative*

GPA. *Use of group study rooms* was a negative predictor. The adjusted R-squared was .045. If ACT Composite is entered in the model before library survey items, the R-squared is .21 for the ACT variable; however *check out books* and *use group study room* have similar adjusted R-squared as the model presented.

One library survey item was not significant in the model, but had significant negative correlation with cumulative GPA at the end of the senior year ($p<.05$):

- Get help with papers and other assignments

Model Summary ^c									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.190 ^a	.036	.033	.4086342	.036	13.394	1	358	.000
2	.225 ^b	.051	.045	.4061252	.014	5.437	1	357	.020
a. Predictors: (Constant), *check out books									
b. Predictors: (Constant), *check out books, use the group study rooms									
c. Dependent Variable: cum_gpa									

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.237	1	2.237	13.394	.000 ^b
	Residual	59.780	358	.167		
	Total	62.016	359			
2	Regression	3.133	2	1.567	9.499	.000 ^c
	Residual	58.883	357	.165		
	Total	62.016	359			
a. Dependent Variable: cum_gpa						
b. Predictors: (Constant), *check out books						
c. Predictors: (Constant), *check out books, use the group study rooms						

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta		Zero-order	Partial	Part	
1	(Constant)	3.226	.035		92.408	.000			
	*check out books	.162	.044	.190	3.660	.000	.190	.190	.190
2	(Constant)	3.297	.046		71.511	.000			
	*check out books	.156	.044	.183	3.534	.000	.190	.184	.182
	use the group study rooms	-.104	.045	-.120	-2.332	.020	-.132	-.122	-.120

a. Dependent Variable: cum_gpa

Conclusion

Our analysis indicates that student usage of the library manifests itself in a number of ways: to use an academic or information resource, to use an information service, to study alone or in a group, to use equipment available in the library, and for social reasons. Many of these have previously appeared in the library literature as parts of the library's offering to the university community.

Not surprisingly, not all correlations identifying the library's influence on student outcomes were

found to be significant when using regression analysis to further examine the relationship. The study does confirm previous correlation studies that identify the library as contributing to student outcomes. The library has an influence on student outcomes across the board on all student undergraduate classifications. The study indicates that the library provides support for students in a number of ways: as a resource, through services, and as a place. All of these aspects of the library's operations are shown to be influential on student outcomes. But nothing is consistent from year to year as students progress through their academic

journeys. Rather, as students develop, they seem to call on different aspects of what the library offers to help them succeed.

The study's findings confirm other studies that link the use of library services and resources to a student's learning and success outcomes. Wong and Webb identified a single aspect of library usage (checking out books) that correlates with a student outcome (GPA).⁶ For seniors, checking out books was a significant predictor in the model for their GPA. In *The Academic Library Impact on Student Persistence*, Emmons and Wilkinson identify that the ratio of professional staff to full time students has an impact on student persistence.⁷ This study also found that the library has an influence on freshman retention and graduation, through the use of online resources.

In examining the library's influence on student success outcomes of second year retention and graduation, the research indicates that the library's support does favorably influence student success. In looking at second year retention of freshmen, accessing the library online was identified as the most significant library factor, and even after controlling for significant demographic variables, this factor was still identified by the model as a significant influence on retention. For freshman students the same factor influenced both retention and graduation: accessing the library online. Freshman students that accessed the library online more frequently were more likely to return for their second year and to graduate. Using the library's quality information resources appears to favorably influence a freshman's student success outcomes.

In looking at student learning outcomes represented by GPA, the results again indicate that the library does have a consistent and positive influence on a student's GPA. This influence changes depending on where in their academic career the student is located. For first year students, the library's influence appears through two factors that highlight the library as a place: providing a place to study alone and as a place that has specialized equipment available to students. In a sense, as new students they are getting acclimated to the place of the library in their academic efforts. Interestingly the impact of studying alone repeats a finding in *Academically Adrift* that time spent

studying alone is more academically beneficial than time spent studying in groups.⁸

Seniors' cumulative GPA was influenced by the library differently than freshmen. In both cases there were two factors that the models indicated were significant, but for seniors one was positive and the other negative. Checking out books had a positive impact on seniors' GPA, while using the library's group study rooms was a negative factor. It is interesting to note that studying with a group didn't have a negative impact, but using a group study room, perhaps as a quiet place to nap, had the negative impact. The study did not reveal why students used group study rooms.

This study finds that the library's influence on student outcomes, whether student learning outcomes, represented by cumulative GPA, or more typical student success outcomes, represented by second-year retention and graduation, is real. This is true even when certain demographic characteristics are controlled for, including the students' ACT scores, whether the students are part time or full time and their session GPA. The factors that impact a student's outcomes change depending on where in his academic career a student finds himself. Moving forward with the project, we plan to collect and analyze more data and expand the analysis beyond the local student outcomes to those reported by other standardized tests such as CLA and measures of student engagement such as the NSSE.

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Notes

1. Association of College and Research Libraries, *Value of Academic Libraries*.
2. Rodriguez, "Understanding Library Impacts on Student Learning."
3. Rodriguez, "Answering Questions About Library Impact on Student Learning."
4. Stone, Pattern, and Ramsden, "Does Library Use Affect Student Attainment?"
5. Matthews, "Assessing Library Contributions to

University Outcomes: The Need for Individual Student Level Data."

6. Wong and Webb, "Uncovering Meaningful Correlation Between Student Academic Performance and Library Material Usage."
7. Emmons and Wilkinson, "The Academic Library Impact on Student Persistence."
8. Arum, *Academically Adrift*.

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Appendix 1

2010 Library Usage Survey

Reasons you come to the library (check all that apply):

- ☐ Reasons you come to the library (check all that apply): To check out books
- ☐ To check out media (CDs, DVDs, etc.)
- ☐ To locate journal/newspaper articles
- ☐ To get help with research papers or other course assignments
- ☐ To read newspapers or current magazines
- ☐ To use items (books/articles/videos) placed on reserve by your professor
- ☐ To use media equipment (e.g. video cameras, digital cameras, scanners, video editing, video viewing)
- ☐ To study alone
- ☐ To study with a group
- ☐ To use the group study rooms
- ☐ To use a printer or photocopier
- ☐ To use the computers for academic purposes
- ☐ To use the computers for recreational/personal use
- ☐ To use the Mac lab (Apple Macintosh Computers)
- ☐ To visit the Help Desk
- ☐ To visit the Academic Resource Center (ARC)
- ☐ To visit the Merton Center
- ☐ To use a laptop
- ☐ To meet friends
- ☐ To look for information in online databases (EBSCOhost, ProQuest etc.)

☐ Other (please specify)

If you never use the library, why don't you?

Please rate the following:

On average, how often do you use the library in person?	Daily	2 to 4 times a week	Once a week	2 to 3 times a month	Once a month or less	Never
On average, how often do you access library materials, services and databases (such as ProQuest and EBSCOhost) without visiting the library?	Daily	2 to 4 times a week	Once a week	2 to 3 times a month	Once a month or less	Never

- Variables considered
- Demographic and Academic Preparedness
- ACT Composite (max. 36)
- 1st Generation College Student (Y/N)
- Session Grade Point Average (GPA)
- Pell recipient (Y/N)
- Athlete (Y/N)
- Race (white, black, Hispanic, Pacific Islander/Native Hawaiian, Asian, American Indian/Alaska Native, Multi-race, Unknown)
- Sex (F, M)
- High School Type (public or private)
- Radius (miles from home)
- Full-time or Part-time Student
- Library Usage Variables
- Check out books
- Locate articles
- Read newspapers or magazines
- Use items on reserve
- Study alone
- Study with a group
- Use the group study rooms
- Use printer or photocopier
- Use computers for academic purposes
- Visit the Help Desk
- Visit the Academic Resource Center (ARC)
- Visit the Merton Center
- Use a laptop
- Use the computers for personal use
- Meet friends
- Use library at all
- Use library in person
- Access library online
- Outcome Variables

- Graduated in four or five years (Y/N)
- Returned in the second year (Y/N)
- Cumulative GPA in freshman year (0-4.0)
- Cumulative GPA in senior year (0-4.0)

Telling the Whole Story: A Mixed Methods Approach to Assessing Roaming Reference Services

Consuella Askew and Marissa Ball
Florida International University, USA

Abstract

In November 2011, Florida International University (FIU) Libraries launched a roaming reference service with a small group of 12 volunteers, each armed with an iPad2. We used a mixed method approach allowing us to use reference transaction data, and user/librarian survey data, along with librarian comments and stories in order to determine the efficacy of the program.

Our findings include that the majority of our students typically seek assistance from the librarians once a term (53%), but the majority (73%) also indicated that they would seek a librarian's assistance more frequently, if a librarian was available on the various floors of the library. Overall, our users indicated that they were "Satisfied" (33–66%) to "Very Satisfied" (33–47%) with all aspects of our roaming service. Librarian responses indicate overall enthusiasm and positive feelings about the program, but note that additional enhancements are needed to ensure the continued development and effectiveness of the service.

Introduction

Academic librarians continue to explore ways to improve and increase reference services to our users in this ubiquitous information age. Throughout the years many different methods of extending face-to-face reference services have been tried and adopted such as the telephone, e-mail, chat, instant messaging (IM)/text messaging, embedding, and roving. Corollary to these efforts has been an ongoing debate about whether or not to eliminate the physical reference desk. Supporters of this radical idea substantiate their opinion by citing the decreasing number of reference transactions often noted in the literature, the disproportionate numbers of directional or information questions being asked at the reference desk and the inability to assist users at their point of need because of being "tethered" to a physical

desk and in turn, its resources. However, many libraries have compromised and simply minimized the reference desk area by utilizing mobile devices allowing their librarians to roam or rove beyond the desk and become more easily accessible to their users.¹ Champions of this "untethered" approach note that the physical desk serves as a barrier that poses an obstruction to delivering services to users. Dempsey best sums up this ongoing debate by suggesting that its premise is not a matter of "space and furniture," but rather it is "a question of the role of the librarian in working with and being accessible to library users."²

It is in recognition of our need to work with, and be accessible to our library users that the FIU Libraries, Information & Research Services Librarians implemented a roaming reference service.

In the literature, the terms roaming or roving have been used interchangeably when referring to this type of mobile reference. McDonald and McCabe point out.

The term "roaming" reference has never been clearly defined. Generally, it has been used to describe services provided in a non-traditional manner: roving, outpost, offsite and point of need reference services. In essence, it is anything occurring away from the confines of the reference desk.³

Balas offers a more succinct definition of roving reference

... reference conducted outside of the reference desk.⁴

The definition given for each is the same. Whether referred to as "roaming" reference or "roving" reference, the shared quality is that this action

takes place in areas that are beyond the physical reference desk—throughout the library buildings and across the university campuses. The librarians at FIU prefer to be called “roamers” rather than “rovers” and so, for the purposes of this research we will use the term roamers and its appropriate derivatives.

Roaming @ FIU

FIU is a large, urban, public, multi-campus university system serving nearly 46,000 students in Miami, Florida. Ranked as one of the 25 largest public universities in the nation, approximately 80% of its diverse student body consists of undergraduates.⁵ The FIU Libraries are comprised of two distinct libraries, the Steven and Dorothea Green Library housed at the Modesto A. Maidique Campus and the Glenn Hubert Library at the Biscayne Bay Campus. While the campuses and libraries serve user populations distinct in age, population size, programs and colleges served, fundamental similarities are shared—bustling and overflowing buildings serving commuter-based populations. Existing reference services across both libraries include the traditional face-to-face services at the desk, in-depth research consultations, support via phone and email, and help through the increasingly popular chat and texting service. Although they appreciate the convenience of the virtual/chat services, they still overwhelmingly prefer the face-to-face interaction with the reference librarians. Feedback forms at the service desks and anecdotal observation have uncovered the mounting frustrations among students in the buildings. Space in the FIU libraries is at premium and students are reluctant to leave their study spots in order to approach a librarian at a fixed service point. A phenomenon we share with many other libraries represented in the literature.⁶ Penner notes,

With the ability to transform or personalize their areas, students are reluctant to leave their belonging to ask for help at the reference desk, particularly when the desk is located on another floor of the library.⁷

These factors along with shifting user needs, mounting space limitations, and the continued evolution of print to electronic library collections have presented a clear need for increased flexibility and mobility to our traditional reference services. The “Ask-Us-Anywhere” roaming reference pilot program was developed in an attempt to address

these demands.

Funding for the technology purchased to support the pilot service was secured through a Student Technology Fee grant provided by the university. iPads were selected as the device of choice for the roamers due to the at-hand accessibility of the web and library resources as well their ease of use. The technology of the iPads allows for quick and easy access to the library’s OPAC, research guides, FAQs, databases, and website. This, in turn, allowed for seamless and quick integration of the device into our proposed roaming service. The grant allowed for the purchase of 12 iPad2s, wireless keyboards, and OtterBox protective cases. Given the nature of the iPads as personal devices, as well as the scheduling difficulties that would arise from sharing devices across campuses and maneuvering around busy schedules, it was decided by the program coordinators, that a successful program would require each librarian to be assigned their own iPad.

Twelve volunteers for the pilot service were recruited, five at the Hubert Library and seven at the Green Library. In order to participate in the program, librarians were required to roam for two hours each week, between the peak service hours of 10 a.m. and 2 p.m., on the day(s) of their choosing. It was decided that roaming was not just limited to the library buildings; the roaming librarians were also asked attend orientations and other events around the university to provide outreach services and help promote the library. Participants were also required to attend a training session prior to their first day of roaming.

To help facilitate the training sessions, an *Ask Us Anywhere: iPad Roving/Roaming* guide was created using LibGuides (libguides.fiu.edu/ipads). The workshop, as well as the guide, covered basics of device usage, the setup of their individual accounts (i.e., e-mail, calendars, iTunes), network/wireless access, app recommendations, bookmark suggestions, and the inputting and tracking of statistics. In addition, detailed descriptions were shared for the helpful applications (app) already available on the devices, such as *iMessages*, *Safari browser* and *Camera*. Suggestions and recommendations for apps to download included: *FIU Mobile*, *Evernote*, and *Skitch*. Guidelines for best practices on how to approach patrons and what

to do when roaming were also addressed using roaming etiquette and techniques compiled from customer service fundamentals found in the library literature and business related literature.

Review of the Literature

Roaming reference has been around for many years. In its earliest form, librarians would walk around the library to assist patrons in need. However, as more information was produced in electronic or web format, it became harder for the librarians to access this information while roaming, when their computer station was at the reference desk. This challenge was resolved as libraries increased their numbers of stand-alone OPAC terminals, which were strategically scattered throughout the library buildings;⁸ then, as electronic information became mobile in the first decade of the new millennium, tablet PCs were tried, with mixed results.⁹ The smartphone particularly, the iPhone, was another candidate, but problems with connectivity, screen size, non-standardization, formatting, and functionality prevented the early generations of this technology from being adopted on a long term basis.¹⁰ In 2010, Apple introduced the iPad and libraries quickly saw the utility of this technology for their services. Given its short lifespan, a review of the literature reveals that little has been written specifically about employing iPads for roaming reference services.

The roaming programs identified in the literature shared a number of commonalities across library types such as: reference librarians being able to provide services beyond the reference desk; the provision of just-in-time service; the ability to access web based library resources away from the desk;¹¹ and, library staff being able to access multiple instances of their online catalog in order to assist large crowds of users.¹² However, the statistics collection and tracking for these iPad roaming programs varied widely by method and scope and noted that challenges included using mobile devices to access the online catalog, wifi connections and recording statistics.¹³

The most thorough iPad roaming reference study to date was conducted by McCabe and MacDonald at the University of Northern British Columbia.¹⁴ Using roaming reference as a way to address their declining reference statistics, their librarians staffed the service for six months, during which time

they collected transaction data using LimeSurvey software to capture query type, location and approach. They implemented two iterations of the roaming service: one integrated with the traditional service desk duties and the other as a standalone service. The second iteration required librarians to provide roaming service in addition to their desk service hours. They asked patrons to fill out an optional e-questionnaire at the end of the roaming transaction to collect data related to past use of reference services, provide thoughts on the service and to find out whether or not the service made them more apt to contact a librarian for help.

They realized an overall increase of 228 reference questions with the roaming service; the majority of which (67%) were research related. Their results showed that roving reference with iPads proved to be very successful when librarians were only assigned to rove, but less successful when they attempted to combine desk hours alongside their roving duties. They found that the integration of roaming and reference desk resulted in a 56% decline in the total number of roaming reference questions from the previous iteration where roaming was implemented in addition to desk hours. Although they indicated that they did collect patron data, it was not discussed along with the rest of their results.

The Youth Services (YS) division at the Boise Main Library received a LSTA Just-in-Time grant that allowed them to acquire four iPad2s to equip nine staff members for roving reference. Their goal was to increase staff interaction with patrons, by giving them tools that allowed them to get out from behind the reference desk. They kept their traditional reference desk, but in May's words, "The physical reference desk area has been minimized. . ."¹⁵ by decreasing the number of librarians on duty at the desk from two to one, with one or more roving librarian.

After implementing the program, they found that they were able to have multiple librarians assisting multiple patrons at the same time using the staff features of the catalog. However, they found that their web-based public access catalog was not optimized to work with mobile technologies. In particular, they were unable to access certain popular staff functions or to easily adjust the screen size with the mobile device. Other complaints such

as ergonomic issues with long-term use of the device, the lack of ease when switching back and forth between applications and cutting and pasting were also common amongst the less comfortable with the technology. They recommended, "Ideally each librarian would have her or his own unit, allowing for personalization of the apps and other customization."¹⁶ However, there was no data presented in the article transaction or otherwise, to illustrate how roving impacted reference services.

At the University of Warwick Library, Widdows recounts their roving reference experiences using the mobile phone and their trial of the iPad as a potential roving tool.¹⁷ The Warwick library no longer has a traditional reference service desk, but utilizes HelpDesks which deal primarily with circulation and account questions as a means of proving query "triage" and patrons are referred to specialists staff, or rovers, as needed. The rovers also provide backup support to the HelpDesks during busy times.

Their iPad trial lasted one week consisting of 35 service hours. Fifty-six of the total 230 front-of-the-house (HelpDesks) queries were handled by the rovers; 26 of these roving queries actually required the use of the iPad. Widdows noted the major challenge with the iPad for their library was that it had no phone feature, prohibiting the rovers from contacting a specialist for more complex queries. Like the Boise Library, Warwick librarians also ran into problems accessing the full features of their web-based catalog using the iPad.

Although Widdows states that they collected data on their roaming program using a specially built application that was designed around their existing data recording sheet, other than the few transaction statistics shared above, there was no other data presented to illustrate the users' or the rovers' perspectives on the program.

At Southern Illinois University-Carbondale, Morris Library,¹⁸ three iPads were integrated into an existing roaming program. Nine reference librarians shared usage of the iPads, which were checked out in shifts. The benefits included allowing the Virtual Librarian mobility while staffing the virtual reference service, they also found the multi-functionality of the iPad ideal for reference enabling access to the online catalog,

reference tools, as an e-book reader, etc. The drawbacks noted by the authors presented some surprises. The literature typically reflects that roaming librarians tend to prefer the lighter, more mobile iPad, to the laptop. However, for this program, the librarians reported feeling "uncomfortable" with the iPad as a replacement for the laptop. The authors agreed with May, that it would be ideal for each reference librarian to have had his or her own iPad, which would minimize the need for the continual account management and allow each individual to customize the iPad to their individual needs.

Graves and Lott concentrated on the deployment of the program and did not present any transactional or assessment data of any kind. However, they explained this omission in their "Next steps and the future" section of the article, saying that assessment and usage data will be compiled and analyzed as part of their next steps in determining how the library moves forward with their roaming service.¹⁹

The Librarians at the Albin O. Kuhm Library & Gallery²⁰ collected two semesters of data regarding their iPad roaming service, which operated for four hours per week in predefined locations. The roaming locations were identified by observing traffic patterns in their 24-hr library study space, the commuter lounge, the University Center, and academic department offices.

From the transactional data collected during this period which consisted of 60 queries,²¹ they determined: more than 75% of the service users are students, the busy times of the week are Tuesday through Thursday from 2:00 p.m. to 4:00 p.m., and more than half of the questions they received were library related. While they go on to mention in the article, the anecdotal feedback they had received from their campus community, there was no attempt to formalize a data collection effort to capture and analyze this qualitative data. Furthermore, there was no mention of future assessment efforts.

The literature seems to indicate that all of the experimenting libraries—academic and public—have had overall positive experiences with integrating this tool into their roaming services. However, it is apparent that very little empirical

data has been collected on iPad roaming programs or roaming programs in general, in the last two years. This is illustrated by the fact that three of the five articles discussed above present mostly transactional or usage data. None of the authors provided any type of assessment data—empirical or otherwise—to represent program effectiveness, user satisfaction or feedback. This study attempts to fill this existing gap in the professional literature and create a foundation upon which to build assessment techniques for roaming services.

Methodology

In order to get a big picture view of the roaming service at FIU Libraries, we looked at our reference service usage data. The Libraries have invested in Springshare's LibAnswers product, which includes a reference analytics module that we use to record all of our reference transaction data. Using this product we are able to easily track, chart, and cross-tabulate data for a variety of reporting purposes. To get at our users' perspective of the service in particular, a survey was developed to obtain their feedback at the point of service. To round out this data collection effort, a survey was created for the librarian to complete at the conclusion of the reference transaction. In addition, Librarians were asked to provide feedback on the overall program by responding to five open-ended questions. The questions were geared to solicit their feedback and observations on their roaming experience and perceived user reactions.

The survey instruments used to collect the data were created using Qualtrics, a web-based survey tool, licensed by our university. In order to encourage participation, the surveys were very brief; the user survey consisted of four items and the librarian survey had two items. The survey items were piloted by a small group of faculty and students before they were made public. To allay any concerns about privacy, users were advised that their responses were confidential and once they clicked on the survey submit button, all responses would be recorded and disappear before the iPad was handed back to the librarian. After the user completed the survey, the librarian would then complete the corresponding librarian survey. The data collected from both surveys reside behind a firewall on a secure university server.

The roaming service coordinators collected feedback about the program from the librarians asking them to respond to five questions concerning the service implementation, user reception, suggestions for improvement and an open-ended question for any additional comments they may have about the program. This data will be used in conjunction with the user surveys to identify best practices and to improve the service.

Data Analysis

Data was collected for a period of approximately 10 weeks (52 days) during the beginning of fall 2012 semester for a total of 208 service hours, between our peak hours of 10 a.m.–2:00 p.m., Monday thru Friday. Our reference analytics system shows that during this timeframe, the reference librarians responded to a total of 2850 queries via our virtual/mobile services that include chat/IM, SMS/Text, telephone, email, and phone. Roaming reference transactions totaled 168 queries ($n=168$), which represents 5% of the total number of these virtual/mobile transactions.

A deeper analysis of the transaction data recorded provides us with some useful information not only about the program but also about our library. Our results indicate that our roamers are most often inside the library (89%), when a transaction occurs. The majority (79%) of the service users are undergraduates. The nature of the roaming queries is most likely to be directional/informational (73%), followed by research related (20%) and least likely to be technology related (7%). The overwhelming majority (88%) of the transactions take between one and ten minutes to complete.

The student surveys ($n=15$) provided insight to user behavior and their satisfaction levels of the service. When asked why they were in the library on that day, 33% of the users responded that they were there to check out a book or reserve an item, 27% were in the library to study by themselves or research an assignment for a class or class project. The third highest response by users was to check out an electronic device (21%) such as a laptop, iPad, Kindle etc. (See Figure 1.)

Figure 1: Purpose of Library Visit

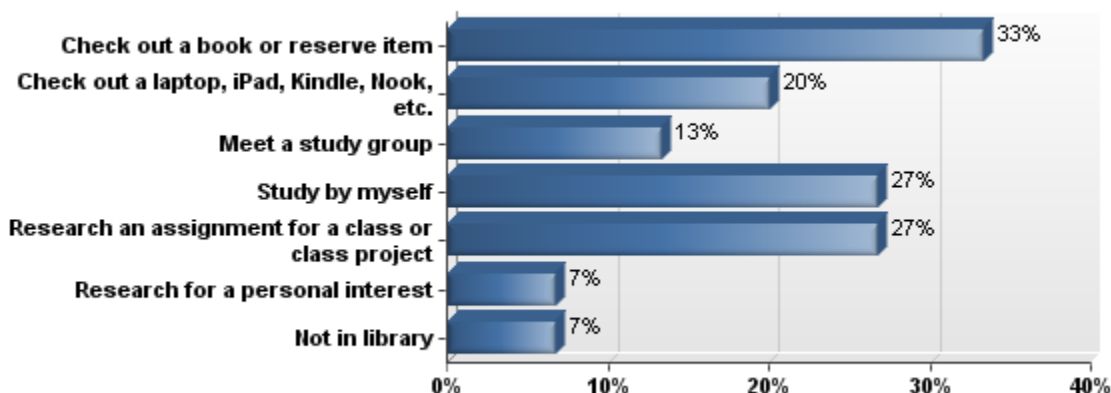


Figure 2: How Often User Asks for Librarian Assistance

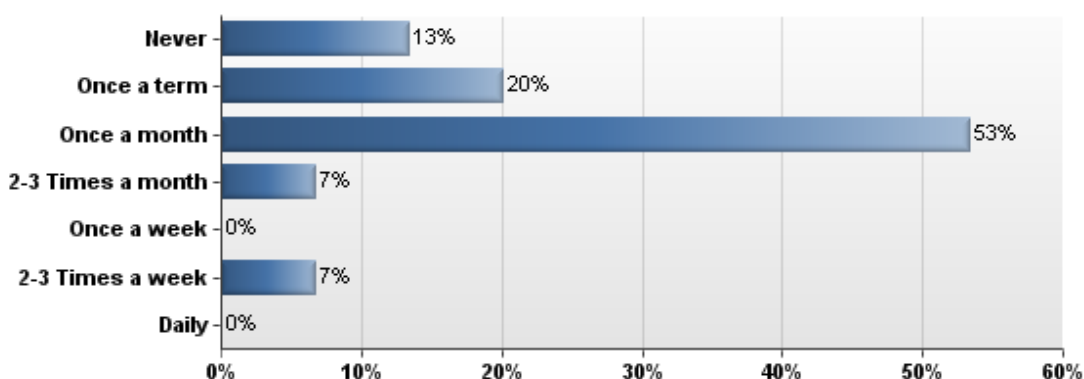


Table 1: User Level of Service Satisfaction

Question	Very Satisfied	Satisfied	Neutral
Librarian was approachable and friendly	47%	33%	20%
Librarian was easily recognized as a library employee	33%	60%	7%
I got the help I needed	40%	60%	0%

Figure 2 shows the majority of the respondents indicated that they asked a librarian for assistance about once a month.

The third survey item collected data regarding user satisfaction with elements of the roaming program using a Likert type satisfaction scale (See Table 1).

In particular, we wanted to know if the roaming librarians were friendly and approachable, easily identifiable, and of course, if the user received the help they needed. Forty-seven percent of the respondents indicated that they were “Very Satisfied” that the librarian who assisted them was approachable and friendly; however, 20% of the respondents indicated they were “Neutral.” Over half of the respondents (60%) indicated satisfaction with the ease by which they could recognize the librarian as a library employee and the help that they received. However, only a third (33%) of the respondents indicated being “Very Satisfied” with the ease by which they could recognize the librarian as a library employee and 7% gave “Neutral” rating to this same item indicating a program need.

The last survey item asked if the respondent would be more willing to ask for assistance if a librarian

were available on the various floors of the library, to which 73% responded “Yes.” The low number of user responses prevents us from gathering any meaningful information from a cross tabulation of the responses to this item with survey item #2 regarding their frequency of asking assistance to find out if there is a relationship between the respondents who tended to ask a librarian for help more often to those who would be more likely to seek assistance from a librarian posted on the various floors of the library throughout the day.

The responses to the Librarian surveys ($n=23$) provided insight to their behavior while roaming. The librarians indicated that they typically approached the student (74%). There seemed to be two favorite roaming locations between both campuses: the second floor of Green Library (35%) and the third floor of Hubert Library (30%). (See Figure 3)

Figure 3: Roamer Frequented Locations

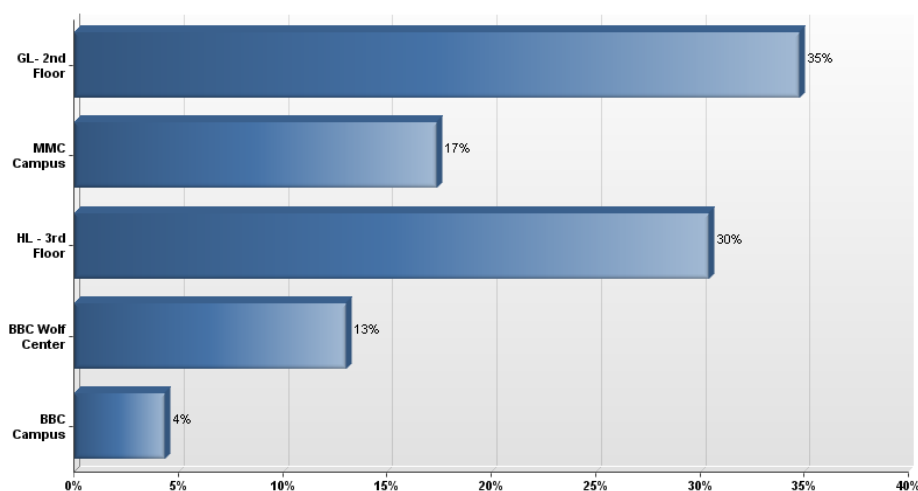
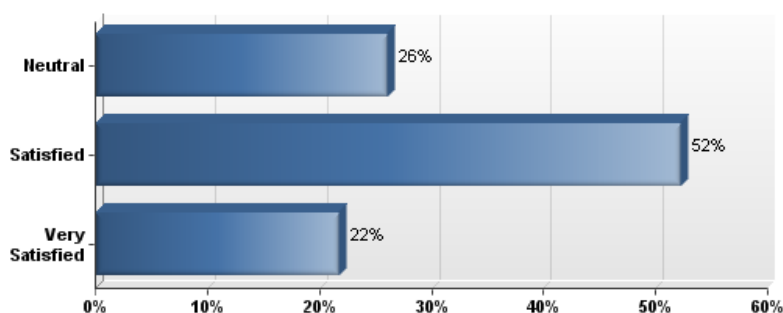


Figure 4: Roamers' Rating of User's Service Satisfaction Level

The Librarians' response to the survey item asking them to rank how they felt the user's level of satisfaction was with their assistance indicated that a little over half (52%) felt their user was "Satisfied" with the services received a few indicated their users were "Very Satisfied" (22%) with their assistance. Ironically, it seems the users reported being much more satisfied with the service than the librarians perceived them to be.

While the quantitative data sheds light on the user's behavior, the qualitative data collected illuminates librarian behavior and perceptions. Additionally, this data provides useful suggestions for changes to the services from the people who know best, those who are roaming. As the quantitative data showed, roamers indicated a preference for roaming in one of three places in and around the Green and Hubert Libraries. Surprisingly the comments for the favorite spot in the Green Library (GL), the third floor, differed from the recorded transaction locations, which mostly took place on the second floor of the library. The GL librarians indicated that they liked to roam on the third and seventh floors, as these floors have no service desk. Since the Hubert Library (HL) is relatively small, the librarians roam in the library, the academic buildings, and the student center where the students tend to congregate. This strategy is best illustrated by one of the HL librarians who says that she roams

...through the library and around the WUC [Wolf University Center]. Sometimes through AC1 [Academic Center 1]...Because the library is too small and I often find I get more questions outside of [sic] library.

Very few of the challenges mentioned in the literature were echoed by the FIU roamers. Technology was often cited as a challenge in the literature, such as poor wireless connection, catalog accessibility and screen switching, etc. However, the challenges identified from the FIU experiences were unique and included excessive noise levels, excessive temperatures in certain locations (it is Florida after all), and poor recognition or visibility of the service. One librarian commented on feeling a "little intrusive" when roaming a floor where the students are quietly studying saying,

I must admit that sometimes, when it is very quiet and students are busily engaged, I feel a little intrusive and somewhat like a floor walker

Although she ends her comment by admitting, that the sentiment may be "Just my hang up, of course." Another librarian expressed the difficulty of having students feel comfortable with approaching them for help, saying

The most challenging aspect so far has been having the students approach us for help. You can usually find students who need help if you ask them, but they will not approach us themselves.

The above statement also substantiates the Librarian Survey results that show the librarian most often initiated the roaming transactions.

A number of free apps were suggested and recommended for use by the roamers during the roaming service training session and the roamers

were taught how to install these apps on their iPad. What has become clear from their responses is many have not used these recommended apps. Most of the roamers report that instead of using apps they more frequently used bookmarks instead. One of the more ambitious and perhaps tech savvy roamers indicated that he uses "prezi viewer, dropbox (most often), and adobe reader."

The majority of the roaming librarians agree that the service needs better publicity and marketing to raise the students' awareness of the service and help them easily identify roamers when they needed one. As one librarian commented, the service needed to be more "high profile." However it became clear through other comments that along with the high profile there was a need to implement a "consistent schedule."

When asked to look into the future and share their vision of our roaming service 1-2 years from now, all but one roamer indicated that they saw this service existing in consort with the traditional reference desk as opposed to a standalone service. Comment after comment, it was clearly and strongly expressed that the traditional reference desk should continue to be a point of service for reference.

I believe the desk will always be needed

As a traditionalist, I like the idea of having a reference Desk. I think people need to identify a specific place where they can go for help.

Roaming should not replace the reference desk: it's an extra way to help people.

However, there was one librarian who saw things a different way:

I see reference increasingly decentralized, online, ubiquitous, and continuous....

When asked to provide any additional comments they had about the service they unanimously presented overall positive and enthusiastic feelings about their service experience.

I've enjoyed it quite a bit, and believe this and online help are closer to the future of reference services than sitting at a desk.

There is great potential with this service. We just have to keep tweaking.

The students are always very happy when they receive help right where they are.

The favorable reception they got from the students who asked for their help most likely reinforced their good experience.

Summary and Conclusions

One of the most glaring findings from the number of directional and information queries we encounter is that we clearly need to improve our signage in the library. As well, we need to rethink the position of our service desk, which currently sits in the middle of the floor close to the entrance of the library. By addressing both of these items, we will probably see a dramatic decrease in the number of these particular query types.

The data tells us that the respondents who received assistance from a roamer are more likely to be in the library to check out a book or reserve material, than to conduct research, or to study by themselves. Ironically, given the interactive nature of the first two activities, their responses indicated that they are less likely to ask a librarian for assistance. This was corroborated with the data from the roamers, who indicated that in most cases, they approached the student to initiate the reference transaction instead of the reverse. Given their reluctance to ask a librarian for help, it was good to see that users were most often satisfied with the help they received from the roamers and their overall experience. Although more respondents indicated that they were "Very Satisfied" and "Satisfied" with the librarian being approachable and friendly, 20% responded "Neutral" to this item. This suggests that we need to be more aware of our body language and facial expressions as we are approached by a student or as we approach them.

Student responses concerning their recognition of the roamers, as a library employee can easily be correlated to the Librarians' suggestions that there is a need for a more effective marketing and publicity strategy for the service. Our current publicity consisted of announcing it via our social network venues and advertising the service on our

internal digital signage displays. Clearly there is more work to be done in this area and we are in the process of addressing these areas.

What was most encouraging was that the respondents indicated that they would be more likely to seek assistance from a library if one were available on the various floors of the library. This suggests to us that we are on the right track with our roaming service and it signifies there is a need for us to redefine our service strategy. As several roamers noted, we need to provide this service on a more consistent schedule and in conjunction with the reference service desk; therefore, further consideration and planning will need to take place as we consider our future approach to roaming.

Roaming is not a new service in academic libraries, however, with the addition of mobile technology academic librarians have more opportunities to become “unchained” from the traditional desk and meet their users wherever they are. As reference services become more “decentralized” and personalized, there is a need for further research to determine to what extent does culture, language or gender impact a library user’s willingness and comfort level to approach a librarian for help. In addition, academic libraries should consider not so much the “what” we do, as illustrated by the traditional reference transactional data collected but should also incorporate data collection to describe who we serve, how we serve them, and where we serve them.

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Shop Your Way to Service Excellence: Secret Shopping for Academic Libraries

Agnes K. Bradshaw and Kathryn M. Crowe
University of North Carolina at Greensboro, USA

Abstract

Secret or mystery shopping is a standard method of evaluating customer service in the retail and hospitality world. While many public libraries have implemented mystery shopping practices few academic institutions have done so. The University Libraries at the University of North Carolina at Greensboro conducted two mystery shopper exercises in 2010 and 2012. Students were recruited from a Hospitality Management class to serve as the secret shoppers. They attended a 90 minute training session and received scripted questions to use. "Shoppers" completed a rating sheet for each encounter that was based on customer service values established by the Libraries. Averages of the overall results of the first exercise in 2010 were shared with the entire library and more specific departmental information shared with the appropriate supervisor. Findings were generally quite positive but indicated that we could improve "going the extra mile" and "confirming satisfaction." As a result, we developed training sessions for public services staff which were delivered during summer 2011. A LibGuide that included training videos was created for students and all public services students were required to view the videos and provide comments. In addition, we developed more specific public service standards for procedures such as answering the telephone, confirming satisfaction and referring patrons to other offices. The Secret Shopper assessment was administered again in spring 2012 to see if scores improved. In the interim the Special Collections unit added a service point so it was added to the study. The results in the second study indicated improvement.

Introduction

The University of North Carolina at Greensboro (UNCG), part of the 17-campus University of North Carolina (UNC) system, is a publicly-supported university with High Research Activity Carnegie classification. In 2012 the total enrollment was 18,175 with a faculty of approximately 1,000.

The University Libraries include the Walter Clinton Jackson main library and the Harold Schiffman Music Library. At the time of the initial study Jackson Library had two public service points, Reference and Checkout (Access Services) on the first floor. Later, the Special Collections and University Archives (SCUA) department added a service point on the second floor. The Schiffman Music Library has one combined service point. These service desks are staffed by professional librarians, support staff and student employees. The Reference Desk in Jackson and the Schiffman service point both employ graduate students from the Libraries and Information Studies program as interns. In fall 2012, a Digital Media Commons was added in Jackson Library, so was not included in this assessment project.

Previous assessments conducted by the University Libraries provided positive results for services. In 2008 the Libraries conducted LibQUAL+® and the overall perceived mean for "Affect of Service" was 7.5 on the nine-point scale. Every two years the UNC system conducts surveys of all sophomores and seniors which include questions about library services. In the 2010 senior survey the Libraries scored 3.5 on a four-point scale for "staff responsiveness" and 3.6 for "library services overall." Longitudinally, we showed improvement in these categories since 1998 when we scored 3.2 on both these questions. In the 2010 sophomore survey the Libraries received 4.1 out of 5 on "helpfulness of staff." Because this was a newly revised survey we don't have longitudinal data for it.¹

Although the Libraries performed well on these assessments they were satisfaction surveys rather than in-depth studies focused on the user experience. And, while most qualitative comments on the 2008 LibQUAL+ survey were very positive, some indicated that users had less than satisfactory

interactions at service desks:

I sometimes find the student staff to be really annoyed at having to help me, even just checking out books.

I cannot send my students to the library with confidence that they will be treated with the same respect.

In recent years academic libraries are increasingly emphasizing services and access over building legacy collections and the UNCG libraries are following this trend. Both Jackson and Schiffman offer computers with a wide variety of software, group and quiet study space and technology checkout as well as traditional print and AV materials. Chat, e-mail and texting are offered in addition to in-house service. Jackson Library has a 24/5 space that is very popular. Together the Libraries have over one million visitors each year. Like many academic libraries, we are realigning service staff to rely more on paraprofessionals for reference service so that librarians may focus on information literacy and specialized liaison services. Often these staff members are not part of the Reference Department which can present training challenges. The reliance on student employees with a high turnover rate can also make it difficult to provide consistent service. After administering LibQUAL+ in 2008 the Libraries sought to enhance the quality of the customer experience at service desks and via phone and chat. To begin the process, the Associate Dean for Public Services charged a task force in 2009 to develop customer service values to serve as a guide for both external and internal service. These values were vetted among the public service departments and posted on the Libraries' web page when completed.² The task force recommended a training program for customer service that "should be shaped through ongoing assessment."

Literature Review

Mystery shopping is a term that is familiar in industries that are heavily focused on customer service such as financial services, retail, restaurants, and hospitality. In 2010, the mystery shopping business was "estimated to be a \$1.5 billion industry, up from roughly \$600 million in 2004."³ It should be noted that many of the industries that use mystery shopping use professional services organizations that hire and

train the shoppers. There have also been attempts to utilize the mystery shopping concept in other non-customer service areas, such as patient satisfaction with health care services. And, while much of the literature once focused on mystery shopping done in person, work is now being conducted to evaluate the quality of services delivered in virtual environments. According to the 14th annual Mystery Shopping Study conducted by The E-Tailing Group, "the study confirms that merchants are refining online tactics to find, inform, personalize and connect with improved speed and efficiency, while diligently developing social and mobile initiatives."⁴

The literature reveals that the earliest use of mystery shopping in a library took place in 1996 in a public library in Modesto, California. Mystery shoppers were used to assess the library's customer service, as part of the county's quality service initiative.⁵ Subsequent use of mystery shopping in libraries has been to measure the quality of the customer service experience; however there is not a universal definition of quality customer service. In addition, there is not a universal way to assess quality of customer service. Is it the amount of time a person has to wait to speak with someone at the reference desk? Is it providing free coffee to students at exam time? Is it offering résumé writing and computer workshops at public libraries in response to the needs of the local community?⁶ Another factor that must be considered is that in many instances, the library can be considered a "self-service" organization; patrons can come into the library, and in many instances find what they are looking for without requesting assistance from library personnel. Even those that don't find what they are seeking still may not approach a service point for assistance.

The literature also shows that the use of mystery shoppers is as varied as the desired outcomes. For some libraries, when measuring customer service quality, the focus could be on the accuracy of answers received at the reference desk.⁷ There are those that use mystery shopping to judge the accuracy of answers received during a reference interview as well as an assessment of the appropriateness and accessibility of physical space and signage.⁸ Another use of mystery shopping is the assessment and development of customer service training needs. The assessment for training needs is not just confined to the front-line public

services staff (for example Reference and Access Services/Circulation department staffs) but internal departments as well, such as the human resources department. In areas that are profit driven, mystery shopping has been used to measure up-selling offers⁹ and identify employees with promotional potential.¹⁰ In one library, they worked with the state's Small Business Development Center to tailor the mystery shopping process for the needs of their library. Various service points were "shopped" and they made sure to include a variety of "customers" so they could get a better idea of the needs of various populations (e.g. patrons whose first language was not English, parents with children, etc. Their shoppers used repeat visits (five times) in order to get to relieve employee concerns about the impact of workload variability on the customer service encounter and consistency of responses.¹¹

Support and agreement by stakeholders is always crucial in implementing a mystery shopper initiative in a library. For public libraries, authorization by the library board or employee union may be required prior to implementing such a program. For academic libraries, the need to get permission of the university's Institutional Review Board (IRB) will probably be required.¹² Benjes-Small and Kocovar-Weidinger also discussed the importance of using written guidelines of appropriate behavior to which all staff are exposed as a way to judge or measure whether or not customer services standards are being met. Both authors used students as mystery shoppers. At Longwood University, the results of the survey were used as a part of the employees' performance review, which resulted in revised job descriptions and using the mystery shopper assessment to measure progress.¹³

In some instances, the results of mystery shopper evaluations have been received as unwelcome surprises to the library staff. There are also instances in which library staff resist efforts to measure quality service output as a function of a retail operation.¹⁴ Most of the literature shows that mystery shopping efforts have been focused only on the delivery of customer service to external users and not internal customer service providers, such as cataloging, acquisitions, administration, etc.

The literature indicates that the majority of

efforts to use mystery shopping in libraries occur in the public library sector. Depending on the environment (unionized or civil service), there may be barriers to using mystery shopping as a measurement of job performance or to be used as an assessment of promotional potential. Academic libraries and public libraries do have many commonalities, but also have differences in their missions as well as a different patron base. One of the commonalities of both academic and public libraries is, unlike retail establishments, they do not have a vested interest in trying to get a patron to "buy" additional products and services; however, library employees should have a vested interest in ensuring that the patron is aware of the products and services that could be of assistance, either at the time of the visit, or during a future one. Both academic and public libraries should seek to create an environment where customers (or patrons) are comfortable seeking assistance within any service point. The Association of College and Research Libraries (ACRL) recently announced the "Top Ten Trends for Academic Libraries." Two of the trends were "staffing" and "user behaviors and expectations."¹⁵ Fair or not, library users often base their expectations of customer service on customer service that is provided in non-library environments. As stated by Sillipigni, et al., "Librarians are finding that they must compete with other, more convenient, familiar, and easy-to-use information sources. The user once built workflows around the library systems and services, but now increasingly, the library must build its services around user workflows."¹⁶ Failure to assess customer service delivery and the quality of that delivery would mean we are ignoring the needs of our users. Users who feel their needs are being ignored will turn to other, more welcoming resources regardless if they are the best ones for their need.

Method and Procedures

After reviewing the literature the Libraries determined that the mystery shopper protocol was the best method to assess our service interactions. We established as the outcome of the study "customer service will reflect the values and standards established by the University Libraries." The study completed at Radford and Longwood Universities in 2010 was an excellent model and we adapted their protocol for our project.¹⁷ We conducted the first mystery shopper assessment in fall 2010 and included desk and phone service

for all service points (Reference and Checkout in Jackson and the service desk in Schiffman) and chat service for Reference. The research team included the Associate Dean for Public Services, the Human Resources Librarian and the Assessment Analyst. Because secret shopping is a standard in service industries we collaborated with UNCG's Hospitality and Tourism Management Department to recruit students as shoppers. A professor agreed to award extra credit to students who participated. We also gave them a \$10 credit for the campus food service. We developed a rating sheet (Appendix A) for the students to use based on the customer service values mentioned above. Although we certainly care about accuracy, the emphasis for this assessment was on the customer service *experience*. We included four behaviors: greeting, follow-up, confirmation of satisfaction and referral with three levels of rating: 1(Poor), 2(Satisfactory) and 3(Very Good). Brief descriptions of each behavior were included on the rating sheet along with criteria for each level and type of service. For example, for greeting at a service desk, the following guidance was provided for "very good:" "A 'very good' for greeting for in-person service was defined as 'Employee made eye contact and greeted me in a positive manner,'" while "poor" was "Employee was distracted and did not acknowledge me." We also had three yes/no questions: "Employee treated me with respect," "Employee avoided jargon or technical language," and "Employee went the extra mile." Guidelines for these questions were covered during their training. Space for additional comments was also included.

We sought to make the assessment as "real life" and anonymous as possible. We informed staff in the departments to be studied that the exercise would take place sometime during the semester but we did not give exact dates. We met with each department to apprise them of the protocol and assure them it was not part of their performance review but an overall assessment of our service so that we could address any issues identified. To that end we did not include any date/time stamps in the results. The questions we developed for the survey centered on the feedback that we received from the initial LibQUAL+ results indicating that some patrons did not feel they were treated respectfully by staff. We collaborated with heads of the Reference, Access Services and Schiffman Music Library to obtain some of the most frequently asked questions considered "typical." Questions

for the Checkout Desk emphasized service-related questions, that could usually be answered with basic responses, such as "How many books can I check out at one time?" or "Where can I print something in color?" (Appendix B). While certain categories of service related questions may seem easy to answer, we wanted to ensure that shoppers were being asked the right clarifying questions by employees, not to see if the correct answer was provided (although that was a concern, it was not the primary focus of this study). For example, it would be simple to tell a questioner that the library is open 24 hours, 5 days a week, but in reality, that schedule is only applicable to students and faculty. For other patrons, the library closes at 12:00 AM.

For questions that would be asked at the Reference Desk, the head of the Department of Reference and Instructional Services provided a list of questions relating to common assignments and citation issues. Since often times the Reference Desk is staffed by paraprofessional staff, we did not want to present a difficult question that would require obtaining additional assistance, or place the questioner in a position which would require him/her to handle questions they could not answer. Examples of questions asked of Reference staff included "can you help me find articles on identity theft?" and "I am a UNCG graduate, how do I access the databases from home?" or "How to do cite this in APA style?" (see Appendix B for additional questions).

We required the shoppers to attend a 90 minute training session. During the training, we provided an explanation of the importance of excellent customer service to the Libraries as well as the customer service values (and behavioral examples of them) that staff were expected to demonstrate and we provided instruction on what to look for when observing staff behaviors. Each shopper was assigned a question for each service point (Reference Desk, Access Services Desk and the Schiffman Music Library) and type of service (in-person, telephone and chat) with the exception of the Schiffman Music Library and Access Services; chat service was not offered in Schiffman at the time of the initial survey and is still not available in the Access Services department. We requested that shoppers vary their times of contact to make their presence as anonymous and unobtrusive as possible. We also wanted to vary the time of contact to avoid staff members feeling as if they

were being “targeted” if the questions were only asked during specific time periods.

One question was placed on each rating sheet used by the shoppers. Six students completed the exercise with each shopper asking a question for each service. They entered their scores into a Qualtrix form created by the team. They also submitted paper sheets as a backup.

Results

For the most part, the Libraries received very positive results. Scores were particularly high for “greeting” and “referral.” “Follow-up” was rated slightly less well and “Confirming satisfaction” the lowest. For the Yes/No questions, shoppers rated staff well for “Treated with respect” and “Avoided jargon.” There were, however, issues with “Going the extra mile.” Below are overall averages for all service points and types of service.

Behavior	Average rating (1= Poor, 2=Satisfactory, 3=Very good) n=40
Greeting	2.71
Follow up	2.24
Confirmed satisfaction	1.68
Referral	2.73

Yes/No questions	% Yes n=40
Treated with respect	97%
Avoided jargon	92%
Went the extra mile	36%

In addition to the averages, charts helped us see how each type of service (Desk, Phone, Chat) was rated. For example, below is a chart for greeting for all types:

We also compiled results for each department broken down by type of service.

Follow Up

The Assessment Analyst compiled the results and developed graphs for each question that indicated scores for desk, phone and chat. The results for all services were shared with the entire staff through meetings and e-mail. The Associate Dean shared results for individual departments with the appropriate department head for discussion among their staff. After examining the results the team had the following recommendations:

- Develop “standards of service” that reflect the customer service values. Although we had the values we really had no specific standards or guidelines for interacting with staff. For example, we did not have guidelines for how to do a referral or transfer a phone call to another department [Appendix C].

- Develop customer service training for staff that focused on “going the extra mile.” Because that question received lower scores we decided that we needed the opportunity to discuss what we meant by going the extra mile and how we could achieve it.
- Develop online training for students. Our students work many shifts in two buildings, and it’s impossible to get them all together for training.
- Conduct the assessment again after training to see if there was improvement.

Staff Training

Training was provided for all library staff members including those that did not have contact with the public. We wanted to ensure that the customer service values we wanted to impart within the library were given to staff members that provided internal service, not just given to those who work at public services desks.

We conducted six sessions (4 hours each, with breaks) and extended an offer to attend training to the managers of the computer labs, which

are housed in the library, but not under the organizational control of the library. However, since the lab is located in the library, students often make an (incorrect) connection between the computing lab staff and the library staff. Sessions were staggered so that those staff members that work during evening hours were able to attend.

The training design was done by the Human Resources Librarian. She also conducted the training sessions, and developed a workbook to use in the training sessions. The program design focused on "Going the Extra Mile" which the team felt would allow the staff not to feel the training was remedial in nature or was being used as a punitive measure. The emphasis in the program design was to improve customer service and eliminate the feeling by patrons that they were not being treated respectfully. We were careful to point out that the LibQUAL+ scores reflected that good customer service was being provided. We let the staff know that the LibQUAL+ qualitative data included comments which said some respondents didn't feel the customer service being provided went far enough; it didn't "go the extra mile."

Although not planned, the training sessions gave some staff members new information about some of the services offered within the library; staff members who are considered to be internal service providers found the information to be extremely beneficial. The Libraries' customer service values were updated based on staff suggestions.

Student Training

As mentioned above we determined that online training was best for our student employees. The Libraries place great emphasis on providing our students with the opportunity to gain skills they can use in the future regardless of what profession they chose. The Distance Education librarian and a Librarian and Information Studies (LIS) practicum student spent a semester developing customer service videos around the standards. These include basic skills such as approachability, the reference interview, telephone etiquette, referrals and handling a line of customers. Additional videos provide tips for dealing with angry customers. We used students in the videos and made them upbeat and humorous so that they'd appeal to our employees. Libraries' documents such as the customer service values and standards are

included as well. The videos and documents were organized into a LibGuide for easy access and editing.¹⁸ Once the LibGuide was completed, student supervisors asked to include videos on general basic success skills such as attitude, attire and professional image. For this we pulled videos from our Films on Demand subscription. Student supervisors were asked to require employees to view the videos and make comments to indicate they'd completed them. Some comments from students include:

- "These skills seem like common sense, but it's amazing how people you see that don't follow it. You should send this video to the workers in Subway."
- "I easily get flustered when a person is frustrated at me, however this video taught me how to properly handle the situation and remain calm and respectful."
- "I've never thought to look for people who need help because I always assumed they would ask, now I know."

Second Study

In the second mystery shopping assessment, staff members were told that mystery shopping would happen sometime during the spring semester of 2012, but were not given a specific timeframe. During the second study, we again reached out to the Department of Hospitality and Tourism Management for students to be mystery shoppers and recruited nine students. We reviewed the questions and made some changes to them. Because our Special Collections and Archives (SCUA) had added a formal service point it was included in the assessment. For this study a Library and Information Studies graduate student assisted us. She helped with the training sessions, prepared the question sheets and entered data into Qualtrics.

As with the first group of student shoppers, we explained the importance that the library placed on customer service and that we were assessing the customer service experience rather than accuracy of the answers. We shared the newly developed Standards of Service as well as the Customer Service Values.

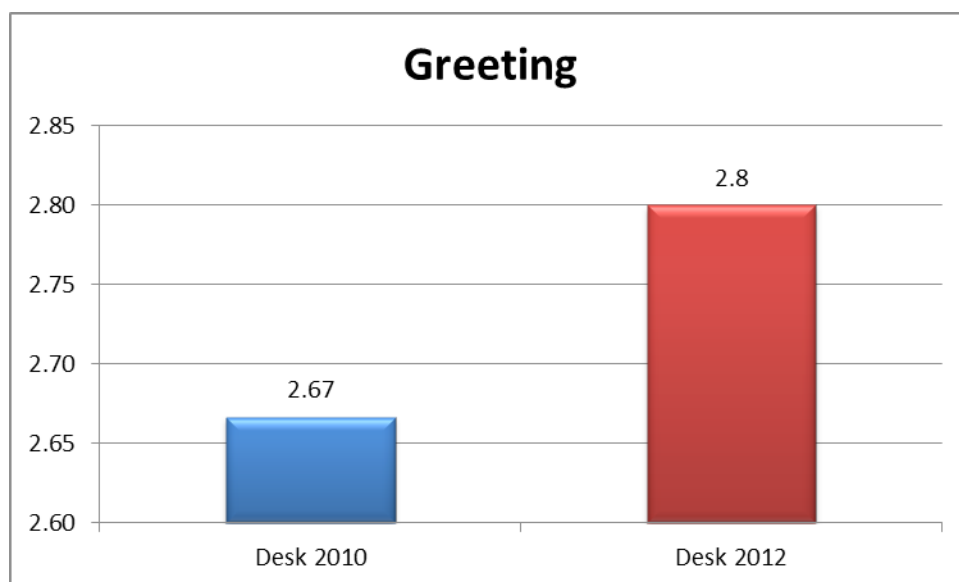
Results from the 2012 assessment indicate that improvement occurred for all behaviors and questions:

Behavior	Average rating (1= Poor, 2=Satisfactory, 3=Very good) n=40	N=70
	2010	2012
Greeting	2.71	2.76
Follow up	2.24	2.73
Confirmed satisfaction	1.68	2.44
Referral	2.73	2.84

Yes/No questions	% Yes n=40	N=70
	2010	2012
Treated with respect	97%	97%
Avoided jargon	92%	92%
Went the extra mile	36%	59% (no=61)

We were particularly glad to see that the two problem areas, “confirmed satisfaction” and “went the extra mile,” improved quite a bit.

Again, we created graphs to help us learn how each behavior for each type of service scored with comparisons between 2010 and 2012. Here is a graph for greeting for desk service:



We shared the overall results again with all Libraries’ staff and posted comparison graphs on our assessment LibGuide.¹⁹

Similar graphs for each department were also developed and shared with the department heads. The Associate Dean discussed results in a Public Services Department Heads meeting and individually with department heads. She also visited department meetings to discuss the results

with staff and gain their input. We also shared results with student employees during the fall 2012 student orientation to show returning students the improvement in their performance and new students that the online training was useful for them.

Next Steps

The Libraries continue to emphasize the importance of customer service. All new staff

receive the customer service values and standards and are strongly encouraged to attend a campus customer service workshop conducted by our Human Resources Department. All new student employees are required to complete the videos on the customer service LibGuide.

We also continue to examine our services to ensure we're meeting the needs of our patrons. Presently we have a task force examining the role of our public service desks that is charged with making recommendations for the future. Because we are likely to continue staffing with paraprofessionals, future customer service training should include not only going the extra mile, but also providing the skills and knowledge to answer questions accurately. While providing helpful, respectful and courteous service is a requirement, we recognize that our training needs will shift also to enhancing skill development. Examples would include conducting reference interviews and ensuring competence with the wide variety of resources for those staffing the service desks. Training will also need to take into account the changing demographics of our customers. For example, we have an increasing number of international students, as well as larger numbers of what would be considered to be "adult students." As our requests for virtual reference assistance increase, we anticipate that chat inquiries will also become more complex.

The Libraries conducted LibQUAL+ again in fall 2012. We are pleased to report that scores on "Affect of Service" rose from 7.5 in 2008 to 7.92. In addition, we will compare 2012 UNC sophomore and senior survey scores when they are posted. As mentioned above our services must respond to changes in academic libraries and higher education and we need to ensure that assessments correspond accordingly. As an example, we will assess the quality of services of the newly opened DMC and its impact on students.

Conclusion

The mystery shopper exercises provided the UNCG University Libraries the opportunity to examine our services and customer service goals more closely. The changing nature of our services with moving toward using more paraprofessional staff and the impact of technology on services

provided some of the impetus for doing the study. We also wanted to gather additional evidence on issues identified in the 2008 LibQUAL+ survey. And finally, we sought more in-depth assessment of the user experience than satisfaction measures.

Conducting the mystery shopper study identified several areas to address. We realized we needed more clearly defined standards for staff to follow. We saw that we needed to discuss what "going the extra" mile means to us as an organization. We also needed to develop a scalable training method for student employees. While we can't categorically state that the standards and training were a causal effect on score improvement in the second study, we can hope there was a correlation. It was also very useful to have specific evidence for staff to see where changes needed to be made. And it was equally important to celebrate with staff when there was improvement! The study provided an excellent opportunity for the Libraries' staff to discuss what service means to us as an organization and helped enhance the already established culture of excellent customer service.

It's essential to get buy-in from staff before conducting a mystery shopper study and make the goals of the study clear and transparent. For some staff it may always be perceived as a threat and management needs to assure them that such assessment is necessary in order for the library to remain viable and current and to ensure that we are providing the services and resources that our customers need and desire.

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Notes

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17. Benjes-Small and Kocevar-Weidinger.
18. "Customer Service Skills," The University of North Carolina Greensboro, <http://uncg.libguides.com/customerservice>.
19. "UNCG University Libraries Assessment Information," The University of North Carolina Greensboro, <http://uncg.libguides.com/libassessment>.

Appendix A

UNCG University Libraries Mystery Shopper Rating Sheet		Date and time of shop: _____	Service Shopped: ☐ Desk (in-person) ☐ Phone ☐ Chat	Desk Shopped: ☐ Access Services ☐ Reference ☐ Music ☐ SCUA
Your "Shopper Code" number: _____		Question asked: _____		
Behavior	1— Poor	2— Satisfactory	3— Very Good	Score
1. a. Desk. Employee made eye contact and acknowledged you (e.g. "May I help you?")	a. Employee was distracted and did not acknowledge me.	a. Employee greeted me but not with great enthusiasm	a. Employee made eye contact and acknowledged me and greeted me in a positive manner	☐ 1
b. Phone. Employee stated their department and asked if they could help me.	b. Employee did not state name of department and did not ask if they could help me.	b. Employee stated name of the dept but did not ask if they could help me.	b. Employee stated their department and asked if they could help me.	☐ 2
c. Chat. Employee provided a greeting and asked if they could help.	c. Employee did not provide a greeting or ask if they could help	c. Employee greeted me but did not ask if they could help me.	c. Employee provided a greeting and asked if they could help.	☐ 3
2. Employee asked follow up questions to clarify your request. (e.g. "What type of information do you need – books, articles, web page?" or "What exactly is your assignment?")	Did not ask any follow up questions.	Asked questions but still didn't seem to understand what I needed	Asked questions until they understood my inquiry	☐ 1 ☐ 2 ☐ 3
3. Employee confirmed that you got the information you needed. (e.g. "Does that answer your question" or "Is there anything else I can help you with?")	Did not ask me if I was satisfied	Asked if I was satisfied	Asked if I was satisfied and encouraged me to come back or suggested other contact methods (e.g. chat, phone, come in)	☐ 1 ☐ 2 ☐ 3
4. If the employee was unable to help you s/he referred you to another office or person	Was told that referral needed but no assistance offered.	Was told referral needed and offered some assistance.	Was told referral needed and directed to other resource. Went the "extra mile". < OR > Did not need referral	☐ 1 ☐ 2 ☐ 3
Question	No	Yes	Briefly summarize the answer you received: _____	
5. Employee treated me with respect	☐	☐	_____	
6. Employee avoided jargon or technical language	☐	☐	_____	
7. Employee "went the extra mile"	☐	☐	Additional Comments (use reverse side if necessary): _____	

Appendix B

Selected Mystery Shopper Questions

Access Services

In person questions

1. How long can I check out items? (Staff should if you are a grad or undergrad student at UNCG or not. A good follow up question is to ask if you can renew items, how to renew and for how long.)
2. Can I make copies here? How can I pay for copies?
3. I need help with my laptop. Where can I go? (Student laptop, not one owned by the Library)
4. Where are the DVDs? How long can I check one out? How many can I take out at once?
5. I need to find some statistics on unemployment rates. (This question should be referred to the Reference department.)

Phone questions

1. I'm a student at ECU and I'll be in Greensboro next weekend. May I borrow from your library? What do I need to do? How do I get your books back? (Staff might also offer ILL as an option.)
2. How long can I check out items? (Staff should ask if you're a grad or undergrad student at UNCG or not. A good follow up question for you to ask is if you can renew items, how to renew and for how long.)
3. I'm checking to see if you have my textbook. (Use a textbook title from one of your classes. Staff should explain our textbook policy.)
4. I'm in a wheelchair and want to come to the Library. Where can I park and how do I get into the building?
5. I graduated from UNCG in 2008. Can I check out materials?

Reference

In person Questions

1. What Supreme Court case desegregated public schools in the United States and who was the lawyer who argued the case for the plaintiffs? (Brown vs. the Board of Education of the City of Topeka, KS filed in 1951, decided by the Supreme Court in 1953, is the court case that is normally considered to have led to the desegregation of public schools. Thurgood Marshall was the lawyer.)
2. I'm doing a persuasive speech (CST 105) on (stem cell research, socialized health care,

gun control,) and need to find some resources. (I can't remember how to get to the online guide.) (Would've attended a library instruction class. Names of teachers: Ms. McCall, Ms. Digh, Mr. Cook.)

3. I need to find financial information on the Hilton chain. (Quarterly earnings for the past year.)
4. I need to cite this article in APA citation style. (Use a citation you have for class.)

Phone

1. My grandmother graduated from UNCG in 1945. I'd like to find her picture in the yearbook. (Yearbooks are online.)
2. I think my grandmother has something in the Women's Veterans Collection. How can I find that? (Pretend your grandmother is Ann K. Watters from Wilmington.)
3. I graduated from UNCG in 2008. Can I check out materials?
4. I'm a student at Page High School. Can I check out from your library? Can I use your computers and print?
5. I need the book *Animals Make Us Human*. Do you have it? Who wrote it, I'm not sure? Do you have this book? (We don't have it—how can I get it?)

Chat

1. I found this article, but I can't get the full text on the computer—what's wrong? (Use *Therapeutic Recreation Journal* before 1995; online begins that year.)
2. I'm looking for a book that I think was an all-campus read—*Zeitoun*. Do you have copies I can check out?
3. I need to make a color print. Where can I do that?
4. How long can I check out items? (Staff should ask if you're a grad or undergrad student at UNCG or not. A good follow-up question for you to ask is if you can renew items, how to renew and for how long.)
5. Can I see if you have my textbook? (Use a textbook title from one of your classes. Staff should explain our textbook policy.)

Music Library

In person

1. I'd like this CD please c/DISC 00055 (you'll need to request it at the desk). How can I listen to it here?
2. My teacher told me to get music for a song called *Solitude*. I think it's by Count Basie. (The song is actually by Duke Ellington.)

3. Do you have a score of Beethoven's *Eroica* symphony? (This is Beethoven's *Symphony No. 3* in E flat Major, Op. 55, which is commonly known as the *Eroica*—Italian for “heroic.”)
4. I found this citation but I can't get the full text on the computer—what's wrong? Patricia E. Riley “Video-conferenced music teaching,” *Music Education Journal* V. 11 #2. (It should be # 3.)
5. I need to find a song called *September Song*,” (it is from the Broadway show *Knickerbocker Holiday* (1930)), with lyrics by Maxwell Anderson and music by Kurt Weill. I'd like a recording of it please.

Phone

1. Do you take donations of LPs?
2. I'm looking for a song: *My Irreplaceable You* by the Gershwins. (Should be *Embraceable You*.)
3. I'm looking for an article from the *NATS Journal* from 1994 and I can't find it online. (It's not available online; you should be offered to get the article via document delivery.)
4. I just heard a symphony called *Witches' Sabbath*. Do you have a recording of this on CD? “Dreams of a Witches Sabbath” is actually the fifth movement of the *Symphonie Fantastique*, by Hector Berlioz.
5. I'm looking for *Die Kunst der Fuge*. Can you help me find it? (This is the title of a monumental work by J.S. Bach, which translates to English as *The Art of Fugue*.)

SCUA Questions

In Person Questions:

1. Can I check out items from Special Collections and University Archives? Do you have your policies posted online? If so, can you show me where on the Library site?
2. My family has a large collection of “old” papers that seem to be related to Greensboro and UNCG. Who should I talk to about a possible donation? What is the actual procedure to donate items to UNCG? Is there anything online about what and how you collect?
3. When was the school founded and who was the first president of the college? Are there any online sources that you can show me that explain the history of the school?
4. When was the campus desegregated?
5. When did UNCG change from being the Women's College to a co-educational University?

Phone Questions:

1. I inherited a number of items from my grandparents. There seem to be some old books

included. Do you do appraisals?

2. In looking at your homepage, I came across the term “finding aid.” What is it? How do I use in my planned research?
3. I am looking to do a research paper on the Civil Rights Movement here in Greensboro. What types of material do you have? Are there any oral histories of students?
4. I am planning to become a librarian. Before I apply to grad school, I was looking to volunteer at a university library. Do you take volunteers? Are there internship opportunities?
5. I see that your hours are Monday–Friday 9-5. I am unable to get away from work during the hours that you are open. How can I access your research materials? Can you make photocopies or scanners of specific items that I might want to review? Is there a cost?

Appendix C

Public Services Standards University Libraries University of North Carolina at Greensboro

Greetings

In Person

- Staff working at a public services desk should be attentive and alert at all times. When patrons come near the desk, look up, make eye contact, smile and greet them: “Hello (Hi), how may I help you?”

Telephone

- Telephones should be answered within three rings by identifying the library/department and “may I help you” or “how may I help you?”
- When transferring a call to another phone number, always first give the patron the destination number in case the call gets disconnected. Wait for one ring and then hang up. If time permits, wait for the phone to be answered and identify yourself, indicate you’re transferring the call and very briefly what it’s about. If the call isn’t answered get back with the caller and give them the number to call back.
- When receiving a referred call, staff should pick it up by saying “Hello, this is (your first name, last name), how may I help you?” If you know the context of the patron’s call, to speed the transaction by recapping what you know, such as “. . . I understand you can’t renew your books online, is that right?”

Interacting with Patrons

- If you are uncertain what the patron is asking, rephrase the question and ask for confirmation that you understand what the patron needs.
- Develop a rapport by asking open-ended and follow-up questions to make sure the patron has the information he/she needs.
Question: I need information on non-verbal communication
Response: Is there a particular type of non-verbal communication you’re interested in such as body language?
- Find out what the patron has already tried, and encourage the patron to contribute ideas.
- Allow the patron to finish asking the question before commenting.
- Give the patron frequent positive feedback, and show interest in their question or problem.
- Never say “No” or say the library doesn’t have something without offering positive alternatives. For example, if we don’t have an item tell the patron about ILL or offer to check the public library catalog. Students should refer questions to a staff member if they’re uncertain.

- Avoid library jargon.
 - Never hesitate to ask for help from a colleague if you feel that you are unable to answer the question on your own.
 - If you are unable to answer a question completely ask for contact information to follow up.
 - Always trying to make people feel as if the question they ask isn't a stupid one—patrons frequently say things like “you'll probably think this is a dumb question” and we always reassure them we don't expect them to know everything.
 - When referring to another department, be sure to verify that the material/resource/person is appropriate.
 - UNCG and Greensboro have very diverse populations and it's important to be sensitive to working with patrons from a wide range of cultures, ethnicities, orientations and disabilities.

Follow Up/ending the interview

- Ask in some way if their need has been fulfilled—e.g. “Does that answer your question?” “Is there something else I can help you with?” “Is that all you need right now?” “Need anything else?”
- Remind them to get back in touch if they need something else in the future. Remind them of the multiple ways they can contact us—give them an AskUs bookmark!

Going the extra mile

- Whenever possible, walk a patron to a destination rather than pointing. This includes going to the stacks if they have been there and are unable to find something or if the call numbers might be difficult to locate such as in the basement.
- If you're referring a patron to another part of the Library, either walk them there or call ahead to make sure someone is ready to help him/her.
- Feel empowered to be flexible in order to provide service. For example, pulling a book for someone who is disabled or who is coming into the library from out of town to use a single item is certainly appropriate service.
- Going the extra mile does not include offering help that verges on doing a person's assignment for them. We should be teaching people to use the resources, not doing the work for them, but this can be a tough call sometimes.
- Recognize some needs cannot be fulfilled.

General tips

Staff should not engage in loud non-work-related conversations that may be overheard by patrons. If you are chatting with a colleague when a patron approaches be sure to discontinue the conversation. Staff should not have their cell phones when they're at the desk unless they have an emergency and have discussed it with their supervisor. Staff should not be surfing the internet, doing social media or personal e-mail while at the desk.

Secret Shoppers in the Library

Jennifer L. Jones
Georgia State University, USA

Abstract

Like many libraries, Georgia State University (GSU) Library consistently evaluates most of its services and resources, but the provision of high-quality reference service is assumed more than it is measured. As part of its fiscal year 2010–2011 Institutional Effectiveness Assessment Plan, GSU Library committed to investigating the quality of reference services provided by library employees in order to get a better picture of this core, and under-assessed, function.

The library chose to evaluate reference services using the secret, or mystery, shopper method. Volunteers posed as students with reference questions, engaged employees in informally scripted interactions, and then assessed the employees' reference skills using an evaluation form. The evaluation forms were based on the Reference and User Services Association's Guidelines for Behavioral Performance of Reference and Information Service Providers (<http://www.ala.org/ala/mgrps/divs/rusa/resources/guidelines/guidelinesbehavioral.cfm>) and consisted of numeric rating scales. Volunteers rated whether and to what extent employees exhibited certain behaviors during their interactions with volunteers and provided written comments to justify their numeric scores. The interactions occurred in person at the reference desk, circulation desk, and special collections reading room desk; over the phone with the same desks; and online via email with the reference desk.

Issues identified through the secret shopper project included employees answering patrons' questions without attempting a reference interview, and employees unnecessarily referring patrons. The findings of the study served to inform reference interviewing training; make reference interviewing training a regularly offered workshop; and promote discussions among supervisors and employees about reference interviewing expectations.

Introduction

Like many libraries, Georgia State University (GSU) Library consistently evaluates most of its services and resources, but the provision of high-quality reference service is assumed more than it is measured. Since 2003 and every two to three years thereafter, the library has relied on its LibQUAL+® Affect of Service scores as indicators of user satisfaction with reference service, and these scores have remained fairly positive and consistent over time (see Table 1). While reference service quality was not an area of critical concern given the satisfaction ratings, reference remains a core function of the GSU Library. Numbers of in-person and online reference transactions at GSU Library have risen over the past few years (see Table 2). The library desired to get a better picture of the effectiveness of one of its most highly used, but under-assessed, services. As part of its fiscal year 2010–2011 Institutional Effectiveness Assessment Plan, the library committed to investigating the quality of reference services provided by library employees.

In 2010, the library evaluated customer service skills of library employees using the secret, or mystery, shopper approach often used in retail establishments in the private sector. The library chose to evaluate reference services using the same method in 2011. Volunteers posed as students with reference questions, engaged employees in informally scripted interactions, and then assessed the employees' reference skills using an evaluation form based on the Reference and User Services Association's (RUSA) Guidelines for Behavioral Performance of Reference and Information Service Providers.¹

Secret Shopping in the Library Literature

Secret shopping is a form of market research that relies on "trained researchers [acting] as customers or potential customers of an organization with the intention of monitoring and assessing the quality of the customer service experience."² In library secret

shopping, “a shopper poses as a patron and asks a library staff member a question. Immediately following the encounter, the shopper reports on the service provided.”³ Secret shopping has been described as a method that goes beyond typical customer satisfaction measures and captures the “customer experience.”⁴

One trend noted in the library literature on secret shopping is that libraries have carried out secret shopper assessment projects primarily as a way of evaluating customer service, and a few have used secret shopping to measure the value of reference skills and to look at overall service quality. Arapahoe Library District in Englewood, Colorado, shopped all of its employees, “from receptionists to the library director,” when it used secret shopping to assess customer service.⁵ Villanova University’s Falvey Memorial Library incorporated secret shopping as one of nine components of a “mixed-method” “continuous quality improvement project” that also included focus groups and transactional data.⁶ Public libraries in London worked together to use secret shopping to evaluate the customer service and reference skills of their employees⁷ and, in a separate project, secretly shopped employees before and after they received customer service training to determine whether the training had an impact on the customer service provided by employees.⁸ The goal of the libraries of Longwood University and Radford University was to try out secret shopping to determine whether it “could be effectively used to measure and improve customer service in the library setting.”⁹ Their conclusion was that secret shopping as an assessment tool is a worthwhile endeavor.

Another theme among libraries’ secret shopper projects is that there are certain elements that should be included in the planning and follow-up stages. Project managers must maintain transparency with employees who will be shopped during the project.¹⁰ Secret shopping tends to generate anxiety among employees and a sense that the underlying goal is to single out and penalize employees, rather than to improve services. Managers should communicate clearly the intended outcomes of the secret shopping project to employees prior to the beginning of the project and explain how assessment results will be used.¹¹ If, for example, the goal is to identify weak service areas in order to develop training plans for staff, this goal should be articulated to employees. An

additional point to make with employees should be the standards and behaviors that will be used as evaluation criteria; project managers must explain expectations to employees.¹² “If [employees] do not know what they are expected to do it is unfair to assess them on whether they are doing ‘it.’”¹³ Finally, results should be presented to employees soon after the project is over, with an explanation as to how the results will be used to inform the intended outcomes.¹⁴

Another trend among libraries that have used the secret shopper method is partnerships. A number of libraries that have undertaken secret shopping have collaborated on the projects. Academic libraries have collaborated on the planning process and the results analysis and shopped the partnering university library.¹⁵ Public libraries have joined together to cross-shop the other libraries in the group.¹⁶ Libraries have partnered with other public organizations under the same organizational umbrella to shop each agency.¹⁷ Some libraries have joined with small business development centers and external consulting firms that specialize in coordinating secret shopper projects.¹⁸

Methodology

For its reference skills evaluation study, GSU Library relied on the planning and communication guidelines suggested in the literature along with the knowledge it gained from its 2010 secret shopper experience. In 2010, the library evaluated the customer service skills of library employees using the secret shopper method. Volunteers posed as GSU students and evaluated the customer service skills of library employees against the library’s customer service policy. Based on the success of the 2010 project and the useful findings that came out of it, the library chose to evaluate reference services using the same method.

The process began early in the 2011 spring semester with the assessment and user experience librarian working with a planning group comprised of a staff member from access and media services, which includes the circulation desk; a public services coordinator who supervises subject librarians and administers all of the services of the general reference desk and virtual reference services; and the head of the special collections and archives department. The basic plan consisted

of volunteers posing as students with reference questions. Volunteers would ask questions in person at the reference desk, the circulation desk, and the special collections department's reference desk. Additionally, volunteers would ask questions virtually via e-mail, and call the reference, circulation, and special collections desks with questions. The assessment and user experience librarian along with the planning group developed a set of 13 scenarios that volunteers would use in their interactions with library employees. The scenarios were informally scripted reference questions designed to guide the volunteers' interactions. Each scenario consisted of the initial question the volunteer would ask, such as, "Where are the newspapers?" Accompanying each initial question was the "real" question, the details of which the volunteer was allowed to reveal as the employee requested more information. For example, the real question that went along with "where are the newspapers?" was "I need some primary source materials from December 7, 1941, the bombing of Pearl Harbor. I need accounts of what happened. Wouldn't some of this information be in newspapers?" All of the scenarios were designed so that any library employee at the designated service point could respond to them using resources in the GSU Library, and the planning group helped ensure that the scenarios were realistic and reasonable for each designated service point. It was decided that five of the 13 scenarios would be used multiple times and that this should not suggest to employees that they were being shopped. When large sections of a class have an assignment due, employees often are asked the same question repeatedly. The volunteers were given additional information to help them evaluate each scenario, such as the following information that accompanied the newspapers question:

Any employee should be able to help with this, so a referral should not be necessary. If the employee refers you to another employee or library department, the transaction is over. You do not need to continue. Please note the referral on your evaluation form.

The employee should ask questions like (these are just examples):

- We have a lot of newspapers. Are you looking for a particular newspaper?
- Do you need current issues or old issues?
- Tell me about your assignment.
- Are you looking for a specific article?

- Are you looking for a newspaper from a specific date?

Some appropriate resources to use are:

- New York Times Historical (database)
- Atlanta Constitution Historical (database)
- The catalog (GIL) to find diaries or other first-hand accounts.

The planning group also reviewed the evaluation forms to be used by the volunteers. The evaluation forms were based on RUSA's Guidelines for Behavioral Performance of Reference and Information Service Providers and consisted of numeric rating scales and areas for written comments. Volunteers used a six-point scale to rate whether and to what extent employees exhibited certain behaviors during their interactions with volunteers. A rating of one on the scale corresponded to "completely disagree," and six corresponded to "completely agree." Additionally, volunteers were required to provide written comments to justify their numeric scores (see Appendix 1).

Simultaneous to planning the project, the assessment and user experience librarian began recruiting volunteers to participate as secret shoppers. During the 2010 project, the most engaged and helpful volunteers were those individuals currently enrolled in library and information science degree programs. Based on this experience, the assessment and user experience librarian first recruited volunteers from among members of the Atlanta Emerging Librarians. This group is comprised of, among others, librarians new to the profession and students currently enrolled in library and information science graduate degree programs, including Valdosta State University and the Georgia cohort of the University of North Texas. The assessment and user experience librarian asked for the assistance of the Atlanta Emerging Librarians administrators in distributing a project recruitment email message to members, resulting in three volunteers. Another recruitment message was distributed to GSU graduate students who had agreed to participate in library assessment activities. This resulted in two volunteers, for a total of five volunteers. Since this project did not have a budget, volunteers were offered the incentives of a letter of thanks from the dean of libraries and the knowledge that they

were contributing to the improvement of library services.

Once the scenarios were finalized and volunteers were on board, the assessment and user experience librarian met individually or spoke on the phone with each volunteer to explain the purpose and scope of the project; closely review the assigned scenarios—the “initial” questions and the “real” questions; clarify expectations for completing the evaluation forms; and answer volunteers’ questions. Each volunteer was assigned two–four scenarios and given an evaluation form to use with each scenario. The interactions occurred in person at the circulation desk, the general reference desk, and the special collections reference desk; online via email to general reference services; and over the phone with circulation, reference, and special collections. To maximize convenience for volunteers, they were allowed to visit, email, and call the library on day(s) and time(s) of their choosing. All of the shopping was completed during the three-week summer session, i.e., Maymester. Each service point was visited by at least two volunteers. After each volunteer finished the project, the assessment & user experience librarian again conducted individual meetings to gather information about volunteers’ experiences and to get clarification on ratings and comments.

Prior to the shoppers beginning their in-person and virtual visits, the project was announced to all of the employees who work at one of the service points that would be shopped. The RUSA Guidelines were distributed, as well, with the explanation that the results of the study would help reveal weaknesses in the reference services that the library, as a whole, provides, and would inform whether and what kind of reference service training the library should offer to employees. Employees were told which service points would be visited and given the start and end dates that shopping would take place.

Findings

GSU Library designed this project not to be punitive to employees, but to give a snapshot of overall strengths and weaknesses in the reference services it provides. Evaluation results were presented in aggregate, with average scores and comments stripped of all identifying information

included in the summary report. Although the summary report contained average numeric scores, the results were qualitative, not quantitative. Scores were calculated to get a general idea of what behaviors were more persistent than others, but the scores were not valid. In order to generate quantitative data, shoppers would have had to go through extensive training to ensure absolute consistency in scoring, and the questions asked would have had to have been identical at each service point. In reality, each shopper engaged in a forty-five-minute, one-on-one orientation session with the assessment & user experience librarian, and only a few questions were repeated so that employees would not suspect secret shopping.¹⁹

Based on the evaluation results, one identified issue was that employees routinely took patrons’ questions at face value and responded accordingly, without attempting a reference interview. For example, if a volunteer asked about the location of newspapers, the library employee did not attempt to find out whether the volunteer was looking for a specific newspaper title or article, newspapers from a particular time period, current or historical newspapers, etc., and instead directed the volunteer to the location of the physical newspapers in the current periodicals area of the library. As another example, if a volunteer requested information about F. Scott Fitzgerald, the library employee did not make an effort to determine what kind of information was needed (biographical information, critical information on his works, information on a particular work, etc.). Another issue of concern was that library employees unnecessarily referred volunteers. During the course of the project, library employees referred volunteers to other library departments, other campus departments, and, in one situation, to another institution. Since the planning group designed all of the scenarios so that any library employee could respond to them using resources in the GSU Library, library employees should not have needed to refer volunteers.

Some of the study’s findings were quite positive. According to volunteers, employees were “very friendly,” “pleasant,” “professional,” and “very approachable.” Few customer-service-related concerns were reported by volunteers. Employees generally were quite friendly and helpful, just not thorough, in their interactions with volunteers.

The results of the study led to a few changes within the library. Reference interviewing training, which was offered to employees occasionally prior to the study, now is a regularly offered workshop. All public services employees are encouraged to attend, and some supervisors require attendance. The results also helped inform the content of reference interviewing training. The training class now emphasizes that patrons sometimes have difficulty communicating their information needs. Attendees are asked to share experiences of patrons who initially requested information that, ultimately, was quite different from their actual information need. This exercise emphasizes the critical nature of the reference interview in getting to the core of the reference question. The class also stresses the importance of reducing referrals when working with patrons, thereby maximizing patron convenience and improving customer satisfaction and service. Beyond training class improvements, the study's outcomes have made it easier for supervisors to outline reference interviewing expectations and communicate the expectations to employees.

Final Thoughts

While the secret shopper method is not a novel one, it seems to be underused in libraries, perhaps because it seems challenging to execute. Challenges can be lessened by relying on the input of other library employees and getting the participation of willing and interested volunteers. Using a team approach during the planning stages ensures that the scenarios designed are realistic but still general enough to be answered by any library employee included in the scope of the project. Team-based planning also helps promote buy-in from the employees who will be secretly shopped and evaluated. Recruiting volunteers from among engaged populations with a personal or professional interest in the project will ensure that the project is taken seriously, that ratings are fair, and that feedback is thorough.

It is crucial to communicate with library employees throughout the life cycle of the project. The nature of secret shopping makes those subject to evaluation quite apprehensive. Employees might believe they will be singled out and penalized if their performance is evaluated as weak. Project managers must explain fully to employees the scope of the project, emphasizing details such as how and with whom the results will be shared, and

how the results will be used.

Opponents of the secret shopper method typically are concerned with issues such as volunteer training, volunteer consistency, and whether the studies are in-depth enough to be reliable, since the results largely are based on volunteers' initial thoughts and reactions. Secret shopper visits are valuable, however, for the very reason some skeptics dismiss them; they capture "the first impression someone gets of a service, and no amount of excellent performance indicators are going to make up for a poor experience."²⁰ As long as a library has established standards for customer service, reference service, or another service or functional area, or would like to use the assessment results as a baseline upon which to build standards, libraries of all types are encouraged to undertake a secret shopping. With little more than planning and creativity, libraries can gain great insight into the quality of the services they are providing.

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Notes

1. See the Reference and User Services Association Guidelines for Behavioral Performance of Reference and Information Service Providers, <http://www.ala.org/ala/mgrps/divs/rusa/resources/guidelines/guidelinesbehavioral.cfm>.
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10. Calvert, 26, 33; Benjes-Small and Kocevar-Weidinger, 275; Backs and Kinder, 17–18; Stein et al., 85.
11. Benjes-Small and Kocevar-Weidinger, 274; Calvert, 26.
12. Calvert, 34; Kate Purcell, "Mystery Shopping in the Banking Industry," *Library + Information Update* 4, no. 12 (2005): 38–39.
13. Calvert, 34.
14. Stein et al., 85.
15. Kocevar-Weidinger et al., 28–43; Philippa Jones and Jill Woodman, "How Do Others See Us?—Mystery Visiting as a Tool for Service Evaluation," *SCONUL Focus* 34 (Spring 2005): 51–53.
16. Ashcroft, 40–41.
17. Calvert, 24–35.
18. Backs and Kinder, 17–19; Burkamp and Virbick, 56–57.
19. For more information on this issue and using the correct analytical methods for data collected via the secret shopper method, see Elke Greifeneder and Michael S. Seadle, "Research for Practice—Avoiding Useless Results," *Library Hi Tech* 28, no. 1 (2010): 5–7.
20. David McMenemy, "'General Feel' is a Valid Focus of Mystery Shopping," *Library + Information Update* 4, no. 10 (2005): 21.

Table 1. Mean perception scores^a for LibQUAL+® Affect of Service items

Affect of Service Items	2003	2005	2007	2010 ^b
Employees who instill confidence in users (AS-1)	6.41	6.64	6.55	7.20
Giving users individual attention (AS-2)	6.72	6.65	6.52	7.30
Employees who are consistently courteous (AS-3)	7.25	7.32	7.15	7.95
Readiness to respond to users' questions (AS-4)	7.13	7.12	7.27	8.00
Employees who have the knowledge to answer user questions (AS-5)	7.15	7.20	7.19	8.07
Employees who deal with users in a caring fashion (AS-6)	6.99	7.03	7.07	7.61
Employees who understand the needs of their users (AS-7)	6.96	6.92	7.04	7.31
Willingness to help users (AS-8)	7.27	7.16	7.18	7.50
Dependability in handling users' service problems (AS-9)	6.95	7.00	7.25	7.59

The scale is 1-9 with 9 being high.

^b In 2010, the survey population consisted of graduate students and faculty only. All other years, undergraduate students, graduate students, and faculty were surveyed.

Table 2. Numbers of reference transactions for fiscal years 2010-2012

	FY10	FY11	FY12
In-person transactions	10,569	11,704	14,753
Virtual transactions	5,641	13,889	13,789

Appendix 1. 2011 Secret shopper evaluation forms

In-Person Interaction

Please rate the following items on a scale from 1 to 6, with 1 being Completely Disagree and 6 being Completely Agree.

Date and time of your visit: _____

The employee appeared approachable. Examples of approachable behaviors include looked up from computer or book, made eye contact, smiled, and greeted you.					
Completely Disagree 1	2	3	4	5	Completely Agree 6
Comments:					
The employee showed interest in the interaction. Examples of showing interest are giving you his/her complete attention, maintaining eye contact, and nodding in understanding.					
Completely Disagree 1	2	3	4	5	Completely Agree 6
Comments:					
The employee conducted a reference interview by listening and inquiring. Example behaviors include rephrasing or restating the question to ensure it is understood; asking open-ended questions to gather more information; and maintaining objectivity.					
Completely Disagree 1	2	3	4	5	Completely Agree 6
Comments:					
The employee effectively searched for information to fulfill the request. Example behaviors are selecting search terms, explaining the search process and sources used, and managing time appropriately.					
Completely Disagree 1	2	3	4	5	Completely Agree 6
Comments:					
The employee followed up with you to ensure you were satisfied with the results of the interaction. Example behaviors include asking whether your question has been answered; making referrals to other sources of information; and inviting you to return if you have additional questions.					
Completely Disagree 1	2	3	4	5	Completely Agree 6
Comments:					
Please share anything else you think would be helpful to us in evaluating the reference skills of the employee.					
Comments:					

Phone Call

Please rate the following items on a scale from 1 to 6, with 1 being Completely Disagree and 6 being Completely Agree.

Date and time of your call: _____

1. ☐ My call was answered in ____ rings. ☐ If your initial call was not answered, please check here and try again later. How many times did you call before an employee answered? ____					
Comments:					
2. The employee's tone was pleasant and welcoming.					
Completely Disagree 1	2	3	4	5	Completely Agree 6
Comments:					
3. The employee showed interest in the interaction. Examples of showing interest over the phone are offering brief verbal comments.					
Completely Disagree 1	2	3	4	5	Completely Agree 6
Comments:					
4. The employee conducted a reference interview by listening and inquiring. Example behaviors include rephrasing or restating the question to ensure it is understood; asking open-ended questions to gather more information; and maintaining objectivity.					
Completely Disagree 1	2	3	4	5	Completely Agree 6
Comments:					
5. The employee effectively searched for information to fulfill the request. Example behaviors are explaining the search terms selected, explaining the search process and sources used, and managing time appropriately.					
Completely Disagree 1	2	3	4	5	Completely Agree 6
Comments:					
6. The employee followed up with you to ensure you were satisfied with the results of the interaction. Example behaviors include asking whether your question has been answered; making referrals to other sources of information; and inviting you to call again if you have additional questions.					
Completely Disagree 1	2	3	4	5	Completely Agree 6
Comments:					
7. Please share anything else you think would be helpful to us in evaluating the reference skills of the employee.					

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Comments:

Email

Please rate the following items on a scale from 1 to 6, with 1 being Completely Disagree and 6 being Completely Agree. **Please print the transcript of your email transaction and submit it with this evaluation form, or forward the transaction to jlink@gsu.edu.**

1. My email was acknowledged within ____ hours/business day(s).					
Comments:					
2. The employee provided a pleasant, welcoming, appropriate greeting.					
Completely Disagree 1	2	3	4	5	Completely Agree 6
Comments:					
3. The employee conducted a reference interview by, for example, rephrasing or restating the question to ensure it was understood and asking open-ended questions to gather more information.					
Completely Disagree 1	2	3	4	5	Completely Agree 6
Comments:					
4. The employee explained the selection of search terms, the search process, and sources used.					
Completely Disagree 1	2	3	4	5	Completely Agree 6
Comments:					
5. The employee followed up with you to ensure you were satisfied with the results of the interaction. Example behaviors include asking whether your question has been answered; making referrals to other sources of information; and inviting you to email again if you have additional questions.					
Completely Disagree 1	2	3	4	5	Completely Agree 6
Comments:					
6. Please share anything else you think would be helpful to us in evaluating the reference skills of the employee.					
Comments:					

Do We Have What it Takes? Assessing Liaison Librarians' Skill Sets to Build Strong Partnerships and Ensure Better Outreach in a Quickly Changing Research and Learning Environment

Denise Hersey
Yale University, USA

Francine De Franco
University of Connecticut, USA

Abstract

Academic libraries have used library liaison programs to provide personal, customized research and instructional services to academic department staff, faculty and students. However, as the work, methods, and tools of library constituents change, liaisons must adapt. An essential part of this process is identifying whether liaisons have, or how can they develop, the skills necessary to support the changing needs of the academic community.

Liaison librarians at two large academic libraries in Connecticut, the University of Connecticut and Yale University, decided to investigate this question together. The authors planned a workshop that brought together fifty-six liaisons from both universities. Prior to the workshop participants were asked to complete a needs assessment survey based on the University of Minnesota Libraries Academic Programs Division Knowledge, Skills and Abilities Self-Assessment. The purpose was to focus liaisons' attention on the changing roles and expectations of liaison work and the skills they need to successfully navigate these changes.

Managers and liaisons at UConn and Yale can now use the results of this assessment to develop action plans for their respective organizations. The goal of these assessment activities include the revision of overall program and job descriptions relevant to current and future faculty research and teaching efforts that will cultivate strong faculty partnerships.

Introduction

The widespread use of technology in the past ten

years has dramatically changed how teaching and learning is conducted at academic institutions and libraries have strived to keep up with these changes. Supporting faculty, researchers and students who can now conveniently search for the information they need outside of the library is a challenge that forces librarians to engage with their constituents in new ways. Traditionally, library liaison programs addressed the needs of faculty, graduate students and students. However, whereas initial liaison responsibilities were often directed toward collection development, large electronically available journal packages, and easy to use approval plans have changed this focus. Simply by looking at the library literature it becomes clear that academic libraries are re-examining how they provide outreach to their constituents. The emphasis is now on the relationships that liaisons develop and build with those they serve and support.

In the introduction to *The Expert Library*, co-editors Scott Walter and Karen Williams, state that "the library's most valuable collection is its people." In support of this statement, James Neal points out that expectations for professional staff in academic libraries need to be centered around "a commitment to rigor, a commitment to research and development, a commitment to evaluation and assessment, communication and marketing skills, political engagement, project development and management skills, entrepreneurial spirit, resource development skills, leadership and inspirational qualities, an embracing of ambiguity, a sense of adventure, and deep subject or technical expertise." He goes on to say that "an academic library cannot thrive as a learning and scholarly organization

without a staff that is dominated by these essential characteristics." For subject librarians, it is these qualities that have provided and continue to provide the foundation for determining the competencies and expertise needed to meet the changing expectations generated by University initiatives, academic programs, and research areas.

The compelling question facing academic librarians who serve as subject specialists and liaisons is "How do we develop skills and competencies to meet the evolving research and academic needs of the faculty we serve? What services do they need? Are their service needs traditional as well as future focused? What are the most important skills we need to acquire and how quickly can we develop competency in these new areas? Essentially, what are the competencies critical for subject librarians who wish to impact their role as partners with faculty in the research and learning process? Gendron suggests several areas that have surfaced as important to the future of academic libraries. These areas include digitization, social computing, digital scholarship, online learning, library assessment, student centered structures, privacy, intellectual freedom, collaborative and interactive learning, de-emphasis on building print collections and increased emphasis on library services, interdisciplinary studies and intellectual property. While these areas represent developing competences, the list is by no means complete or static and consequently, it is essential that liaisons identify which skills are needed in order to work effectively with specific faculty and academic areas and most importantly determine their own competency levels for each skill area. Rather than wrestle with these questions at our individual institutions, it can be beneficial to work with colleagues facing the same challenges. Librarians at the University of Connecticut and Yale University decided to face these questions together, drawing on the experience and knowledge of the liaisons in their long standing programs.

Joint Workshop

The University of Connecticut (UConn) has the State's largest public academic library serving over 30,000 faculty and students at the main campus at Storrs and five regional campuses. The UConn Libraries have had a strong liaison program in place since the late 1980s. The Yale University Library system provides information to over 15,000 faculty and students and began its liaison program

to departments in 1997. As two of the largest state academic library systems, many librarians from both institutions were familiar with each other through various local and regional library associations. Although the two groups of librarians had never worked formally together, coming together to investigate new trajectories for their liaison programs was a logical step. Managers for the respective liaison programs met to organize a workshop to bring together all of their liaisons to help identify new methods for providing outreach services and the skills necessary to support these opportunities.

The liaison workshop, held at the UConn, Storrs campus, brought together fifty-six liaisons from both universities. They were equally dispersed amongst different subject specialties with the majority having worked in academic libraries for either 0–3 years or 11–15 years. As a result, the group itself represented librarians working with departments from various disciplines and encompassing those with years of experience in the field and those who were new to librarianship.

The workshop, held in November 2011, lasted for six hours and was interspersed with different discussions and activities in both small and large group forums. The goals of the workshop were for liaisons to:

1. Possess an increased awareness of the evolving nature of the roles and responsibilities of liaisons.
2. Develop an understanding of the knowledge, skills, and abilities needed in order to cultivate effective, useful relationships with the academic departments liaisons support.
3. Create an action plan that includes concrete needs and specific activities to engage in with faculty during the balance of the academic year.

Liaisons were also asked to read chapter 5, "The New Liaison Librarian," from the book "The Expert Library," edited by Scott Walter and Karen Williams. Liaisons also read the Duke University Library Report, "Engaging with Library Users." The purpose of these readings was to have liaisons begin to think about what types of outreach activities are currently the most important for librarians to pursue and to emphasize the shift away from collection development activities.

By examining what other libraries have done in response to changes within higher education, Yale and UConn subject librarians could adapt or adopt strategies identified and developed by their peers rather than starting from scratch.

Liaisons discussed what activities currently define liaison work and identified their own successful outreach experiences, an activity that went poorly, and services they would like to offer their constituents but currently cannot in an attempt to identify common barriers and limitations. Karen Williams, the Associate University Librarian for Academic Programs at the University of Minnesota, participated in the meeting via Skype to discuss how changes were made to the liaison program at her library. This then segued into a discussion of her chapter on changing liaison work from the "The Expert Library."

In addition to identifying new outreach activities required of today's successful liaisons, librarians were also asked to consider the skills they would need to achieve these new expectations. Liaisons discussed the results from the skills assessment survey they had taken prior to the workshop and after reviewing the Duke Report once again, and drawing on their previous discussion on skill sets, worked in groups to develop job descriptions for the liaison of the future. At the end of the workshop, each liaison was asked to identify two skills they wanted to develop and two activities they wanted to accomplish by the end of the coming Spring semester.

Needs Assessment

The work of subject librarians in academic libraries requires a hybrid approach to services. Traditional services such as instruction, research consultations and collection development remain important to faculty. However, data management, digital scholarship, online learning, e-science, copyright, citation analysis and bibliometrics, and grant support have increasingly become opportunities for subject librarian partnerships with faculty across disciplines.

In order to identify and assess core competencies for academic librarians, the University of Minnesota developed an assessment tool that asked liaisons to self-assess their technical expertise and their familiarity with a wide range of evolving

areas of research, scholarship and teaching in order to prepare librarians for the future. The University of Minnesota Libraries Academic Programs Division Knowledge, Skills and Abilities Self-Assessment asked librarians to assess their skill levels at a "basic or less," "basic or less, but need to know more," "intermediate," "intermediate, but need to know more," "advanced" or n/a across these broad areas: teaching and learning, reference and research services, collection management, liaison/relationship building/communications, archives and special collections, technology, scholarly communications, leadership, and professional. Inspired by this tool, the authors developed a modified version for use by the Yale and University of Connecticut Libraries' liaisons (see Appendix A). The tool was developed using SurveyMonkey and distributed to each attendee prior to the workshop. Forty-two attendees completed the survey. The respondents' areas of responsibility included the humanities (31%), basic sciences (19%), social sciences (28.6%) and health sciences (31%).

The data generated from each question was compiled to indicate the percentage of respondents with skill level at the "basic or less, but need to learn more," "intermediate but need to know more," or "advanced" levels. At the basic through intermediate levels, workshop attendees indicated the following as their highest needs: perform a user needs assessment (72.3%), in response to user needs, identify new tools that could be development (69.4%), perform a user needs assessment (65.7%), advise scholars on managing data (63.9%), advise scholar on managing articles, preprints, etc. (63.9%), possess a basic understanding of copyright (61.1%), and understand and employ effectively principles and techniques of marketing (61.1%).

Workshop attendees highest advanced skills levels included ability to understand the information literacy needs for assigned or relevant disciplines (40%), an understanding of reference tools that support the work of members of the departments supported (52.8%), keeping current with new information resources (42.9%), working effectively with users to teach them information seeking skills (50%), working well with diverse users who possess varying skill levels (52.8%), communicating effectively in asynchronous online reference situations (i.e. e-mail) (69.4%), communicating

effectively in face-to-face and telephone reference (65.7%) and conducting an effective reference interview (55.6%).

The Needs Assessment data illustrated that staff possess advanced skills sets in areas associated with traditional library skills. Where staff possess basic or intermediate skill levels and a desire to build or enhance their skills are in areas associated with University initiatives, faculty research efforts and new directions in teaching and learning.

The workshop experience generated interest in pursuing training to obtain the skills necessary to provide services valued by the faculty and students they served. It also led to interest in further opportunities to collaborate with colleagues from other institutions to build skills together.

What We Have Done So Far—Yale University Libraries

Yale library managers looked at the results of the workshop skills assessment survey and began to focus on addressing some of the specific needs. Librarians felt they needed to better understand how to “create engaging and effective instructional materials.” As a result, a committee is being formed to design a series of sessions for librarians focusing on adult education, instructional techniques such as blended learning and active group learning, and creating useful teaching materials. A copyright expert from ARL was also invited to discuss how libraries can interpret copyright law in relation to electronic class materials and fair use. This helped address the skill of “possessing a basic understanding of copyright law.” In addition, and as a response to the need to “advise scholars on managing their data,” a new Data and E-Science committee is now working on creating a strategic agenda for how Yale will approach the support of e-research including the archiving of researchers’ data, data storage, and where librarians can fit into the cycle of e-science research.

The question of what liaisons should be expected to do in today’s educational and research environment to best meet needs of faculty and students is one that also needed to be addressed on a larger scale. Yale librarians felt they needed to better articulate expectations for liaisons in order to provide training for the skills they would

need. Many job descriptions had not been changed in years and librarians who began work in the libraries more than ten years ago had seen their job responsibilities change but each position had changed independent of others. There had been no campus-wide vision for what outreach should be and how librarians would provide the best service to meet needs. That larger question needed to be addressed and the joint UConn-Yale workshop had provided the impetus to do this.

The new Librarian for the Yale University Library system created a position, Director of Collection Development. One of the priorities of this new position is to focus on creating useful approval plans across all subject fields so that liaisons can ultimately devote more of their time to outreach services. It was important, however, to clearly articulate what these outreach services should entail.

By looking at documents from institutions such as Duke, the Massachusetts Institute of Technology, the University of Wisconsin, and the University of Minnesota that detailed work expected of liaisons, Yale library managers crafted their own list of expectations for what they would envision an excellent liaison program to look like and what activities liaisons need to be doing to create such a program. This document provides a framework describing the functions liaisons are expected to perform and best practices to succeed in these functions. Library managers will address the skill deficiencies identified in the needs analysis, and that are clearly important in meeting the new liaison expectations.

Recognizing that not all liaisons can be expected to be expert in every aspect of outreach, groups of experts or collaborative will be created to serve as points of reference for new trends in topics such as copyright, data management, grant compliance, mobile device applications, and scholarly communication amongst others.

In addition, a liaison librarian journal club was started to meet monthly to discuss relevant articles, book chapters and reports on changing field of library liaison work and how liaisons at Yale can learn and change their work based on others’ experiences and findings.

What We Have Done So Far—The University of Connecticut Libraries

The needs assessment generated a list of skill areas that UConn subject librarians felt were essential to their work with faculty. Among the top needs were the ability to advise scholars on data management, outreach and marketing techniques, performing and analyzing user needs assessments, copyright, publishing models and open access, instructional design, and advising faculty on managing their scholarly articles. A “Learning Together” series has been established that seeks to provide subject specialists with opportunities for workshops, presentations, invited speakers and professional development activities to address these needs. To date, a copyright attorney was invited to present a workshop for faculty, graduate students, university and library staff on copyright and fair use. A presentation was also held that discussed the use of Mendeley to manage and organize research and collaborate with colleagues. A series of shared learning presentations by subject specialists is planned that will provide an update on key resources, search strategies and tips by discipline for colleagues who wish to develop familiarity in areas outside of their areas of responsibility. Additional workshops are scheduled for the upcoming academic year.

During spring 2012, UConn subject specialists set a goal devoted to meeting with deans across all schools and colleges and academic department heads related to their subject

areas of responsibilities. The meetings were scheduled during summer and early fall 2012. The purpose of these meetings was threefold. First, each subject librarian shared data gathered from the 2012 Libraries’ User Survey specific to the academic units and compiled responses to common questions related to data management, copyright issues, research grants, e-publishing, digitization and online education.

Second, each subject librarian used the information gathered from the Library User Survey and interview questions to develop a customized service plan for the departments that incorporates survey results, interview discussion points, and departmental needs that will enable subject librarians to identify key research and teaching needs, determine departmental priorities and

develop an action plan of services for faculty and students.

Third, the information gathered will be used by each subject librarian to develop new job descriptions that build or enhance current roles and responsibilities and incorporate new services, roles and responsibilities specific to the academic area(s) served.

The University of Connecticut Libraries will use the departmental meeting interview data to review, revise and update the academic liaison program description, revise and update all subject librarian job descriptions, and develop common and unique services for faculty and students across academic programs.

After all interviews have been completed and summarized, the results will be shared, reviewed and discussed with all subject librarians. The summative data will be used to develop a comprehensive comparative analysis that describes research and teaching needs, new and enhanced programmatic directions and strategic initiatives across academic disciplines and also identifies common and unique areas within and among the broad humanities, sciences and social sciences areas. The data will also be used to identify areas of need for professional development and future hiring purposes.

At UConn, additional professional development specialized instruction related to e-science, data management, copyright and intellectual property, instructional design, and online learning.

A second joint liaison workshop with Yale liaison colleagues is planned for winter 2013 that will focus on sharing strategies for outreach strategies that help build strong partnerships with faculty for research and teaching purposes.

Next Steps Together

It is important for liaisons from both UConn and Yale to continue to draw upon each other’s expertise and experiences as both library systems move forward with their plans to improve outreach activities. Although both institutions are geographically over 60 miles apart, liaison coordinators have begun to organize training

sessions in tandem with each other. In June, 2012, they worked to bring in a representative from Mendeley, a PDF management resource, to teach librarians at each institution how to use the product. They are now working on inviting representatives from Papers, another PDF management system, to do the same at each library and plan to continue coordinating demos and training with company representatives when feasible.

In addition, librarians from UConn and Yale created a shared group within Mendeley. It allows librarians to become familiar with the tool, as a learning exercise, but it also enables them to share any pertinent articles on liaison work and outreach with their colleagues.

Another combined workshop is also being developed which will focus on outreach strategies, new directions, and professional development opportunities.

By working with other institutions, librarians can remain motivated to explore new outreach practices and support one another as they all work to attain the skills necessary to provide successful assistance to faculty, students and researchers. What UConn and Yale librarians discovered was that they not only face the same challenges, but they also need to work on developing similar skills sets, and that by working together they can encourage, support and motivate each other to be valued partners with faculty in their research and teaching efforts.

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The Quality Maturity Model: Your Roadmap to a Culture of Quality

Frankie Wilson

Brunel University, United Kingdom

Abstract

This paper presents the complete details of the Quality Maturity Model. The QMM provides a framework for libraries to self-assess their progress towards achieving a culture of quality. Librarians at the cutting edge of work on performance measurement and improvement have used the Quality Maturity Model during its development. The aim of this paper is to bring the details of the model to a wider audience, so they too can use it to make their improvement efforts more effective.

A culture of quality is essential in enabling a library to adapt to meet the needs of future customers. A high quality library is able to meet, or even exceed, the needs of its customers. Such success comes (broadly) from focussing on quality as being defined by the customers. However, if a library does not have a mature culture of quality, then as the needs of the customers evolve the existing assessment and quality control processes may no longer be appropriate. The library is in danger of rapidly dropping from high to low quality.

The Quality Maturity Model describes seven facets of quality culture: management of the organisation; learning organisation attributes; attitude to change; attitude to quality; leadership; investment in staff; and the alignment of all parts of the organisation (horizontal and vertical) towards the mission, vision and values.

For each of the facets there are five levels: 1—ad hoc; 2—repeatable; 3—defined; 4—managed; and 5—continuous. A library with a strong and ubiquitous culture of quality will score at level five (continuous) for all facets. However, libraries that have not yet reached this utopia will score at different levels across the facets.

The QMM enables libraries to locate themselves within the quality maturity landscape. They will then be able to use the Quality Maturity Model

as a roadmap to plan their route to improvement. Such a strategic approach to improvement allows libraries to make sense of the literature in terms of what is appropriate for them, so avoiding expensive irrelevancies. After all, it is pointless trying to develop a balanced scorecard if your library does not have a strategic plan!

The Quality Maturity Model is unique. There are other models that assess quality culture, but the details of these models are kept secret and the only way to be assessed is by paying the (large) consultancy fee. There are other models that make their details public, but they describe only one or two aspects of quality culture, not all. The QMM has been developed by a librarian for librarians. Because if you don't know where you are, a map won't help; and if you don't know where you are going, any road will do.

Introduction

Everything that we do in a library is done by people. Library staff make every decision from building design to what books to buy, from how to design an education session to the priorities for spending. Not so, I hear you cry, so much is automated in libraries now. Well, yes, a customer may use a self-service RFID machine to check out their books, but it is a *person* who decided which machine to install, how many to have, where to put them, the impact on the staffed service points, how often they are serviced, and what to do when one breaks down. A person decided the rules that the machine operates by—how many books you can check out, for how long, and what you are charged if you fail to return them on time. If a customer is unhappy with their experience of borrowing a book, it is not the fault of the machine, but of the decision makers. There is no such thing as “computer says no.”

In an environment where quality is defined by the customer, and people are crucial to performance,

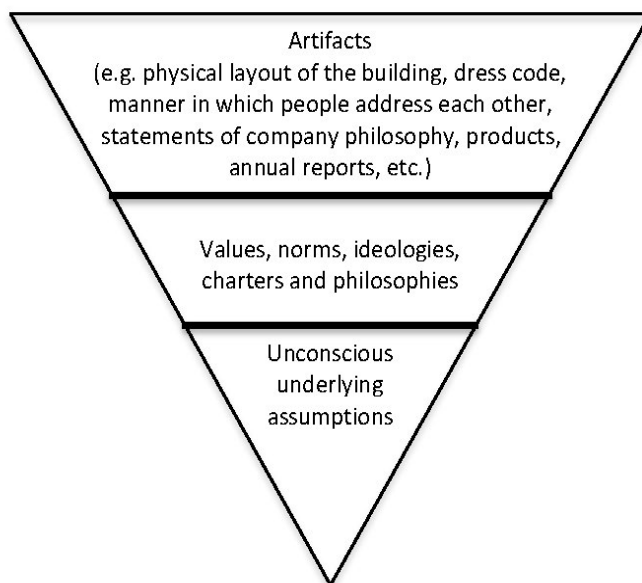
the management of the library must ensure their staff members make the appropriate decision each and every time. But, as everyone who manages people knows, it is not that simple. You can have rules, procedures, manuals, notices and training events, but still they will do it their own way. The key to modifying behaviour is to understand that it is not driven by formal instructions, but by organisational culture.¹ If you want to improve the quality of your library service, then you must improve the organisational quality culture.

In the rapidly changing environment within which libraries operate, agility is necessary for survival. But agility is difficult when it relies on people, because people find change difficult, unsettling, threatening and traumatic. And it does rely on people, because we can't sack everyone and start

fresh with new staff every time the library takes on a new role. Organisational culture is once again the key—if you can create a culture where change is accepted, embraced, welcomed, even sought out, then you are on your way to building an agile organisation, able to evolve with its environment and consistently provide a high quality library service to its customers.

If the key is changing the organisational culture, how do we do it? According to Schein,² culture is a pattern of assumptions, invented, discovered or developed by a group that has worked well enough to be valid and is taught to new members as the correct way to perceive, think and feel. He describes three fundamental levels at which culture manifests itself, illustrated in Figure 1.

Figure 1: Schein's three levels of organisational culture.



Culture change so often fails because it is concentrated on changing the artifacts, without changing the underlying assumptions that determine perceptions, thought processes, feelings and behaviour. Which is why, if you simply tell people the new way of doing things, no matter how many times you tell them, they will always revert to what they have always done. To successfully change organisational quality culture we need to address the underlying assumptions which lie beneath "the way quality is done round here."³

What is Quality?

A high quality library is able to meet, or even exceed, the needs of its customers. Such success comes from focussing on quality as being defined by the customers—a Total Quality Management approach.⁴ There are a multitude of books and articles about TQM and how to achieve it, however, the definition of quality in all of these is best described as "I know it when I see it," which is too fuzzy a concept to be helpful to anyone trying to tease out the individual strands of what constitutes

quality.

The Quality Maturity Model brings together all descriptions and definitions of quality in the existing literature, and an analysis of quality culture as embodied in practice in UK university library and information services in order to explicate a culture of quality.

The Quality Maturity Model describes a culture of quality as: doing things right; doing the right thing; learning; suited to the business environment; and explicitly and appropriately aiming to improve quality. The culture is created by strong leadership and by the people of the organization; and the ubiquity of the culture is determined by organisational alignment.

The Purpose of the Quality Maturity Model

The purpose of the Quality Maturity Model is four-fold. Firstly, it is intended to be a roadmap to enable a library to determine where they are located on the journey towards achieving a ubiquitous culture of quality, and what the appropriate direction of travel is. Because if you don't know where you are, a map won't help; and if you don't know where you are going, any road will do.

Secondly, it is a framework to enable the management of a library to prioritise actions. The literature contains myriad tools and techniques, all proclaiming to be just the thing to help your organization improve. All libraries have limited resources, so where is it best to invest? What will give the most bang for your buck? When a library knows its location within the quality maturity landscape, managers can take a strategic approach to improvement and so make sense of the literature in terms of what is appropriate for them. A score that is satisfactorily in most areas but low in a few areas may prompt library managers to concentrate improvement techniques on the low scoring areas. In addition, it can assist managers to avoid expensive irrelevancies just because they are the next big thing—after all, it is pointless trying to develop a balanced scorecard if your library does not have a strategic plan!

Thirdly, the Quality Maturity Model is a tool for assessment. Librarians love assessment; there are

three international conferences devoted solely to this subject⁵ (including, of course, this one). Libraries assess inputs, outputs, and combinations of the two; customer satisfaction, staff satisfaction, and their culture of inclusivity; value for money, return on investment; and their impact—on their customers, on society, and everything in between. It seems certain that libraries will also want to assess their quality culture. However, readers familiar with libraries will realise that the list of things assessed is somewhat disingenuous. While it is a pretty safe bet to say that all libraries assess their inputs, very few libraries have successfully been able to assess their impact on society.⁶ This is related to ease of measuring—where it is quick, cheap and easy to measure something, it is universally measured; where it is difficult, time-consuming and expensive to measure something, only the most committed or innovative measure it.⁷ The Quality Maturity Model, and accompanying assessment instrument, is intended to make it quick, cheap and easy to measure the quality culture of a library.

Fourthly, the Quality Maturity Model is intended to provide a common language and a shared vision for a community of practice.

The Quality Maturity Model

In common with other maturity models, the QMM has five levels:

1. **Ad hoc**—The quality management process is *ad hoc*, even chaotic. Few processes are defined, and success depends on individual effort and heroics.
2. **Repeatable**—Processes are in place so that success for one customer can be replicated with another (or the same one on different occasions).
3. **Defined**—Quality processes are documented and standardised. All work derives from the organisational strategy.
4. **Managed**—Detailed measures of the quality process are collected, and is understood and controlled.
5. **Continuous**—Continuous quality improvement is enabled by feedback and by piloting innovative ideas. Future requirements are anticipated so there is no drop in performance.

However, it is interesting to note that I have come

across more than one library operating at below Level 1!⁸

There are 41 factors, grouped into eight facets, to describe what constitutes “quality culture.” The QMM consists of a description of each factor at all five levels of maturity, as can be seen in Figure 2.

Figure 2: Snapshot of QMM.

Management of the organisation	Ad Hoc	Repeatable	Defined	Managed	Continuous
1.1 Strategic plan generation	There is no strategic plan or annual operating plan.	There is a limited strategic plan.	The strategic plan is derived from (mediated) environmental sensing.	The strategic plan is derived from environmental sensing (top down, bottom up and inside out).	Strategic plan derived from environmental sensing (top down, bottom up and inside out).
1.2 Management alignment (a)	Actions are solely reactive to events.	Strategic plan includes breakthrough improvement processes. Many actions are unrelated to the strategic plan and are reactive to events.	Strategic plan includes breakthrough improvement processes. Some actions are still unrelated to the strategic plan.	Strategic plan includes breakthrough improvement processes.	All improvement processes, both incremental and breakthrough, flow from the strategic plan, and it is updated to reflect new developments.
1.2 Management alignment (b)	Goals for individuals, teams and the library are poorly defined, if present.	Goals for specific high-level managers are linked to the strategic plan. Goals for most staff are poorly defined, if present.	All senior staff have goals, some of which are related to the strategic plan.	Goals for achieving the strategic plan are cascaded down throughout the library to all appropriate staff.	Goals for achieving the strategic plan are cascaded down throughout the library. All staff have individual goals, which contain both improvement and “business as usual” targets.
1.3 Progress monitoring	There is no monitoring of progress in achieving goals.	There is no monitoring of progress in achieving goals.	There is infrequent monitoring of progress, but no corrective action taken.	There is monitoring of progress in achieving goals, and some corrective action is taken.	Progress in achieving goals is closely monitored and corrective action taken where necessary.
1.4 Performance measurement	Basic statistical measures may be collected, but are used for competitive analysis if at all.	Basic statistical measures are collected and used for competitive analysis. Customer feedback is also viewed as an indicator of performance.	Customer feedback and measures of internal processes are used to determine how the library is performing.	A range of performance indicators is used to determine how the Library is performing. KPIs, may exist, but are not necessarily fully aligned with metrics used or strategic aims of the library.	A range of balanced performance measures are used to monitor how well the library is achieving its aims. Metrics closely align with KPIs, which closely relate to strategic aims and mission. Performance measures

Each factor is assessed and given a score of 1–5. This score locates the library on the “quality culture roadmap.” So now you know where you are.

The rubric-style presentation of the model clearly illuminates the next step towards quality maturity for each of the 41 factors—enabling you to see where you are going.

Therefore, the eight facets of quality are:

1. Management of the organisation;

2. Environmental sensing;
3. Learning organisation attributes;
4. Attitude to change;
5. Attitude to quality;
6. Leadership;
7. Investment in staff; and
8. Alignment.

The 41 factors that make up these eight facets are presented below.

Figure 3: QMM factors

1. Management of the organisation

- 1.1 Strategic plan generation.
- 1.2 Management alignment.
- 1.3 Progress monitoring.
- 1.4 Performance measurement.
- 1.5 Project management processes.

2. Environmental sensing**2a Customers (bottom up)**

- 2.1 Gathering feedback from customers.
- 2.2 Collation of feedback from customers.
- 2.3 Response to feedback from customers.
- 2.4 Action taken as a result of feedback from customers.

2b Organisation (top down)

- 2.5 Gathering feedback from the parent organization.
- 2.6 Influencing the parent organization.

2c Wider context (inside out)

- 2.7 Gathering feedback on the wider operating context (e.g. Higher Education).
- 2.8 Involvement of library staff in the LIS profession.

3. Learning organisation attributes.

- 1.1 Staff empowerment.
- 1.2 Staff involvement in change.
- 1.3 Nature and level of learning that occurs.
- 1.4 Attitude to mistakes.
- 1.5 Attitude to risk.
- 3.6 Encouragement of staff to innovate.

5. Attitude to quality

- 4.1 Definition of quality.
- 4.2 Attitude to quality improvement.
- 4.3 Perception of responsibility for quality.
- 4.4 Type of quality improvement initiatives ("sexy" vs. "vanilla").

5. Attitude to change

- 5.1 Attitude to change.
- 5.2 Perception of drivers for change.
- 5.3 Identification of barriers to change.

6. Leadership

- 6.1 Vision and value setting.
- 6.2 Trust.
- 6.3 Inspiration and motivation.

7. Investment in staff

- 7.1 Attitude to staff.
- 7.2 Training provision.
- 7.3 Development of staff
- 7.4 Recognition of staff.

8. Alignment – the ubiquity of the culture.

- 1.1 Vertical alignment (top, middle and bottom all on same song sheet?).
- 1.2 Horizontal alignment (units work across boundaries, or in silos?).
- 1.3 Consistency.
- 1.4 Communication flow (up, down, sideways).
- 1.5 "Little cogs" - staff see where they fit in the wider organization.
- 1.6 Staff structure is appropriate.
- 1.7 Alignment of the attitude to quality.
- 1.8 Alignment of the attitude to change.

Space prevents me from presenting the full Quality Maturity Model detailing all of the factors with the “rubric” for each maturity level, but two of the factors, with their maturity level descriptors are presented below.

Figure 4: Extract from the QMM showing maturity level descriptors

5.3 Perception of responsibility for quality	
Level 1	Quality is the responsibility of everyone to do their best to adhere to procedures.
Level 2	Quality is the responsibility of people serving customers face-to-face to be ‘nice’.
Level 3	Quality achievement is the responsibility of the management of the service (or the quality officer if there is one), though it may be explicitly devolved down for specific areas.
Level 4	Quality for a particular area is the responsibility of the people in that area.
Level 5	Quality for the whole library is everyone’s responsibility.

QMM Assessment

The intention of the Quality Maturity Model is that libraries can self-assess using the freely available tools. This is in contrast to other models that assess quality culture where the details of the models are kept secret and the only way to be assessed is by paying the consultancy fee.⁹

Assessment against the QMM produces a score from 0–5 (0 if the descriptors for level one are not met) for each of the 41 facets (this is 42 scores as 1.2 Management alignment is split into two parts) to produce a quality culture profile. A library with a strong and ubiquitous culture of quality will score at level five for all facets.

However, libraries that have not yet reached this utopia will score at different levels across the facets.

The quality culture profile enables libraries to see their areas of strength and weakness, and managers to strategically plan improvement activities. The profile also enables libraries to see where improvements have been made by repeating the QMM assessment—thereby evidencing the impact of the improvement activities. An example of what a quality culture profile might look like is presented in Figure 5.

Figure 5: What a QMM assessment might look like

Facet	2013 score	2015 score
...		
6. Leadership		
6.1 Vision and value setting	1	
6.2 Trust	3	
6.3 Inspiration and motivation	2	
7. Investment in staff		
7.1 Attitude to staff	3	
7.2 Training provision	4	
7.3 Development of staff	3	
7.4 Recognition of staff	2	
8. Alignment		
...		

Cultural change takes time,¹⁰ so it is recommended that repeated QMM assessment be conducted with at least a two-year gap.

Future Developments

At the time of this conference, it is not possible for a library to self-assess against the Quality Maturity Model, because there is not yet a self-assessment instrument! However, over the course of the next year the author will develop and test the Quality Culture Assessment Instrument and make it, the full version of the Quality Maturity Model, and all instructions and necessary information freely available on the SCONUL Performance Portal website.¹¹

The author therefore hands these resources over to the Library community, and asks only two things in return: (1) that anyone using or referring to the Quality Maturity Model and the Quality Culture Assessment Instrument acknowledges the author's intellectual property, and (2) that everyone using the tools contributes to the community of practice via the SCONUL Performance Portal blog. The author hopes that in the future this will become a resource for tools, techniques and best practice to be shared, and so the quality culture of all libraries improved, for the benefit of our customers.

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Notes

1. Edgar H. Schein, "Organizational Culture," *American Psychologist* 45, no. 2 (1990): 109–119.
2. Ibid.
3. After Deal and Kennedy's phrase "culture is the way things get done around here." Terrance Deal and Allan Kennedy, *Corporate Culture: The Rites and Rituals of Corporate Life* (Cambridge, MA: Perseus Publishers, 2000).
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One Size Doesn't Fit All? Harnessing Multiple Assessment Frameworks to Build the Value Proposition for the Organisation

Meredith Martinelli and Jennifer Peasley
Macquarie University, Australia

Abstract

The Macquarie University Library quality framework was developed in 2007 and consists of a biennial client survey, a cycle of service improvement reviews and the ongoing review and assessment of statistical data. Whilst these mechanisms do provide us with essential evidence they aren't capturing the value proposition that underpins the story of the Library. This proposition needs to be able to adapt to multiple audiences from communicating with our clients to presenting our strategic vision to the University.

The opening of our new Library brings an ideal opportunity to review our assessment approaches in order to enhance our value proposition for the organisation. In July 2011 we moved to our new Library and the last six months of 2011 were focused on gathering information from our clients relating to their impressions and experiences of the new spaces and service provision. We have seen a significant increase in the physical and virtual use of our spaces, resources and services and yet our client surveys still evidenced the same feedback we have been receiving for the past five years—not enough power points and more quiet study spaces! Considering that we have doubled the access to seating, computers and power points what assessment measures do we need to engage that will bring a more comprehensive picture of our value and highlight the key improvement areas that will ensure we are providing the services and support our clients require.

In 2012 the Library will undergo a review as part of the University's Quality Enhancement framework. Within the broad parameters of the review there will be a specific focus on the "development of metrics around outcomes measures to demonstrate fitness for purpose, particularly in relation to benchmarking nationally and internationally." An integral part of this will be identifying

opportunities to integrate the Library into University assessment. Macquarie University has taken the lead role in the development of a national Teaching Standards Framework and the University Librarian participated in this development by drafting an initial evidence matrix to be used to assess Library Resource provision within this framework.

This paper will report on the progress of the Library Review, the integration of Library assessment in the Teaching Standards Framework and identify the tools and methods that will form our Library Quality Framework from 2013.

Context

In August 2011 Macquarie University opened the doors on a new \$100 million library. This is the first new university library building in Australia for some years and incorporates the first automated retrieval system in the southern hemisphere.

Since opening we have seen a significant increase in the physical and virtual use of our spaces, resources and services and yet our client survey, carried out in October 2011, reflected the same issues of space and access to computers that have been common to all previous surveys, not providing any broader insights into client expectations and value impact. Our challenge is to gain a more comprehensive picture of our value to highlight the key improvement areas that will ensure we are providing the services and support our clients require.

In 2012 Macquarie University Library commenced a program of review in relation to our performance. The aim is not only to review our current practice but to identify the models, methodologies and tools that will underpin the

analysis processes and evidence the value we bring to the University's research, teaching and learning goals. This will not be achieved in a year but acknowledges a commitment to embedding the Library in university practice and aims to ensure that any value is expressed in the sense of value to our clients and the institution.

Literature review

How do we define value in a sector that openly declares this to be a challenging goal? It is interesting to note that this debate is not new or recent. In 1999 Judith Broady-Preston and Hugh Preston¹ noted that "to suggest that the main impetus for quality assessment in academic libraries is a recent, governmentally driven phenomenon is misleading. With varying degrees of enthusiasm, librarians have, over the years, attempted to measure or demonstrate the 'quality' of the service they provide." What was evident then and remains relevant now, is that whilst libraries have a sound understanding of inputs and outputs, undertake regular and relevant client satisfaction surveys and can regularly review work practice and service delivery, there is little understanding of the "impact" of the services and resources they provide to their clients.

Joseph R. Matthews² observed that "despite a fairly lengthy history of inquiry, much confusion exists about the concept of organizational effectiveness." He goes on to identify conceptual challenges around what to measure rather than how and then how to link these assessment factors to the goals, objectives and functions of the organisation. He notes that "clearly the definition of effectiveness is going to be multidimensional, since a single perspective is not going to be able to capture the effectiveness of any organization."

A 2012 research project commissioned by SAGE³ to investigate the value of academic libraries for teaching and research staff found "the academic library community has been dealing with the issue of how best to demonstrate its value for years, especially value to students. Yet although a good deal of evidence is collected, much of this is evidence of activity rather than evidence of value and impact, especially value to and impact on teaching and research staff."

All of this confirms Megan Oakleaf's⁴ findings

in her 2010 review of the value of academic libraries. The review identified that libraries, whilst engaged in assessment practice, were not as successful in articulating their impact on and contribution to organisational goals. The research included an in-depth analysis of library assessment literature and the development of a series of steps that can be used by academic libraries to check their progress towards building the value proposition and integrating this successfully into the institution's agenda. In an interview with the Chronicle of Higher Education, Lisa Janicke Hinchliffe,⁵ president of the Association of College and Research Libraries [ACRL], stated that the report "really does lay out the framework of the research agenda and the questions we need to answer as a profession. . . Sometimes we can be so focused internally on our library goals that we don't take the time to reflect how those connect to institutional goals, and that's really where our accountability and our responsibility lie."

Step 1: Strategic Directions

Macquarie University has a clearly articulated strategy for the next two years. The vision is for the University to be ranked among the top eight research-intensive universities in Australia and among the top 200 in the world by age 50 (in 2014), with significant progress being made towards this goal since 2006. In the 2010 *Excellence in Research for Australia* (ERA) assessment, 80 per cent of Macquarie's research activity was rated as performing at world standard or higher. During 2012, the QS "Top 50 Under 50" ranked Macquarie 16th in the world, while the Times Higher Education "100 Under 50" rating placed Macquarie at joint-33rd globally. The Academic Plan states Macquarie's aim to make a difference through excellent research, high quality teaching and a transformative student experience.

Macquarie University Library's vision is to be a leader in the provision of information resources and services to enable Macquarie University to achieve its aims with the mission being to provide a world-class information environment for Macquarie University. The Library's strategic aims are to partner with our community to:

- provide access to high quality information resources that support world-class research and research-enhanced teaching;
- deliver excellent, client-centred services that help build graduate capabilities, research

- capacity, teaching excellence and community engagement;
- and provide high quality, safe and inclusive informal learning environments to support and to recognise research, learning, teaching and community engagement.

The University Academic Plan and the Library Strategic Aims are current to 2014. We welcomed a new Vice-Chancellor in September 2012 who will begin the strategic planning process for 2014 and beyond. This new strategy will then inform the development of new university level and library plans. The Library, however, has identified that it may be more useful for our community and for our planning if we had more explicit strategies for library support for research (in terms of the research cycle) and for learning and teaching (in terms of workflows and graduate capabilities). First drafts of the Research Support framework and the Learning and Teaching Support framework have been developed. These provide the context, proposed strategies and indicative performance indicators that will be used to inform the current fine-tuning of strategy, structure and roles.

Whilst the Library works towards the realisation of these strategies, planning for, and moving to, the new Library has occupied much of the time for a significant number of Library staff for most of the five year period from 2006 to 2011. While this has been a significant achievement, as evidenced by increased usage and the use of the Library in marketing Macquarie as the “modern university,” the focus on the building project has meant that attention now needs to be given to other strategies and projects to ensure that we successfully develop and deliver services, resources and support to our clients.

Step 2: Implementing Quality @ Macquarie University Library

Macquarie University Library has a long commitment to quality practice, beginning with the implementation of Total Quality Service (TQS) in 1994. Through an iterative process we have developed our current quality framework which is based on Macquarie University’s Quality Enhancement model. The framework focuses on service improvement, with specific aims encapsulated in annual department, team and individual development plans. The framework

provides a methodology for evaluating the quality of our services by reviewing what we do, why we do it, how we do it and, most importantly, how we know we are doing it well. However, whilst the framework is built on a continuous cycle of improvement it is still focused on inputs and outputs rather than outcomes related to learning, teaching and research.

At a university level, validation of the Library’s quality approach is evidenced in the quality audits completed in 2003 and 2009 by the Australian Universities Quality Agency [AUQA]. Within the portfolio of evidence and audit reports there were multiple references to the library’s effective contribution to quality improvement initiatives and benchmarking including:

- The Library’s support for open access and research
- Partnerships with information technology and academic support services
- Excellence in the provision of a 24x7 IT helpdesk in conjunction with international partners
- Numerous and effective mechanisms for linking closely with academic staff and students, and for identifying improvement opportunities

For six years the library has had dedicated planning and evaluation responsibilities assigned to a role or team, as well as a governance framework that positions quality in relation to service development, delivery and continuous improvement. In October 2012 the Library is undergoing a five year external quality review which is a requirement under the University’s quality model. It is expected that this review will provide us with perspectives to inform our strategic planning and further develop our quality enhancement activities.

For some years we have also measured achievements through the standardised collection and analysis of both quantitative and qualitative data. Quantitative data includes centralised statistical collection and reporting, annual statistics reported in the Library Annual Report, and the Australia- and New Zealand-wide Council of Australian University Librarians (CAUL) annual statistical collection. Qualitative data includes client feedback, survey results and comments and

focus group input.

The library utilises a number of quality methodologies, including a modified version of PRINCE2 for project management, the IT Infrastructure Library [ITIL] methodology for IT service delivery and an internally developed service review methodology that provides an objective and independent method for auditing what is being offered or undertaken by each department across the library. This range of quality approaches provides us with quantitative data and methodologies but does not provide a full picture of the value of the library to our clients.

External assessment—Library Review 2012

The 2012 Library Review comes at a time when we are facing significant leadership changes. Along with the commencement of the new Vice Chancellor, our University Librarian will be retiring at the end of 2012 after ten years in the role. This review will provide us with the opportunity to document the current situation, analyse gaps and propose areas of strategic focus for the next three-to-five years. At the time of writing, we have completed a self-evaluation report which has been provided to the review panel members before they arrive onsite to undertake a series of interviews with key library staff, academics and students. The self-evaluation report is a comprehensive, evidence-driven document that demonstrates progress against Library and University goals and aims to evaluate processes as well as outcomes. The findings and recommendations of the review panel will be of value both for the new Vice-Chancellor and as significant input into the strategic planning that our new University Librarian will lead.

The self-evaluation report has made reference to Megan Oakleaf's ten research areas that relate

to understanding the contribution made by the library to achieving institutional outcomes and summarises the key issues for Macquarie University Library:

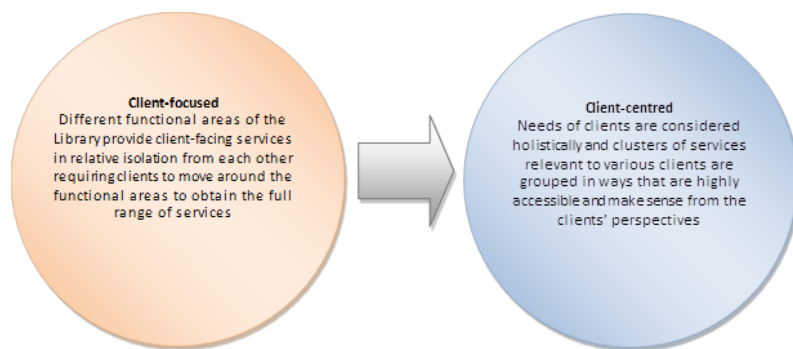
"Like many academic libraries we are now beginning to develop a more strategic approach to evaluation that seeks to determine the Library's value and impact in the context of the mission of the University—to try to identify the ways in which our services contribute to academic, teaching and research outcomes. . . [as] most of the measures and benchmarking done by libraries to date is about inputs and activity, not about outcomes."⁶

Step 3: Putting Quality into Practice: Client Centred Services and Strategies

In 2010–2011, as part of planning the move to our new Library, we undertook to develop a service philosophy and model to underpin future service strategies, plans and assessment. Through an environmental scan, staff focus groups, working parties and visits to other libraries and service organisations, we identified five principles which form the basis of our service philosophy:

- a holistic approach to clients and their needs
- a welcoming, client-centred environment
- empowering clients through seamless self service
- learning together—clients and library staff sharing a learning partnership
- excellence in quality and innovation

While the Library's long involvement in quality improvement approaches had given us a client focus, the shift proposed by these principles was that we become client-centred. Where we had previously organised and delivered services in a library-centric manner, we now needed to group services in a way that made sense from the client point of view:



Once established, the service philosophy informed the development of a set of principles for service delivery:

- maximisation of unmediated access to services and resources
- balance maintained at service points between minimisation of referral and responsible utilisation of resources
- responsiveness to cyclical demand; flexibility and mobility of staffing resources
- service solutions that are sustainable and scalable
- technology is used to benefit people
- continuous review, evaluation and improvement of services is conducted in collaboration with clients
- decisions are based on evidence

Since 2006 we have included client centred measures of success as a key component of our strategic planning. The Library action plan each year includes measures that represent the impact of our services from the clients' perspective. Thus, instead of measuring, for example, how many document supply requests are processed, we measure how quickly those requests are despatched or received, and develop strategies to continually improve our performance. Obviously this is still a measure of activity but it is a step in shifting our perception towards measuring services from the clients' point of view and to measuring outcomes rather than outputs.

To further embed the quality principles, in the first half of 2012, we undertook a qualitative review and assessment of library services and client needs. The outcomes from this review have now been used to develop a series of service strategies and to design the structure and roles within our Library Services department that allows us to best respond to these

needs.

The Review sought input from library staff and clients on a range of issues, including:

- Client's motivation for using the Library's services
- The value they place on library services
- Perceived gaps in service provision

Staff consultation was internally facilitated and involved a large number of focus group sessions. An external consultant was engaged to carry out the client consultation through a program of interviews with associate deans in each faculty. This consultant also assisted in the design of client focus groups and with overall analysis of the data collected.

Whilst there were a number of practical recommendations—longer opening hours, help desks on each floor of the Library, more power points and quiet seating areas—this review was not focused on the building. Instead the findings and recommendations have informed the development of a set of service strategies that aim to focus library expertise and capability on meeting the needs of the clients. Three key areas of strategic focus emerged:

- Research support
- Collection development and management
- Academic literacy

A common theme from both staff and clients was the need for the library to be more attuned to the needs of specific client groups and to tailor services accordingly. In response to the review and as part of designing a new departmental structure the library has developed a set of service strategies that will inform the planning from 2013 onwards.

These strategies aim to support research, learning and teaching through the development of a service mix that is responsive to and centred on client needs and expectations. Building partnerships and relationships is critical to success as is developing client oriented access to resources that meet specific needs. The strategies will also contribute to the development of an assessment framework that addresses both quantitative and qualitative approaches to articulating our value.

Supporting Research—the library strategy

With the University's research agenda aimed at "growing" researchers through research pathways, starting at undergraduate level, the library has been developing a research support strategy that aims to integrate library support into the research workflow and position the Library as a consultant partner in research programs.

With many researchers now accessing a virtual library and librarians striving to make access to collections and services quick, seamless and easy, the library has become increasingly invisible to researchers. The research support strategy focuses on raising awareness of library support beyond that of "collection managers" and will highlight the value of the library's collection and physical space in supporting the recruitment and retention of researchers. It will also communicate the availability of library staff, with specialist skills, who can enhance and support research on an "as needs" basis and embed this within the researcher's environment and workflow.

To achieve this we require a detailed understanding of researchers' needs and behaviours, a redefinition of library roles to meet the current and future needs of researchers and the development of new models of support with a greater emphasis on consultancy and partnerships. Building strong relationships with research groups and support units to provide integrated support for researchers and research students at all stages of the research workflow will be critical to success as will the development of performance measures for the library that can demonstrate the impact and value of library services on research quality.

Supporting Teaching & Learning—the library strategy

In response to Australian government initiatives,

the university's strategies, a new online learning environment, trends in learning and teaching and the changing expectations of new generation learners, the Library has developed a Learning and Teaching Support Strategy. The strategy supports the development of programs linked to graduate capabilities, providing a client-centred approach to supporting learning and teaching which enhances the learners' experience.

The library's Learning and Teaching Support Strategy will develop partnerships within the University to provide integrated support for teachers and learners, provide tailored services to ensure the needs of differing client groups are met, support the development of skills for lifelong learning and ensure quality resources are available to meet learning and teaching needs. Like the Research Support Strategy, clearly articulated performance indicators will measure the outcomes of the implementation of the strategy and indicate areas for further development and improvement.

Step 4: Linking the Library to University Strategies, Goals and Outcomes

At Macquarie we are increasingly using a system of frameworks to underpin and connect the strategies and plans that guide our operations, as well as seeking to embed the Library in university-wide strategies and frameworks. Recent work has included contributing to the development of evidence measures for the new national Teaching Standards Framework. Currently in the early stages of development, this will provide us with a model for how the library might measure contribution to teaching quality and student outcomes.

Teaching Standards Framework

The Teaching Standards Framework⁷ is a Macquarie University initiative led by Macquarie in partnership with nine other universities. The framework aims to develop a tool that can be used by universities to survey their processes for ensuring teaching quality and participate in benchmarking reports. A key component of the standards is a set of criteria that can be used to assess performance data coming from common evaluative mechanisms in use in most universities. These include course evaluation questionnaires, student experience surveys, and employer feedback and the outcome will be the ability to

continually review and improve the quality of learning and teaching.

The research undertaken as part of this project identified that “different quantitative measures focus on specific things—student experience and

satisfaction; assessment and exit performance and skills of graduates as they enter the workforce.

... what gets omitted from such data are the key principles of educational value [for example, life-long learning and social inclusion] recognised by government, academics and students alike as

among the core missions of tertiary education.”⁸

Teaching and learning evaluation mirrors the challenges that university libraries face in the context of measuring impact and articulating value.

The Teaching Standards Framework is built around six standards across three themes: Teaching, Learning Environment and Curriculum. These are further broken down into seven areas of focus covering: management responsibilities, planning, resources, policies and procedures, practices, outcomes, monitoring and evaluation. These areas include:

Teaching	
Standard 1	The institution’s teaching structures ensure quality learning outcomes
Standard 2	The institution’s teaching practices ensure a quality student learning experience
Learning Environment	
Standard 3	The institution’s services and resources enable quality learning outcomes
Standard 4	The institution’s services and resources enable a quality student learning experience

Curriculum	
Standard 5	The institution ensures that the curriculum is current, academically robust and rigorous
Standard 6	The institution ensures that curriculum content and assessment practices produce quality learning outcomes

The Library participated in this project by testing the criteria and performance indicators relevant to the library's contribution to teaching quality across all seven focus areas of the Learning Environment theme. This was achieved by establishing an Evidence Guide that could be used to document performance against each of the specified indicators and by providing some commentary on the indicators themselves, including possible metrics and sources of evidence.

The work completed to date has been shared with other university libraries through the Council of Australian University Libraries forum. As the Teaching Standards framework has now been adopted nationally and an online tool is being developed, the next step for the library will be to partner with relevant internal units to improve student feedback options in order to better assess the impact of library support in the area of information resources provision for units.

Next Steps: Building Our Value Proposition

At the beginning of 2012 the Library aimed to review our quality enhancement frameworks, identify the ways in which we could improve our performance assessment and identify the specific frameworks, tools and/or methodologies that would support our strategic directions. We are, however, part of a larger organisation and in March 2012 the University launched a long term restructuring program that aims to enhance the student experience through connected services and efficient utilisation of resources. An unplanned consequence of this program has been the impact on the library and in particular on our support services including quality and planning.

Ultimately the restructuring program will provide opportunities to identify and adopt a common service improvement model across the service support areas of the university. In the meantime

our original plans have been modified and we are contributing to quality directions from a university-wide perspective. This is a benefit as it will develop a far more sustainable approach to quality and operational excellence, however in the short term we can no longer guarantee our ability to ensure quality is built into all our services.

Despite these challenges our review of current practice is well underway. Our self-assessment has confirmed that our measures are largely focused on inputs, activities and usage, rather than outcomes and given Macquarie's research aspirations, we need to expand our assessment in relation to impact and consider opportunities for benchmarking with relevant libraries across Australia and overseas. The Research Support Strategy, the Learning and Teaching Support Strategy and the Teaching Standards Framework are key strategies that will cumulatively contribute to demonstrating library impact on student learning and ultimately articulate the value proposition for the organisation.

Within this environment, what direction can we take in 2013? Based on the work to date we believe there is the capacity to continue our journey to building our value proposition, enhancing our quality practice and improving our capacity to measure value and impact. We have identified the following key actions for 2013, bearing in mind that a new University Librarian will influence the direction of this plan:

1. Participation in the CAUL national client satisfaction survey to allow for benchmarking against the results of the 2011 survey that took place after we moved to our new library.
2. Identify and utilise other tools that can
3. provide us with international benchmarking data on our service quality [e.g., LibQUAL+®].
4. Self-assess against Megan Oakleaf's Academic Library Value Checklist⁹ to identify our

achievements and the areas where we need to improve. Inherent in this will be the need to partner with learning and teaching groups and the University's data analysis group to position the Library as part of ongoing student assessment programs and enable the data modeling to include relevant library data. Current student evaluation tools include Macquarie University Student Experience Questionnaire (MUSEQ), Teaching Evaluation for Development Service (TEDS) and Australasian Survey of Student Engagement (AUSSE).

5. Expand library impact measures in relation to the Teaching Standards Framework and further develop campus partnerships to embed these measures within relevant student surveys.

Originally we had planned to utilise the Australian Business Excellence Framework¹⁰ to assess our operational performance in leadership, strategy and planning, client focus, process, performance and people. The university-wide restructuring program has meant it is not viable to undertake this work until the University confirms quality directions, however we do plan to utilise the business excellence elements, noted above, to continue the self-assessment undertaken as part of the 2012 Library Review.

But perhaps success in building and articulating our value proposition relies even more on the successful engagement of staff, without which quality and assessment practice is relegated to the annual collation of quantitative data and the results of client satisfaction surveys. The importance of this is reflected in the June 2012 ACRL report "Connect, Collaborate, and Communicate"¹¹ which presented five recommendations for the library profession:

1. Increase librarians' understanding of library value and impact in relation to various dimensions of student learning and success.
2. Articulate and promote the importance of assessment competencies necessary for documenting and communicating library impact on student learning and success.
3. Create professional development opportunities for librarians to learn how to initiate and design assessment that demonstrates the library's contributions to advancing institutional mission and strategic goals.
4. Expand partnerships for assessment activities

with higher education constituent groups and related stakeholders.

5. Integrate the use of existing ACRL quality resources with library value initiatives.

This becomes a critical connection between the library and our clients and must underpin any steps we take to enhance our value. In August 2011 Macquarie University may have opened the doors on a new, state of the art library, but it is the steps we are now taking that will really allow us to articulate the value that we contribute the University's goals in teaching and in research. This is one journey that we share with academic libraries across the globe.

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Notes

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Utilizing Cross-Campus Collaboration to Improve the Assessment of Information Literacy

Nisa Bakkalbasi
Columbia University, USA

**Jason Kopp, Jonathan Paulo, Donna Sundre, Stefanie Warlick
and Sara Williams**
James Madison University, USA

Purpose

With the technological advents of the past several decades, we have an unprecedented access to information. The invention of the Internet has allowed students and researchers to be able to access millions of sources of information almost instantly. However, with this increased access, it is becoming increasingly important that students be able to interact with information in an efficient and reasonable manner. Much of the information available is not validated or subjected to any form of peer review or screening. A student must be able to know what information is needed, access it quickly and effectively, be able to evaluate the information critically, use the information in the creation of a research product, and perform these tasks ethically and legally. In other words, students today must possess a high degree of information literacy to research effectively.

The Association of College and Research Libraries (ACRL) defines information literacy as “recogniz[ing] when information is needed and hav[ing] the ability to locate, evaluate, and use effectively the needed information.”¹ This involves five standards:

1. Determine the extent of the information needed
2. Access the needed information effectively and efficiently
3. Evaluate information and its sources critically, [and] incorporate selected information into one’s knowledge base
4. Use information effectively to accomplish a specific purpose
5. Understand the economic, legal, and social issues surrounding the use of information, and access and use information ethically and

legally²

Since their development, these standards have become nationally accepted, and a number of tests of information literacy have been aligned to these standards. These include the iSkills assessment developed by the Educational Testing Service³ and the Information Literacy Test (ILT) developed by James Madison University.⁴

Approach

Although measures of information literacy were available before the current work, few were designed to measure information literacy for graduating college seniors. Before entering the work force or graduate studies, we want to ensure students have an advanced and generalized information literacy skillset. A test designed to measure information literacy for younger students may not be difficult enough for graduating seniors. In addition, the original ILT contained some questions that pertained to resources only available to university students. These resources are not likely to be available to graduating students, who may be expected to gather information in their careers using only what is readily available to the general public. Thus, we began the development of the Information Literacy Test for Seniors (ILT-S).

We propose here a model for assessment design that involves collaboration from various departments across the university. We formed a tight network of librarians involved in information literacy education, instructors from various majors, and assessment/measurement specialists. Each of these stakeholders played a key role in

the development of the instrument. Librarians provided deep content knowledge on information literacy. They also provided information literacy education and research services for many students across the university, allowing them to understand common mistakes students make in the research process. Finally, the librarians understood the ACRL information literacy standards to a greater extent than the other collaborators. As such, the librarians formed the core of the item-writing team. Assessment and measurement specialists worked with librarians to assist with item writing. These specialists were trained to conduct item-writing and item-review sessions. They provided input on best testing practices and aided in the item revision process. The specialists also coordinated the test development process with the various stakeholders and analyzed initial pilot testing data. Finally, instructors from other departments gave valuable input regarding the skills they want graduating students to possess. These professors also taught research methods courses and advised students completing senior theses, so they were able to provide additional input regarding the common mistakes students make during the research process. The professors in the majors also coordinated students for the initial piloting of the instrument. Their assistance was instrumental in gathering responses from a large sample of students, allowing us to determine the functioning of the test items with a high degree of accuracy. A final role of the professors in the majors was to ensure that the ILT-S was sufficiently general to measure information literacy across all majors. Members of these groups met often and worked together in the crafting of the multiple-choice items for the ILT-S.

Four librarians wrote the initial pool of items. We decided to exclude ACRL Standard 4 from the multiple-choice ILT-S. Given that this skill involved using information to create a product, we determined that it was inappropriate to assess this skill with multiple-choice questions. This objective will be assessed via course-embedded evaluations of student research papers. The librarians wrote items across the four remaining ACRL standards independently, and then met as a group with an assessment specialist on a weekly basis. Each librarian wrote items for all four objectives, to ensure that no one instructor wrote all of the items for a given objective. The ACRL also specifies sub-standards that further delineate the overarching

information literacy standards. To further ensure the test's content validity, we required that at least one item was written for each substandard. During the group item-writing meetings, the team discussed the items that were written and made revisions. These team meetings were integral to the item-writing process. This allowed the librarians and the assessment specialists to resolve any differences of understanding regarding the ACRL standards and how to adequately assess information literacy, which resulted in a more representative and cohesive test. The assessment specialists also consulted with instructors in various majors participating in the project throughout this process to solicit feedback on the item pool, which resulted in further revisions. This process resulted in a pool of 55 items with appropriate coverage of the four ACRL standards.

Findings

The original pool of 55 multiple choice items was piloted with 390 students across two majors. The test was administered in several proctored computer-based testing sessions. The students were sampled from the Health Studies ($N = 298$) and Social Work ($N = 92$) majors. The sample consisted of 3 freshmen, 138 sophomores, 110 juniors, 136 seniors, and 3 post-seniors. Although the ILT-S is designed to assess information literacy at the senior level, we wanted to include students from across the undergraduate continuum in the original pilot to answer important research questions. First, we wanted to test whether items were too easy. If a large percentage of seniors answered an item correctly, then we may conclude that we have simply been effective in training the seniors in information literacy. However, if underclassmen also answer the item correctly, we may conclude that the item is not effective at measuring information literacy at a graduating senior level. Second, showing a score discrepancy that correctly discriminates between seniors and freshmen or sophomores would provide additional validity evidence for the ILT-S, as well as providing some initial evidence of information literacy educational effectiveness.

A series of item analyses were conducted to identify the items we wished to retain in our item pool. Items showing poor item-total correlations within each standard were eliminated. The item-total, or point-biserial, correlation represents the correlation between item response and total

score on the standard. These values should be positive and fairly high, indicating that students who answer an item correctly also tend to answer other items measuring the standard correctly.⁵ This indicates that the items measure the same construct. This procedure resulted in the elimination of 11 items. The scores on the remaining 34 items were sufficiently reliable ($KR-20 = .741$), with lower subscore reliabilities. Reliability quantifies the tendency for examinees that answer one item on the test correctly to also correctly answer other items. This is one method

to ensure that items measure a homogenous underlying construct. Reliability is a product of point-biserial correlations; a test with item scores with very high point-biserial correlations will also have high reliability estimates. Table 1 presents the remaining 34 items, the proportion of students getting the item correct (P-value), and their point-biserial correlations within standard. The p-values should not be too high (representing an item that is too easy), nor too low (representing an item that is too difficult).

Table 1. Remaining 34-item ILT-S (numbered as the original 55-item test)
Standard 1 (11 items)
 (Avg. P-value = .492)
 (KR-20 = .407)

Item	P-value	Point-biserial correlation	Item	P-value	Point-biserial correlation
3	.58	.112	20	.59	.138
6	.65	.167	35	.51	.327
21	.46	.141	43	.85	.231
23	.62	.134	45	.45	.176
26	.25*	.127	53	.64	.324
29	.17*	.128			
35	.51	.253			
41	.22*	.105			
47	.71	.225			
48	.59	.160			
54	.65	.103			

Standard 3 (13 items) (Avg. P-value = .596) (KR-20 = .602)			Standard 5 (9 items) (Avg. P-value = .629) (KR-20 = .433)		
Item	P-value	Point-biserial correlation	Item	P-value	Point-biserial correlation
3	.58	.148	9	.92**	.238
16	.79	.252	10	.79	.110
27	.49	.216	14	.13*	.117
31	.68	.274	18	.55	.123
38	.58	.221	24	.83	.259
44	.35	.110	28	.45	.163
49	.72	.282	34	.31	.179
50	.68	.297	40	.77	.200
51	.39	.287	42	.91**	.315
52	.58	.221			
53	.64	.363			
54	.65	.246			
55	.62	.315			

* Indicates items where respondents seemed to respond randomly ($P \leq .25$).

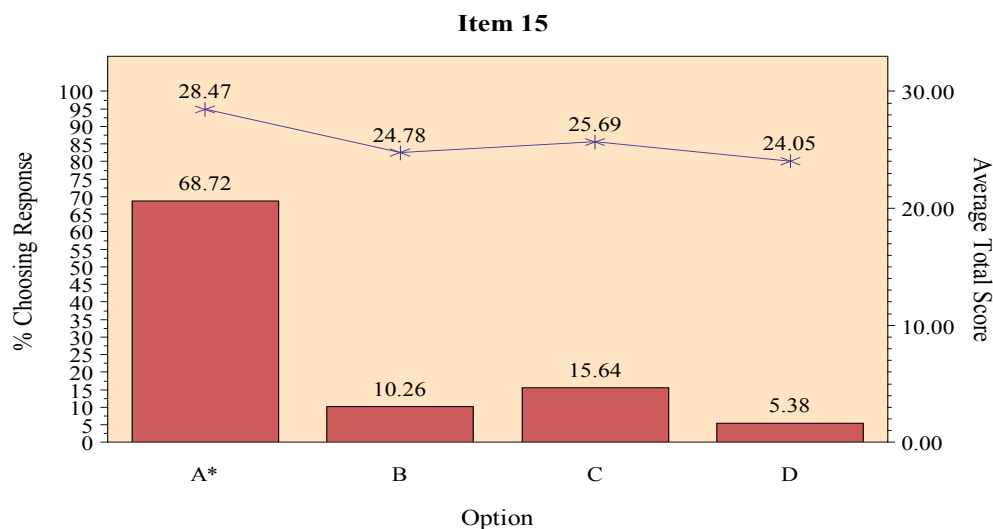
** Indicated extremely easy items ($P \geq .90$)

Although the initial results were promising, the results also indicated that additional revision was needed. This is typical for an initial pilot. Some items (e.g., Item 42) seem to be too easy for students, and some items (e.g., Item 14) seem to be too hard. Additionally, some of the remaining items have relatively low item-total correlations. The reliability estimates within each standard are relatively low, indicating that we cannot accurately assign scores for the individual ACRL standards. Correlations between subscores were higher than the KR-20 values within standard, indicating that total scores should be reported. In other words, items measuring a specific standard tended to correlate with items measuring the same standard to the same degree as with items measuring a different standard, indicating that the standards are not distinct. It is important to note that the final 34-item pool was determined entirely empirically, with items with high item-total correlations being retained. It is unknown whether the promising overall reliability estimate will replicate with an

independent sample.

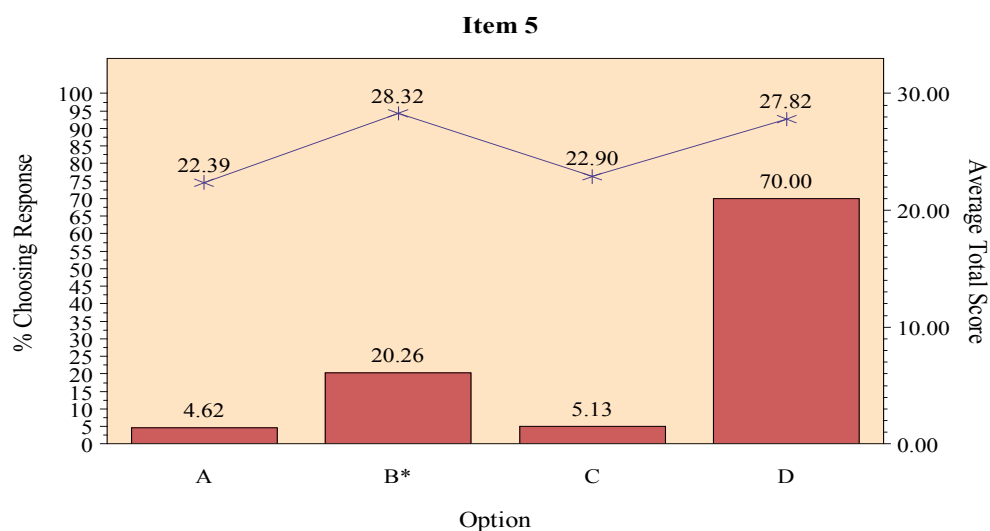
Despite indications that additional work needs to be done, there are signs that the test is effective. Promisingly, seniors scored significantly higher on the instrument than underclassman (by 3.44 points). Additionally, there was a moderate correlation ($r = .31$) between year in school and score on the ILT-S. These findings indicate that students are growing in their information literacy knowledge over time. Future work will examine the relationship between ILT-S scores and course grades in research methods courses to provide further validity evidence.

We continued to utilize significant collaboration in the revision of the instrument after the initial pilot. An assessment specialist created “distractor analysis” plots for use in item revision. The distractor analysis plot shown below is indicative of an effective item.



The bars represent the percentage of respondents selecting each answer choice. The keyed response (the “correct” answer) is answer choice “A,” which is asterisked. Although the majority of respondents (68.72%) answer the item correctly, a good portion of examinees answer the other answer choices as well. The line represents the total score for respondents answering each answer choice. Respondents choosing answer choice “A”

had an average total score of 28.47 points, which is significantly higher than the average total score for the respondents answering the other answer choices. This is a good indication that the item is effective; students higher in overall information literacy are more likely to answer the item correctly. Below is an item that needs additional revision.



The majority of the respondents chose answer choice "D," although the keyed response in answer choice "B." Additionally, the total scores for respondents selecting these two answers are similar. It is possible that both answer choices are technically correct or the item is worded in a confusing manner. Analyzing the testing data in this manner can provide useful guidance in item revision. The librarians worked with assessment specialists to revise the item pool using these analyses. As before, the professors in the majors that participated provided feedback on this revised item pool, which was used for further revision. This process resulted in a 50-item pool, which we will pilot further.

Practical Implications

After just the first pilot of the ILT-S, the instrument produced reliable scores that distinguished between students in meaningful ways. This is exceptionally rare in instrument design; it often takes years of piloting and revision to reach this point. We believe that the strength of the ILT-S was a direct result of the strong collaborative effort involved in its production. Items were revised multiple times as a result of feedback from other librarians, university instructors, and assessment specialists. Each of these groups tended to offer different strengths to the test development process. Having other librarians offer feedback on items ensured that the items measured information literacy appropriately. Instructors in different departments allowed us to craft items that would sufficiently measure information literacy across a diversity of disciplines. Finally, assessment specialists ensured that the items aligned with proper testing practice, and revised the measure using empirical pilot findings.

Despite these findings, additional work needs to be done on the ILT-S before it is used for assessment purposes. We plan to continue revision and piloting until reliability estimates are above .80 for a mix of student class levels (e.g., freshmen, sophomores, juniors, seniors). It is unclear whether scores should be reported at the standards or overall level. Although some instruments (e.g., iSkills⁶) have moved towards reporting scores on individual standards, this may be unjustified if the scores on the standards are very highly correlated. This would suggest that the items actually measure an underlying homogenous "information literacy"

construct, rather than individual skills. We will continue to refine the items using within-standard item analyses, and make the determination regarding the level at which to report scores as the item pool becomes more refined. Some substantive issues may also need addressing. Some professors provided feedback that some items on the ILT-S pertain mostly to academic research. For example, many items pertain to searching for sources in university databases and understanding academic research articles. If we are attempting to measure information literacy for graduating seniors, we may want to include additional test content that measures research skills outside of a university setting.

After the test is developed, further collaboration will be needed in the future. A test rarely remains static for long periods of time. The ILT-S will need to be updated regularly in order to keep pace with changes in the nature of information literacy. This is especially true in the case of information literacy, which is heavily technology dependent. Finally, competency standards will need to be decided on for the ILT-S. If the test is designed to assess graduating seniors, it is necessary to determine a faculty-derived criterion that represents graduating mastery of information literacy skills. Setting this standard is a complex process that involves multiple stakeholders and information literacy experts. Thus, it is important to maintain the cross-departmental collaborative effort in order to properly assess information literacy into the future.

In addition to maintaining our current collaborative partners, we plan to expand this project to involve more majors across the university. This should allow more diverse perspectives to help shape the evolution of the ILT-S over time. There are also major-specific subtests currently being designed and piloted. In contrast to the ILT-S core test, which is designed to measure information literacy across majors, these major-specific subtests are designed to measure information literacy skills specific to certain majors. The Social Work, Health Studies, Chemistry, Psychology, and Biotechnology majors are all involved in developing their own major-specific subtests. It is our hope to develop a shortened ILT that could be given concurrently with the major-specific subtests, so that we can assess both general and major-specific information literacy for graduating seniors.

We believe that involving students is critical in the success of assessment projects. Thus, the next step of our piloting and test development will be to conduct “think-alouds”⁷ with small groups of students. In these sessions, students complete the ILT-S, while verbalizing their thought process in answering the items. This procedure is often useful for identifying confusing or misleading items, and contributes to stronger test development. Importantly, it displays to students that we value their feedback in the assessment process, so that the assessment does not feel forced upon them. Finally, soliciting student feedback extends our collaborative model to the focus of the assessment, which is student learning and development.

It is important to note that this model for collaboration extends beyond the assessment of information literacy. Rarely does a college library system operate in a vacuum. Libraries are often responsible for providing research services for an entire college. Thus, it is crucial that major initiatives undertaken by a campus library system involve major stakeholders throughout the university. By involving several departments in the development process, we were able to give professors across the university a sense of ownership over the project. Bringing collaborators together across the university also helps build networks that can be used for other assessment projects. For example, our university libraries are currently undertaking an ambitious meta-assessment project⁸ that involves many of the same stakeholders included in the development of the ILT-S. Having worked collaboratively in multiple capacities has allowed both projects to prosper. All of the collaborators in this project affirmed that participating allowed them to understand the areas of the other collaborators better. The librarians understood assessment, testing, and research in the majors better, allowing them to provide more effective instruction for students. Professors in the majors similarly professed to learning more about information literacy, which they more fully integrated into their research methods courses. The assessment specialists also learned more about information literacy education, which has informed the creation of other instruments and assessments across the university. Thus, an unintended benefit of this collaboration was a sharing of knowledge that created stronger bonds throughout the university as a whole. We hope the promising

results of this work emphasize the importance of strong collaboration in the field of library assessment.

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Library Faculty and Instructional Assessment: Creating a Culture of Assessment through the High Performance Programming Model of Organizational Transformation

Meredith Gorran Farkas
Portland State University, USA

Lisa Janicke Hinchliffe
University of Illinois, Urbana-Champaign, USA

Abstract

In an environment in which libraries increasingly need to demonstrate their value to faculty and administrators, providing evidence of the library's contribution to student learning through its instruction program is critical. However, building a culture of assessment can be a challenge, even if librarians recognize its importance. In order to lead change, coordinators of library instruction at institutions where librarians are also tenure-track faculty must build trust and garner influence among colleagues as well as support from administration for assessment initiatives. The purpose of this paper is to explore what it takes to build a culture of assessment in academic libraries where librarians are faculty, both at the administrative level and among the librarians, through the High Performance Programming model. The analysis will be exemplified through case studies of two academic libraries where instruction coordinators are working to build a culture of assessment with their colleagues.

Introduction

Providing evidence of the library's contribution to student learning through its instruction program is critical in today's era of quality concerns and accountability. However, even if librarians recognize the importance of assessment, building a culture of ongoing assessment and continuous improvement can be a challenge. Doing so is uniquely effected when librarians are also faculty, both due to competing priorities and the autonomy that comes with being faculty. This paper explores what it takes to build a culture of assessment in academic libraries where librarians are faculty through the High Performance Programming model and discusses what librarians can do to

lead change processes with library faculty. The analysis will be exemplified through case studies of instruction programs in two academic libraries: the Portland State University Library and the Libraries at the University of Illinois, Urbana Champaign.

The High Performance Organization

In 1984, Nelson and Burns published a book chapter that offered a compelling vision of the high performance organization and provided clear and concrete steps toward achieving it.¹ Since its publication, many authors have defined the high performance organization, with all of them sharing certain characteristics.² The high performance organization has moved from leadership via control to leadership via commitment. Leaders build loyalty through their commitment to their employees and developing employees' sense of ownership in the organization. There is a strong emphasis on ritual and the development of a strong, almost clannish, culture.³ Most high performance organizations have adopted a flat organizational structure and a participative management model. Workers tend to be organized into teams, and teams have a great deal of autonomy, authority and responsibility. Unlike many team-based organizations, silos do not exist in the high performance model and people from any area of the organization can make suggestions for areas outside of their direct responsibility. Quality of service is the highest priority, so ideas designed to improve service are taken seriously, regardless of who they came from.⁴ Communications are honest and transparent; information is neither kept from employees nor from leaders. Leaders are open to feedback and criticism and invite it.

A key characteristic that distinguishes the high performance model from other types of organizational frames described by Nelson and Burns is the clear sense of purpose and the wide-reaching commitment to the organizational vision. Members of the organization not only have a strong commitment to the vision, but the vision is so clear that each of them, if asked to articulate it, would say virtually the same thing.⁵ Since commitment to the vision is so pervasive in the organization, leaders can feel comfortable giving employees the freedom to be creative in designing programs, products and services in support of achieving that vision.⁶ This freedom makes employees feel comfortable taking risks and trying new things. In a learning culture, anything new, whether a success or failure, will lead to new learning that can improve service. Autonomy and commitment to vision engenders an energy that makes people excited to come to work.

The high performance organization sits in contrast to three other organizational frames

defined by Nelson and Burns: reactive, responsive and proactive. The reactive organization is characterized by chaotic activity and a lack of any shared sense of purpose. Employees in a reactive organization don't know by what standards they are being judged, which leads to a focus on self-preservation rather than the good of the organization. The responsive organization has a strong sense of purpose and is focused on short-term goals. Employees know what they need to do and managers are focused primarily on coaching employees to meet those well-defined annual goals. A proactive culture is focused more on the future and creating a shared vision for the organization. In this frame, employees are empowered to develop long-term goals that are consistent with the organizational vision. Employees feel a sense of ownership of and commitment to the organization. Each of these frames has a very different focus and requires a different leadership style and employee perspective.⁷ The characteristics of each organizational frame are illustrated in Figure 1 below.

Figure 1. High Performance Programming framework from Nelson and Burns (1984)

	Reactive	Responsive	Proactive	High Performing
TIME-FRAME FOCUS	Past events	Short-term	Long-term	Flow
EMPLOYEE FOCUS	Self-preservation	Specific goals	Organization	Team and culture
CHANGE FOCUS	Responding to threats	Adapting to near-term realities	Planning for the future	Programming the future
MANAGEMENT FOCUS	Blame	Coach	Motivate	Empower
STRUCTURE	Command and control	Hierarchy	Flat	Teams within flat organizations
LOCUS OF CONTROL	External	External	Internal	Internal
COMMUNICATION	Fragmented and unclear	Feedback to employees	Feed forward to management	Transparent and bidirectional flow
LEADERSHIP GOALS	Enforce rules	Ensure success of action plans	Create a sense of shared purpose	Shared commitment and leadership

Figure 1. High Performance Programming framework from Nelson and Burns (1984)

Nelson and Burns use the term “programming” in their book to describe what has to happen to move from one frame to another.⁸ An organization cannot transform itself overnight, but the actions that leaders are taking now, will help to program the organization of the future. After all, organizational culture is based upon shared

history, and leaders must create the shared history of the future by programming changes today. This highlights the notion that truly transformative change requires a significant investment of time focused on organizational development. Beer suggests that organizations should not have ambitious performance goals during times of

intensive organizational development because they will then feel obligated to focus on initiatives rather than on transforming culture.⁹

The high performing organization looks strikingly similar to the ideal culture for building a culture of assessment as described by Lakos and Phipps.¹⁰ Building a culture of assessment requires much more than a change in behavior; it requires internalizing the value of assessment. Inherent in this is a focus on service quality and openness to feedback that could improve quality. At some institutions, the primary impetus for doing assessment work is accreditation or administrative mandate. This doesn't mean that faculty are not conducting assessments in a meaningful way or that results are not used to improve services or teaching. But, in a culture of assessment, instructional assessment becomes an integral part of teaching and is used to improve future instruction and plan new initiatives. A culture of assessment is a culture of learning, where librarians are curious about student learning and want to understand how to improve their teaching. Ennis argues that "'assessment culture' is code for not just doing assessment, but liking it."¹¹ This suggests that building a culture of assessment requires employee commitment and belief in its value rather than simply a willingness to follow orders. While this could happen in a proactive culture, the high performance culture is marked by a strong sense of purpose and a deep commitment to service.

Nelson and Burns' organizational framework can be used as a tool to diagnose what needs to change in an organization to become high performing. Most organizations do not strictly fit into one of the frames listed above, but exhibit characteristics from several of the frames. Knowing what characterizes the high performance frame and determining which elements of one's own organizational culture do not fit can provide clear guidance about which elements need to change. For the library leader seeking the development of a culture of assessment, the High Performance Programming framework is a powerful lens for examining current organizational culture and programming for organizational transformation.

The High Performance Organization and the Faculty-Driven Library

Just as there are many shared elements of the High Performance Programming framework and a culture of assessment, there are many parallels between library faculty status and the High Performance Programming framework, shared governance and autonomy being key examples. Hinchliffe and Chrzastowski demonstrated how the autonomy that often comes with faculty status can empower librarians to innovate and experiment without waiting for administrative approval.¹² The shared-governance model, which is in evidence at many libraries with faculty status, gives every faculty member a voice in the administration and future of their library.¹³ At the University of Arizona in the 1990s, a new library dean helped restructure the library around teams and shared leadership. In this model, administrators provide support and guidance, but each team has the authority to make its own decisions.¹⁴ Shared governance sits in stark contrast to hierarchical forms of library governance, which are focused on administrative control. In shared governance, all faculty must create change through influence, rather than positional authority. Faculty models are also typically marked by relatively flat organizational structures similar to those described in the High Performance Programming framework.

There are other aspects of faculty culture that are less conducive to adopting the high performance model and building a culture of assessment. Some authors have highlighted the individualistic focus of faculty¹⁵ and argue that it stands in opposition to the collaborative nature of librarianship.¹⁶ It is true that there are some inherent conflicts between tenure expectations at some institutions and the work of librarianship, which includes teaching and assessment. The emphasis placed in some tenure and promotion systems on scholarship can, at times, force faculty to prioritize publishing over public service work. For example, in their 2006 survey of priorities in public services librarianship, Johnson and Lindsay found a disconnect between job descriptions and tenure expectations among tenure-track librarians. While only nine percent of respondents said that publishing was given weight in their job description, a full seventy-seven percent stated that publishing was the most important priority for attaining tenure. Thirty-two percent of tenure-track librarians stated that reference and instruction work were least important when being

judged for tenure.¹⁷ At the University of Colorado Libraries at Boulder, teaching—a term meant to stand for the work of librarianship—is only given 40 percent weight in tenure and promotion and librarians are expected to spend as much time on scholarship as they do teaching.¹⁸ When the work of librarianship is only one of several competing priorities and expectations are focused on publishing, encouraging librarians to find time to assess instruction can be challenging.

Tagg examined the reasons behind faculty resistance and found that the message of research being more important than teaching is communicated to faculty early and often, to the point at which junior faculty are sometimes discouraged from focusing on instructional improvement.¹⁹ The problem then is not that faculty do not care to assess and improve student learning, but that reward systems disincentivize those efforts. Tagg argues that tying teaching more strongly to tenure and promotion is critical to motivating faculty to improve instruction.²⁰ In her work applying John Kotter's change model to building a culture of assessment, Farkas argues that in order to anchor change in the culture, barriers to assessment must be removed and structures, such as promotion and tenure, should be altered to encourage assessment work.²¹ By not listing participation in assessment activities as a key criterion for performance appraisal, libraries disincentivize assessment work for busy faculty members.

Learning Communities in the High Performance Model and in Assessment Cultures

Tagg argues that collaboration is vital to changing attitudes amongst faculty around instructional improvement. He cites the collaborative development work undertaken by faculty at Alverno College, an institution well-known for its exceptional assessment work, as an ideal way to get faculty to move towards creating a culture of instructional improvement and assessment.²² Locker and Mentkowski, both from Alverno College, discuss the idea of a *scholarship of assessment*, in which faculty “actively pursue systematic inquiry on assessment as a member of a community of professionals.”²³ They argue that the learning that comes from doing assessment is greatly amplified by sharing and discussing results with one's peers. This allows for multiple

meanings to arise from looking at the same results and for results from multiple faculty members to influence practice among each member of the group.

This model for building collaboration through faculty learning communities is consistent with the high performance framework. According to Nelson and Burns, high performing organizations recognize the value of these informal groups in organizations and believe that they can be harnessed to improve performance.²⁴

The importance of building cohesive and supportive teams focused on instructional improvement cannot be overstated, but creating such an environment among faculty can be difficult. Phipps writes about team learning being focused “on the learning of the team, not on individual contributions; a genuine thinking together, dialoguing, suspending assumptions, discovering insights together.”²⁵ In a faculty-led department, where the focus is usually on the individual and their teaching, this requires a significant culture shift. One way to spark that shift is through collaborative learning. At the University of Wollongong, library leaders sought to create commitment to assessment and team cohesiveness through staff development. This first step helped move the organization towards a stronger assessment program.²⁶ Angelo states that faculty learning communities can only come about through trust, shared vision and goals, shared mental models, and shared guidelines for doing assessment.²⁷ Similarly, Phipps highlights the importance of commitment to a shared vision amongst members of the team to provide a sense of direction and energy. She argues that this vision must come from the team itself rather than imposed by leaders.²⁸

These ideas about forming learning communities are predicated on the idea of the faculty determining the vision and direction of assessment work; a notion quite consistent with a faculty governance model. Many articles in the literature of higher education about building a culture of assessment stress the importance of the direction of the assessment push coming from faculty and their concerns. Giving faculty and staff ownership over the program will almost certainly increase buy-in. Many of the common faculty concerns

about assessment—that it runs counter to academic freedom, that results could be used against faculty or departments and that it is focused on accountability²⁹—would be significantly mitigated by a faculty-led assessment effort.

This model of faculty teams or learning communities requires time to develop. Creating a sense of cohesiveness, commitment and shared values doesn't happen overnight. Assessment teams are often tasked with specific activities as soon as they are formed without the opportunity to develop their own culture. Rather than take that route, the assessment committee at Queensborough Community College spent two years learning about and discussing assessment theories and techniques together. By becoming a learning community first, they were able to build trust, cohesiveness and feel a collective responsibility for assessing student learning.³⁰ Learning about assessment as a group can help faculty and staff develop a common vocabulary and common frame of reference, both of which can help build consensus in the development of an assessment program. Assessment, by its very nature is a collaborative, but building true collaboration takes time. Like building a high performance organization, an immediate focus on results will not build a culture of assessment; a focus on creating a learning culture and group cohesiveness is key.

Building a Learning Community at the Portland State University Library

At the Portland State University Library, a successful subject liaison model has existed for decades and has resulted in strong relationships between librarians and many academic departments on campus. The library liaisons are deeply engaged with their assigned departments and have always operated as independent actors in their instruction work. Librarians at Portland State are also tenure-track faculty and, while working full-time, are expected to adhere to the same standards for scholarship and service as traditional teaching faculty. Until 2011, when a head of instructional services was hired, there was no formal coordination of the instruction program and each librarian determined his or her own goals. There also was no group or forum within the library to discuss pedagogical issues

and assessment. Individuals wanting to improve their teaching had to take the individual initiative to do so, which in a tenure track environment took time away from research and service. While a few liaisons were conducting assessments of their teaching and student learning, the few coordinated assessment pushes over the years had been focused on assessing faculty and student satisfaction rather than learning.

Concurrent with the hiring of a head of instructional services came several ambitious goals related to instruction and assessment in the Library's Strategic Plan for FY2012–2014.³¹ While the team involved in strategic planning included representation from library public services, the strategic plan had not gone through a thorough internal vetting process, stemming primarily from the departure of the Interim University Librarian who has been leading the process. As a result, many instruction librarians did not feel a strong sense of ownership for some of the stated goals. While a number of the goals were met in the first year, it was sometimes difficult to secure faculty involvement or buy-in. Coupled with unclear administrative expectations regarding instruction and assessment at a time when most of the library administrators were interims, there were undercurrents of anxiety around these topics.

Not surprisingly, in this organization-in-transition, the new head of instruction ran up against barriers in developing learning outcomes and working toward other goals in the strategic plan. While the instruction librarians all expressed a desire to do more assessment, the lack of a clear and shared vision tacitly encouraged the tenure track librarians to focus on those things on which they knew they would be judged. Since the head of instruction could not effect change at the administrative level, she could only work on those areas that were within her limited reach and try to develop an instructional culture separate from the larger library culture. By the end of the year, the head of instruction had realized that faculty development, not moving towards externally identified targets, was the focus that would build capacity for lasting change. Instead of piling on more initiatives and expectations, what the instruction librarians needed was support, a sense of community, and a feeling of agency over the goals for library instruction.

Building a cohesive learning community has become an important goal for the new head of instructional services, and she instituted monthly instruction meetings designed to provide a forum in which to discuss issues related to instruction. In June 2012, the instruction librarians met in an all-day retreat to discuss pedagogical issues, develop questions they had regarding student learning that could be answered through assessment, and determine the group's goals for the following year. This retreat signaled a turning point for the instruction team. By determining their own goals, charting their own course, the librarians took ownership of instructional improvement. One important goal was to create a repository of learning objects and assessment tools that librarians could share and reuse. Meeting this goal in FY2013 will add significantly to the instruction librarians' tool-kit and their sense of self-efficacy. These small steps towards collaboration around assessment and improvement of student learning are vital and should form the foundation for further improvements in assessment.

This case study highlights the importance of a compelling shared vision and of forming informal communities to support organizational priorities, especially in the absence of such vision. When leadership is in transition, vision can be in short supply, and this can lead to characteristics of a reactive organization, where employees are focused more on their individual instruction work than on the instruction program. Forming informal or formal teams around instruction and assessment can help to bring the focus back to the big picture and create shared vision at the level of the instruction program. In a faculty environment, the faculty providing instruction should be empowered to develop their goals as a team, so long as they are consistent with the organizational vision and mission. Buy-in is not enough in an environment with so many competing priorities. Without a sense of ownership and commitment to a goal, librarians will prioritize those things that they know count most towards tenure, which rarely include assessment.

Infusing Assessment into Instruction at the University Library of the University of Illinois at Urbana-Champaign

The organizational structure of the University Library at the University of Illinois at Urbana-

Champaign is complex and multi-faceted. Like at the Portland State University Library, the University of Illinois Library has a long tradition of subject-specialty librarianship. Responsibilities of subject librarians have evolved over time, having once included technical services roles as conceptualized in a "holistic librarianship" model, but currently focus on engagement, reference, instruction, collection development and management, and professional development.³² Subject librarians have strong relationships with the faculty and students in the departments that they serve, in many cases built up through years of communication and cooperation. Subject-specialty librarianship, however, comprises only one part of the University Library's organizational profile. Equally important are the librarians in central public services and technical services units, who have responsibility for somewhat defined functional areas, as well as those in special collections units, who have public and technical services responsibilities for unique collections of archives, rare books, or other materials.

The University Library also has a long history of faculty status for librarians. With librarians having had faculty rank since the 1940s and full faculty status since the 1970s,³³ the library's organizational culture as well as administrative and work practices reflect the principles of shared governance, collegiality, and individual entrepreneurship as one would expect. Librarians value their autonomy and flexibility, which enable them to pursue opportunities and innovations with minimal bureaucratic processes or layers of administrative approval and oversight. All faculty report to the Dean of the Library, regardless of their unit affiliation, and are evaluated annually by the Faculty Review Committee, which is comprised solely of library faculty members.

Until 2002, the University Library's instruction programs were coordinated by the User Education Committee, a library faculty committee. As the programs grew in size, complexity, and strategic importance, the members of the committee determined that they had accomplished all they could with just a committee and so advocated to establish a central Coordinator for Information Literacy Services and Instruction. This faculty position is in the Office of the Associate University Librarian for User Services and is advised by the User Education Committee. On a related note, the

creation of the Coordinator for Library Assessment followed the same path—a faculty committee that advocated the creation of a permanent position.

An initial needs assessment conducted by the Coordinator for Information Literacy Services and Instruction revealed needs for basic instructional infrastructure, with hands-on classrooms at the top of the list for the Main and Undergraduate Libraries, as well as a desire for models and professional development opportunities. What was repeatedly stated, however, was that the instruction programs currently offered were uniquely developed by library units or teams in response to user group needs and should not be homogenized lest they lose their effectiveness. In other words, library faculty wanted a supportive environment for continuing to innovate and develop responsive instructional programs but saw the value in doing so collectively and cooperatively.

Library faculty also raised questions about whether the instruction programs were as effective as the librarians would like them to be and whether students were achieving the learning outcomes that were intended. Paralleling the development of a coordinated information literacy program in the University Library has been the development of its assessment program. The University Library's path to developing a culture of assessment has been described elsewhere in detail by Hinchliffe and Chrzastowski.³⁴ Of particular relevance to this case study is the lesson of the importance of attending to organizational culture and, in particular, faculty culture and the emphasis on publication as a criteria for tenure and promotion in developing the University Library's assessment initiative. As the assessment program developed and strengthened, it served as a backdrop for infusing assessment into the University Library's instruction programs and supporting librarians' desire to determine if the instruction programs are effective and achieving their intended outcomes.

Harkening back to the initial needs assessment conducted by the Coordinator, key to infusing assessment in instruction has been professional development. Two librarians have attended ACRL's Assessment Immersion program and one attended ARL's Service Quality Academy with particular attention to how she might apply her

new skills to teaching and learning efforts. The annual spring information literacy workshop has focused on assessment—featuring Debra Gilchrist in 2011 on the assessment cycle and Megan Oakleaf in 2012 on rubrics—with plans underway for a follow-up workshop in spring 2013. Resulting discussions and opportunities for librarians to share their pilot approaches are resulting in an emerging informal group of librarians who are leaders for instructional assessment through their work and scholarship, facilitated and supported by the Coordinator.

As interest grows in learning assessment, so too has the desire to share information and resources. The User Education Committee is exploring mechanisms to respond to librarian requests for a repository for sharing instruction and assessment resources, particularly those that might be easily adapted for other user groups. Creating a system that allows flexibility and autonomy while standardizing procedures and workflow is a difficult task but doing so also ensures growing adoption and use of the system that once it is put in place.

This case study highlights the success that comes from working within one's organizational culture and capitalizing on its values and strengths. Though much remains to be done, much has been accomplished in infusing assessment in the University Library's instruction program. Continuing to use the High Performance Programming framework as a lens for reflecting on faculty culture and the culture of assessment will help guide future actions and development.

Conclusion

The High Performance Programming model provides a valuable framework for library instruction coordinators looking to infuse assessment into their instructional programs, particularly at institutions where librarians are faculty. The vision of empowered employees structured around formal and informal teams and focused on service quality is quite consistent with ideals of faculty governance and the ideal conditions for building an assessment culture. Creating learning communities around teaching and assessment can help build a sense of shared vision and purpose amongst faculty, which is especially critical at institutions lacking a strong

administrative vision with respect to assessment. While no framework can direct specifically the steps one must take to achieve organizational transformation, the High Performance Programming model offers insights for leading change via commitment rather than administrative control and capitalizing on the values and characteristics of faculty culture.

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Collaborating with Assessment Services to Evaluate Information Literacy Skills of Graduating Undergraduates

Irene Ke and Christina H. Gola
University of Houston, USA

Abstract

During the 2010–2011 academic year, a group of librarians at the University of Houston (UH) Libraries partnered with UH Assessment & Accreditation Services to conduct a campus-wide information literacy assessment of graduating undergraduate students. This collaborative effort involved a video study on information seeking behavior and a rubric assessment on student papers. Combining the assessment expertise of the staff at Assessment Services and information literacy expertise of the librarians, the team successfully established a baseline for future information literacy assessment on campus and at the library. While the studies were exploratory in nature, the results revealed the strengths and weaknesses of our graduating students.

Introduction

Campus-wide information literacy assessment can prove challenging for many academic libraries.¹ Facing this challenge, University of Houston (UH) librarians took advantage of campus-wide assessment opportunities and initiated a collaborative effort with UH Assessment and Accreditation Services (Assessment Services henceforth) to conduct information literacy assessment. Working collaboratively with Assessment Services, the librarians completed two exploratory information literacy assessment projects to assess the information competencies of UH graduating students. The collaboration combined the assessment expertise of the staff at Assessment Services and information literacy expertise of the librarians. This paper describes how the collaboration developed through patience and persistence, the process of conducting two assessment projects, and the impact on the library instruction program.

Background: UH Climate and Library Instruction

UH is a public, research university located at the

center of Houston, Texas. Currently, UH enrolls more than 40,000 students. The university has twelve academic colleges and one interdisciplinary Honors College. The university has the second most diverse student population in the nation, and a large cohort of undergraduate transfer students.² Most recently, the university embarked on an ambitious plan to attain “tier-one status.” “Student Success” is one of the prominent objectives of the tier-one initiative.³

The library has a well-established library instruction program; however, librarians have not been able to systematically insert information literacy instruction into the undergraduate curriculum. This is largely due to the size of the student body and the large number of transfer students. Library instruction is offered based on faculty requests, and subject librarians work with faculty to determine the content of a library instruction session on a case-by-case basis. One-shot sessions are the norm. As a result, there are no standardized information literacy learning outcomes in the core curriculum, a leading challenge to assessment. With no information literacy skills explicitly taught in the core curriculum, faculty and students have no salient reasons to conduct information literacy assessment. Internally, librarians in general are new to assessment and thus uncomfortable about assessment due to lack of expertise, experience and time.

Despite many assessment challenges at UH, the library instruction program is highly motivated to conduct information literacy assessment for several reasons. First, the demand of accountability has been emphasized on campus and in higher education in recent years. Second, the teaching of information literacy is one prominent area that librarians contribute to the tier-one objective of “student success.” The assessment of which can

help articulate the overall library impact on the campus education provision. Third, assessment data can potentially help establish a linkage between information literacy and student success. If assessment data demonstrates a solid linkage between the two, the data will help librarians gain faculty buy-in and generate in-depth collaborative teaching opportunities. Aside from external reasons, librarians also recognize assessment as an essential component for continuing improvement of the library instruction program.

Collaboration Development

An opportunity for campus-wide assessment originated when UH began the Southern Association of Colleges and Schools (SACS) reaffirmation of accreditation process. SACS reaffirmation required UH to develop a Quality Enhancement Plan (QEP).⁴ During the process UH formed a QEP Topic Selection Committee that organized campus-wide discussions with faculty and student groups. Several librarians participated at different levels during these discussions. The QEP Topic Selection Committee eventually selected “undergraduate research” as its central topic and identified four core competencies. Information literacy is one of the four core competencies. The university was then required to develop an assessment plan for each core competency.

In conjunction, UH is also required to report how the university meets the core curriculum standards issued by the Texas Higher Education Coordinating Board. At the time this project was conducted, the standards included six competency areas: reading, writing, speaking, listening, critical thinking, and computer literacy. At UH, the university interprets “computer literacy” as the ability to use technology, and to access, use and interpret information—information literacy in an essence. The administrators in the Office of Institutional Effectiveness (the department in which the Assessment Services Director resides) thus determined that information literacy assessment was a part of the university’s ongoing general education assessment as required by state regulation.

Based on this need to assess information literacy, the Office of Institutional Effectiveness formed an ad hoc Information Literacy Assessment Task Force to develop a method for assessing information

literacy to meet the assessment requirements of both the QEP and the general education standards. Because of consistent library involvement in the QEP process, a librarian was invited to serve on the task force. The task force included members of faculty from different disciplines, assessment staff, and the library representative.

The task force decided to assess the information literacy skills of a cohort of graduating seniors. Considering many of UH undergraduates are transfer students, this cohort would be the easiest to control for variables. The task force also determined that a rubric assessment of student work was the best method for assessing information literacy skills. The decision to use a rubric was based on several factors. First, the university had previously conducted a successful rubric assessment on student writing; the success had strengthened confidence of its feasibility among the task force members. In addition, the method provided authentic data from student work and seemed easier to collect through faculty help (compared to asking students to take a test outside of any class requirements).

For various reasons, the work of the task force ended before conducting any actual assessment of student work. Competing assessment priorities on campus put the information literacy assessment project on hold for several months. While this was a major setback for the library, the efforts of the task force served a very important purpose. Most importantly, it raised awareness about information literacy assessment and made it one of the priorities on campus. Fortunately soon thereafter, Assessment Services began a rubric assessment effort in two similar areas (critical thinking and writing) that proved successful and resulted in a large collection of student paper samples. Upon realizing that there was a collection of student papers in place for assessment, the library re-initiated efforts for campus-wide information literacy assessment that was eventually successful.

Method: Process Assessment and Product Assessment

Since the information literacy assessment effort was re-initiated by the library, the team moving forward was smaller and consisted of only librarians and the Assessment Services Director. The team used the initial work of the Information

Literacy Assessment Task Force and the sample papers from the other campus-wide assessments as a starting point.

The process began with a preliminary test to ensure that the sample papers could provide meaningful data, especially since the papers were not originally collected specifically for information literacy assessment. The preliminary test aimed to determine whether or not specific information literacy skills that could be effectively measured using the paper sample and also identify potential problems with a rubric assessment method. Three papers from three different disciplines were randomly selected from the pool of sample papers. The ACRL information literacy standards were used as a framework to establish skill categories in the test rubric.

The results of the preliminary test exposed that not all competencies, specifically process based competencies, could be effectively measured using a rubric and student papers. To solve this problem, the assessment project was divided into two parts: a process assessment and a product assessment. Process assessment focused on evaluating the skills of selecting, accessing, and searching for information through an additional observation based assessment; the product assessment focused on quality of information used, how it was incorporated, and ethical use of information based on the student papers (see Figure 1). In addition, since the product assessment was meant to measure the use of external sources, the pool of sample papers was reduced because the test revealed that not all papers required the use of external information.

Figure 1: Information Literacy Skills Assessed by Method

Assessment Methods	Information Literacy Skills Assessed/Observed
Process Assessment (Video-taped study on students' information seeking behavior)	1. Identifying and selecting appropriate resources 2. Searching information resources effectively 3. Accessing needed information efficiently 4. Critically evaluating information
Product Assessment (Rubric assessment on student papers)	1. Selecting appropriate information 2. Using information of sufficient breadth 3. Integrating information into work effectively 4. Giving attribution where necessary 5. Citing information sources in a complete and consistent manner

Process Assessment

The process assessment aimed to observe students' information seeking behavior by videotaping graduating students as they discussed and navigated their way to identifying, selecting, and accessing information. The study included three segments: 1) Participants were given two real life problems to solve. They were given 90 minutes to find information to solve the problems. During the process, the students were asked to "think

out loud." The process was video-recorded for analysis; 2) participants were asked to complete a self-efficacy questionnaire, which contained fourteen multiple-choice questions. The purpose was to evaluate whether self-efficacy has an impact on student's performance; 3) participants were interviewed with a list of prepared questions that were designed to learn student experience using the library and information resources, and any library training they received at UH. At the end of

the three segments, the team members reviewed the recorded videos individually, documenting observations in an Excel spreadsheet. The team then discussed observations as a group.

The team offered \$60 as incentive for participation, funded through a UH Library “micro-grant.”⁵ The Assessment Services Director was heavily involved in the entire process with the librarians, including questionnaire design, task item creation, and interview question writing. The librarians contacted faculty members to recruit students. Seven senior students participated in the study. The participants were diverse in gender, ethnicity, and majors. The entire portion of the process assessment required and received UH Institutional Review Board approval.

Product Assessment

The second part of the assessment utilized the existing graduating undergraduate student papers and aimed to measure the quality of their sources and how they were used, as well as ethical use of information within their work. Since the pool of paper samples already existed, much of the work for the product assessment was focused on creating a rubric that could effectively assess the student work. The team developed several drafts of the rubric, beginning with a basic draft created using the ACRL information literacy standards. The second and subsequent drafts were created through an extensive testing and norming process in which a team of four librarians and the Assessment Services Director each read through the same papers, scored them independently using the rubric, then compared scores in order to find inconsistencies and make adjustments where needed. The finalized rubric can be found in Appendix A.

The student paper samples selected represented senior level classes in several different colleges. To ensure confidentiality of student information, all identifiable personal information was removed, including faculty comments and grades. All paper samples included the assignment and relevant guidelines so the librarians were aware of the assignment requirements. The Assessment Services Director assigned an identification code to each paper and the corresponding assignment.

Four librarians participated in rating the papers. A

team of two librarians read and scored each paper individually, then discussed the score together. The director would only join the rating discussion when there was a marked discrepancy between two ratings. The group rated a total of 58 student papers. The library did not apply for IRB approval for this portion of the study since the papers had already been collected as part of a different assessment. The librarians signed a confidentiality agreement with Assessment Services before evaluating the papers in which we agreed not to discuss or publish results outside of the working group. The Assessment Services Director prepared an official report with confidential results that was shared with the library and certain faculty bodies on campus.

Findings

The findings of these parallel assessments, though exploratory in nature, revealed broad but important information literacy strengths and weakness of UH undergraduates. The process assessment revealed several common themes regarding students’ performance on selecting information resources. Not surprisingly, the participants consistently started their search with Google or another favorite search engine. A national study also describes a similar finding.⁶ Most participants demonstrated limited knowledge of library resources, such as the library catalog and bibliographic databases; this was true of five out of seven who had attended at least one library instruction session during their years at UH.

In addition, the majority of participants did little to no planning prior to conducting a search; however, two consciously planned a strategy before starting a search. All participants struggled with developing effective search terms. Most participants used natural language, a sentence or a single word, as their search query. They appeared to use the same search queries to search all information search tools: Google, library databases, and the library catalog. Some had trouble finding the library homepage after their initial Google search. Surprisingly, while many used Google to start their searches, most participants did not use it to help them find the library homepage.

The most revealing finding relates to a significant impact faculty have on students’ selection of information resources. Those participants that

happened to remember a library information resource (i.e., JSTOR, LexisNexis Academic), remembered the source based on a professor's mention or suggestion of it. In addition, many students learned how to find information from their peers and family members. While not totally surprised, the team was disappointed to know that students are not inclined to ask librarians for help. Several commented that they were unaware that subject librarians are available to help. This finding strongly indicates that while librarians are considered the information literacy experts on campus, faculty are more influential on students' ability to select and use of information.

Another phenomenon observed relates to how students relied on search engine results to determine their information need and discover information sources. Rather than determining what type of information they might need before conducting a search, students used the initial search engine results to narrow down to sources that helped solve the problem presented to them, whether or not the results were reliable. Some commented about the trustworthiness of the information found, but few took actions on verifying the reliability and authority of the information found—which might be due to the limited time given to the participants. The majority of our participants demonstrated high self-efficacy on their ability to find information for solving the problem at hand, but there was no connection between self-efficacy and performance observed.

Regarding the product assessment of student papers using the rubric, the results provided generalizations about students' ability to select a breadth of appropriate resources, incorporate them effectively, and provide attribution and correctly formatted citations. Since the librarians agreed to use the findings of the product assessment for internal purposes only, we cannot share in depth findings in this paper. However, the results informed librarians of where they need to give more attention when teaching about the purpose of citing information. It also provided evidence that we should be having different conversations with faculty about the relationship between library instruction and assignment design and how it affects students' breadth of information sources and thus their experience with information searching. And most importantly, the overall findings established an important baseline for

future information literacy assessment.

Discussion and Lessons Learned

The entire process from the point of the QEP initiation to the two-part finished assessment was extremely time-consuming, but an overall worthy effort. For any librarian contemplating a collaborative campus wide-assessment project, first consider the benefits and drawbacks of the collaboration. The entire collaboration required initiative on behalf of the participating librarians to first establish the presence at the point of opportunity (QEP initiation) and continued initiative to sustain the effort after it stalled. In addition, collaboration provided the assessment expertise and faculty buy-in that did not exist within the library; however, relying on the external expertise meant practicing patience when other assessment priorities stalled the information literacy assessment project and thus changed the trajectory of the project.

The experience also demonstrated the importance of establishing clear shared goals and priorities with external collaborators so that all parties can better manage an assessment project of this size and potentially control any derailments. Remember that some control is relinquished when working with collaborators. For example, as experienced with this project, UH librarians gave up all control of the results of the product assessment because we relied on paper samples collected by Assessment Services and agreed to sign the confidentiality agreement. While this provided a wonderful opportunity to conduct a worthwhile rubric assessment, it limits the librarians' ability to discuss the results more widely and freely with faculty, as well as with librarians outside UH. However, the collaboration and even the limited sharing of results with some faculty groups, established a heightened awareness about the importance of information literacy instruction and assessment. And finally, the collaboration established a long-lasting partnership with Assessment Services that will assist the library in future campus wide-assessment projects.

Beyond the experience of this collaboration, the results of the two-part study provided the instruction program with general assumptions about UH undergraduate students' information skills can be used to develop new instruction and

outreach strategies and build a foundation for future assessment plans. Using the evidence from the process assessment, the UH librarians can begin transitioning from simply teaching library search tools, to teaching search concepts, for example, topic development or keyword development skills, which are transferable from search engines to library search tools. Librarians also recognize, even more than previously thought, how important faculty collaboration is to improving information literacy skills, from the point of information retrieval to incorporation into assignments. This realization has re-invigorated conversations among subject librarians about effective strategies for working with faculty at the course level. The evidence from the product assessment provides a foundation for measuring students' ability to incorporate information into writing, which can be improved upon with a variety of instruction efforts and measure again in the future and benchmark progress. The evidence will also be used to conduct a large-scale curriculum mapping project and eventually develop programmatic student learning outcomes for the undergraduate curriculum.

Finally, the librarians involved in this project learned a tremendous amount about assessment and rubric development. This experience and knowledge will allow UH librarians to conduct smaller and more manageable assessment projects in the future. We now have a fairly well established rubric for these types of projects. In fact, several librarians have already used the rubric to assess information literacy skills at the course level. As more librarians conduct and collaborate on these smaller scale product assessment projects, the more evidence the library instruction program will have to articulate impact on student success.

Conclusion

The UH experience conducting a collaborative campus-wide information literacy project was work intensive, a practice of persistence and patience, and extremely beneficial to building and improving the instruction program. The collaboration was key to successfully completing a large-scale assessment that met both the campus assessment requirements and the library assessment goals. The separate process and product assessments each provided unique findings and allowed UH librarians to discover more than originally planned. UH librarians now have assessment expertise and several options for

sustainable rubric assessments in the future.

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Appendix A: UH Library Information Literacy Rubric

Information Literacy Skills Rubric Fall 2010

Information Literacy Skill	Unacceptable	Acceptable	Exemplary
Selects appropriate resources (nature of resource: poor choices)	Cites search engine as source, like Wikipedia or ask.com. Sources not credible or timely, or irrelevant to topic. Use of sources without regard for author's credential, or for timeliness of source. Sources are emotional, not factual. No primary sources, though they would be expected.	Uses credible sources having proper authority Uses relevant sources appropriate for topic. Uses primary and secondary sources as appropriate	Highly appropriate and relevant Sources Cites authorities in the discipline. Selection and use of information shows that student understands context and knows the domain. Excellent usage of primary and secondary sources when appropriate.

Information Literacy Skill	Unacceptable	Acceptable	Exemplary
Uses resources of sufficient breadth (limited extend of resource)	Extent of information is inadequate for the topic/question at hand. Work cites only one type of resource (websites, journals, books, media resources) although several types of resources are available. Resources do not show appropriate breadth in time frame, point of view, and/or primary/secondary origin Cites only websites or only non-reviewed/non-scholarly material when reviewed material would be expected. So limited to one point of view that it is not clear that writer is aware that another viewpoint exists.	Extent of information is adequate for the topic/question at hand Sources are timely/ from appropriate timeframe. Uses acceptable breadth of source types. Shows awareness of other points of view, though the presentation of them may be less than balanced.	Provides comprehensive information for the topic/question at hand. Uses a full range of high-quality sources appropriate for the topic. Selects resources examining both sides, and all sides, of topic. Use of resources demonstrates understanding of the material and its limits, with consequent adjustments. Resources reflect the full appropriate breadth of time frame, viewpoint, and/or primary/secondary origin.
Integrates information into work	Rather than a critical usage of information, paper is a "knowledge dump." Writer cuts and pastes from sources without appearing to recognize the sources or their content.	Engages with information, rather than simply "dumping" the information. Some attempt at integrating the information into the work.	Critically reviews both/several points of view. New iterations.

Information Literacy Skill	Unacceptable	Acceptable	Exemplary
Attribution is given where it should be (intends to provide attribution)	Failure to attribute when appropriate. Plagiarism. Over-citing or under-citing. Does not seem to understand when citing is appropriate.	Attribution is provided, with a few minor errors. Appears to understand the general purpose of citing.	Fully attributed.
Citations are complete• and consistent in format (executes attribution) *Note: A website citation that is only a URL is incomplete. Author and title (as possible) are 'required so that if link is broken, information may still be retrieved.	Sources cannot be located from citations provided. Poor/inconsistent format or no citations provided.	A few minor errors, but sources are identified and can be located.	All citations are full and consistent.

Too Much Assessment, Not Enough Innovation: R&D Models and Mindsets for Academic Libraries

Brian Mathews
Virginia Tech, USA

Abstract

Academic libraries are facing a disruptive future. There are new technologies, new pedagogies, new publishing models, and new environments, all converging with teaching and research. This multiplicity of change is bubbling forth and setting up for new directions in the years ahead.

in search of small improvements rather than bold new directions. I propose that by adopting Research and Development (R&D) models, metrics, and mindsets, academic libraries can position themselves to discover and implement changes, resulting in new and greater value.

Library assessment programs would benefit from adopting Research and Development (R&D) practices in order to anticipate and accommodate new demands. This paper outlines a perspective shift for addressing needs in the emerging landscape of higher education. By embracing a discovery-oriented outlook, activating networked development initiatives, and nurturing a culture of creativity and experimentation, libraries can position themselves for growth opportunities.

Thinking like an R&D lab prepares and empowers us to face the uncertain challenges ahead. The concepts described in this paper serve as a launching pad for the future. The central theme: assessment initiatives need to be about more than *sustaining* our current practices—we need them to lead us to *growth*. By peering through the long lens of R&D, distant domains become possible destinations.

Introduction

In the early 1600s telescopes were some of the most powerful instruments in the world. It wasn't distant stars that people were searching for, but rather financial advantages.¹ Aspiring entrepreneurs stood on hillsides monitoring the shoreline for incoming trade ships. This ability to *see the future* before others enabled them to capitalize on emerging opportunities.

Famed venture capitalist Guy Kawasaki champions the telescope approach for forward-looking organizations.² He believes that people generally waiver between two dominant mindsets: microscopes and telescopes. Microscope thinking focuses on understanding and improving existing processes, whereas telescope thinking gazes outward at new possibilities.

We're at a critical point in the history of libraries. Now is the time to raise our telescopes and scan the horizon. While we invest in numerous assessment measures, we tend to use microscopes

The Goal of R&D

In 1902, a mining company formed and developed sandpaper into a lucrative product.³ Profits took a downward turn when customers started complaining about quality, which led to the establishment of a small lab to identify defects. The effort grew from a one-person shop into a team of engineers who worked on improving materials as well as manufacturing processes. The lab eventually added scientists and other experts focused on discovering, designing and implementing new ideas. The company is 3M, one of the most robust R&D powerhouses in the world. They started with sandpaper and today they offer over 55,000 products.

Ideas are plentiful. You and your colleagues probably have a long wish list of projects you'd like to tackle, but for one reason or another it's hard to get off the ground. Moving from idea to implementation is challenging. Sometimes the obstacle is money. Other times it's skills, connections, bureaucracy, personalities, or time constraints. These issues may be connected to something larger: culture. Does your library

accommodate the messiness and disruption of innovation?

Many library leaders want to move in new directions but lack the framework. Traditional models are not particularly effective for doing new things. This is where we can turn to the ideation and implementation practices of R&D.

So what exactly is R&D? Let's start with a definition:

"Systematic activity combining both basic and applied research. . . aimed at discovering solutions to problems or creating new goods and knowledge."⁴

The desire to solve problems, to develop new knowledge, and to create or improve services should be the driving force behind our assessment programs. The practice of R&D transcends chemists in a lab or engineers behind computers: it's a philosophy of innovation, an attitude that frames what we study and how we build solutions.

Many libraries operate like 3M did in its early years as a committee charged with assessment duties. They use tools to measure quality, effectiveness and user satisfaction. This approach is helpful for understanding how well current operations perform, but won't lead us to innovation.

To foster change-making innovation, we expand our toolkit as well as our construct for exploring problems. R&D encourages investment into larger and deeper questions that increase or blur established boundaries. Innovation requires us to travel down multiple paths simultaneously with a variety of partners as companions. Just as 3M evolved from the kernel of quality management into a product development juggernaut, academic libraries are poised to deliver a similar impact on learning and research.

Disruptive Cycles

Imagine you operate a profitable horse and buggy shop in the early 1900s. The craftsmanship of your carriages is unrivaled. Your service is excellent and your customers are loyal. The data suggests that you're doing everything right.

Then everything changes. Motorized vehicles hit the mainstream market. In 1908, Ford develops the Model T and by 1927 the fifteen-millionth unit rolls off the production line.⁵ Libraries, and perhaps higher education, are on the verge of a similar experience.

In the technology world this type of change is referred to as *disruptive*—it alters everything we're comfortable with, everything that we know. And while this immense change is difficult, it's a healthy part of innovation. Clayton Christensen outlines this theme in his seminal work, *The Innovator's Dilemma*, in which he refers to disruption as a process by which a new product or service uproots the established landscape.⁶

This cycle occurs over and over again as new ideas supplant old ones.⁷ Telegraphs were replaced by landline telephones, which are being replaced by mobile technology. Radio was challenged by television, which today is being challenged by the web.

Shift to higher education and you can see disruption everywhere. There are new technologies, new pedagogies, new publishing models, new learning environments, new partnerships, new tuition structures, new credentialing processes, new attitudes, preferences, and expectations all interconnected with teaching, learning, and research. This multiplicity of change is bubbling forth and setting up for unprecedented years ahead.

What's the future of libraries? Karen Williams, Associate University Librarian at the University of Minnesota, proposes that academic libraries are shifting from a collections-centered focus toward an engagement-centered model.⁸ This reframes the role of librarians from experts in scholarly *products* (publications) into experts of scholarly *processes*. Discovery and access to information will no longer be our defining identity. Librarians will become integrated and embedded partners emphasizing the craft and expression of knowledge. In this scenario, libraries shift from being suppliers of information into co-creators of scholarly experiences and outcomes.

This radical change requires new skills, abilities,

and attitudes. To shape this future we need telescopes pointing out in different directions. We cannot simply import our legacy model into a digital domain; rather we need to design new models and new domains. Simply put: the old rules (and metrics) don't apply during a disruptive cycle. Processes articulated for telegraphs won't work in the era of wireless communications. Likewise, our work will be different in a robust digital environment.

I addressed this spirit of change in an earlier paper about startups.⁹ My intention wasn't to suggest that libraries *behave* like startups (although that is possible using the lean methodology) but that we *think* like them. A startup mindset enables us to navigate through the uncertainty of disruption. It frees us to think differently instead of towing tradition along begrudgingly. In this sense, we're not upgrading the library but rewriting the source code. A new identity is being constructed while things are in motion; we don't know where the outcome will lead and hence have to become nimble, iterative, future-focused organizations prepared for arriving challenges. By anticipating and engaging disruption head on, we can position the library as a leader of change rather than a victim of it.

Discontinuous Thinking

Xerox knew that it had to evolve.¹⁰ While its photocopy business was extremely profitable, it anticipated that competitors would rise and that disruptions would emerge. Xerox responded in two ways. In Rochester, located near corporate headquarters, Xerox built an R&D facility focused on making better copier machines. On the West Coast, three thousand miles away from administrative oversight, Xerox established the Palo Alto Research Center (PARC).

PARC operated differently than the New York office. They brought together engineers, scientists, and philosophers and let them dream up new possibilities. Their objective was to generate new knowledge leading to breakthroughs that could open up entirely new industries for Xerox. The results were profound. PARC gave us laser printing, Ethernet cables, graphical user interfaces, modern personal computers, object-oriented programming, and WYSIWYG editors among other inventions.

You'll find the business literature is packed with stories, theories, and models for generating innovation, but Xerox provides this potent prototype: play both sides. The Rochester facility focused on developing the core business, while Palo Alto teams separately aimed at creating entirely new industries. This dichotomy highlights a critical concept, the difference between continuous and discontinuous innovations.¹¹

Continuous innovation is incremental and takes place within existing infrastructures. It builds on existing knowledge and existing services without challenging underlying strategies or assumptions.

Discontinuous innovation brings forth new knowledge and new conditions that result in the development of new products, services, or operating models.

Library assessment tends to emphasize the continuous side of the spectrum. How satisfied are patrons with our current offerings? How can we push services out further? Do students comprehend what we're teaching them? How can we streamline workflows?

While these questions are necessary, the challenges of a disruptive environment require discontinuous thinking, too. If we are shifting away from a collection-centered mission, then we need to ask new questions.

Let's look at an example. Consider the variety of academic support that college students need. Librarians typically focus on teaching information literacy delivered through reference and instructional services. Using the continuous approach, the goal is to expand these efforts in new ways, such as texting or course-based tutorials. We push out core services through different channels or new locations. This extension approach is continuous because it builds upon our existing platform.

A discontinuous approach asks a broader question: *what elements are critical for student success?* This inquiry opens new paths. Instead of seeking new ways of adapting old services, the intent is to reimagine the role of the library. By examining the larger learning landscape we can discover unmet

or underserved needs with the prospect of offering new services, technologies, spaces, expertise, or applications.

Discontinuous thinking encourages us to pull information in from other domains and then evaluate our potential involvement. We need to spend time understanding a community before assuming its needs. For instance, instead of setting up a mobile reference desk in the dorms, librarians might volunteer with the campus live-learn community to uncover ways of supporting residence hall staff hoping to grow their academic initiatives. By getting involved with (rather than just pushing out to) research labs, student government, or new pedagogies, librarians can position themselves for an engagement-centered universe.

A Cosmic Perspective

In a famous experiment, volunteers were asked to watch a video and count the number of times a ball is passed between individuals.¹² The study suggests that most people are so focused on counting the transactions that they fail to see a woman wearing a gorilla suit walking in the background.

Cognitive scientists refer to this phenomenon as “perception blindness” or “inattentional blindness.”¹³ We’re often consumed with the details of immediate matters that we remain unaware of the larger situation, even when it is in plain sight. If your job involves repeatedly performing the same task, then changes that make it easier might not be obvious to you. When considering reference work, the desk model is so ingrained in our professional culture that it blinds us to other interaction opportunities.

Breaking free from the gravity of tradition requires a conscious effort. Awareness of our selective blindness enables us to zoom out and refocus our vision. I refer to this as gaining a “cosmic perspective.” It is only by viewing situations through the wide lens of a satellite that we can truly appreciate the full scope of possibilities.

Another cognitive concept that limits our vision is “functional fixedness.”¹⁴ This insight was derived from an experiment known as *The Candle Game*. Participants were given a figurative candle,

matchbook, and a box of thumbtacks and asked to attach a lit candle to a wall without the wax dripping to the floor. The solution—using the box as a candleholder—was not initially evident, and people often struggled to solve the puzzle. However, when the materials were presented differently—thumbtacks in a pile beside an empty box—participants discovered the solution more quickly.

The results suggest that perceptions are clouded by viewing the box as a *container* for thumbtacks rather than as a *platform* for the candle. The role of the box is so ingrained in our minds that it is challenging to perceive it beyond its primary purpose. In this regard, functional fixedness stems from the persistent biases that we relate to various objects, places, concepts, or people. Often when something is labeled one way, it’s hard to break that initial stereotype. Libraries fall into this mode as well: are they *containers* of information or *platforms* for learning?

The perils of perception blindness and functional fixedness are that they encourage tunnel vision. And the real danger is that we might be unaware that we’re even in a tunnel. This narrow view perpetuates a drive for excellence (tradition) over the desire for innovation (evolution). It is grounded in the sameness of continuity at the expense of discontinuity.

During tough times you’ll often hear leaders talk about “mission critical” endeavors, when in reality, during a disruptive cycle, what truly might be necessary is a new mission. A cosmic perspective challenges our preconceptions and entrenched thinking. PARC, instead of just making photocopiers better, revolutionized how people communicated. Likewise, we need to take orbit beyond our day-to-day operations and legacy viewpoints by adopting a different outlook that enables us to anticipate and design for the future.

A Discovery-Oriented Outlook

Anthropologist Thomas Galdwin provides us with two contrasting mindsets regarding new ventures.¹⁵ His research found that European navigators typically began their expeditions with a set plan, charting voyages based on universally accepted principles and best practices. As the journey commenced, progress was measured in

accordance with a preset course.

Trukese islanders of the Western Pacific took a different approach. They began with an objective rather than a plan. They set off with a goal in mind and then responded to conditions that arose. This included the utilization of wind, waves, tide, currents, and clouds in order to steer accordingly. The effort was guided by doing whatever was necessary to reach the destination—the specific course taken wasn't important.

If you're developing an idea that is continuous or otherwise follows a predictable path, then a concrete plan based on established protocol or experience is suitable. However, if the idea is filled with uncertainty or if the destination isn't clearly defined, then different tactics are required.

A discovery-driven outlook acknowledges the difference between planning for a new venture and planning for a more conventional need.¹⁶ New ventures demand that we envision the unknown. Our assumptions are then tested and assessed in real-time. Much like the Trukese adapting to whatever nature presented them, our project requires us to convert guesswork systematically into the working process. Therefore, the real potential of the venture is only discovered as it unfolds.

Think of it like this: let's say you start out with Idea A. It doesn't quite work, so you build it in a different direction called Idea B. Along the way Idea C is sparked and ultimately becomes a new program that your library adopts. Had you followed a conventional path, it's unlikely that Idea C would ever have been discovered.

The key component of this outlook is how success is measured. In a conventional approach, this is typically determined by "staying on course," following the plan, hitting good numbers, or achieving specific targets.¹⁷ The Balanced Scorecard is a perfect example of this schema: performance as a measurable goal.

With a discovery-oriented outlook, learning is the objective. We want to uncover as much useful information as possible in order to address needs and grow the new venture. A prime example is

evident in collection building strategy as libraries shift from a predominately selector-driven model towards a demand-driven model. Instead of assuming we know what scholars want, we provide them with what they need when they need it.

This outlook challenges the foundation of our assessment programs. It requires us to move beyond inputs and measures of satisfaction, and instead test assumptions about what is necessary. We want to make libraries more efficient, but what if the thing we're making more efficient isn't a thing that people need anymore? What if libraries need to become something else?

Navigating a disruptive and uncertain future requires not a map, but a compass.¹⁸ Training ourselves to hunt for the unknown is a critical attribute for future-oriented librarians. But in order to think cosmically, we need new mindsets.

LEAPING SIDEWAYS: *mindsets*

AT&T's Bell Labs was one of the most productive R&D operations in history.¹⁹ A predecessor to PARC, it gave us transistors, lasers, information theory, UNIX, C and C++ programming languages and many other inventions. While Bell Labs focused on improving and expanding communication platforms, researchers were given tremendous creative freedom. The benefits of organizational flexibility were perhaps most evident in their work in outer space.

In 1962 Bell Labs, in collaboration with NASA and other agencies, launched Telstar.²⁰ This satellite, which still orbits the earth today, was the first to relay telephone conversations, fax images, and broadcast video around the globe. Successful implementation required not only unprecedented technical breakthroughs and new expertise, but also the imagination to believe it was possible.

It took Bell Labs over twenty-five years to develop the skills and components necessary to make satellite communications possible. The project was expensive and highly speculative: it was discontinuous and an extremely disruptive idea. At the time, AT&T was heavily invested in an infrastructure of wires, cables, and switches, as well as phone hardware and technicians. The move

into wireless was a giant “sideways leap.”²¹

Game changing, groundbreaking ideas don’t simply appear on your desk; you have to go out and find them. Here are three mindsets to help you along the discovery process:

Seize the White Space²²

As organizations mature, their functions become well defined. Funding, performance measures, and capabilities are concentrated on this *core operating space*. The objective is to secure the necessary resources in order to improve and sustain existing services.

But what happens when opportunities arise outside of the core space? Maybe you will encounter a new technology or a new user segment. Channels open, creating entirely new roles that transform what we do. At these moments, organizations move into *white space*, or uncharted territory existing outside of their core. Libraries moving from storage to publishing functions are a good example of this concept.

Seize the White Space provides a framework for exploring adjacencies and the outer edges of the core. Awareness of emerging trends and distinct domains is an important piece, but having a systematic approach for evaluating and building new ideas is most critical. Training ourselves to recognize and pursue new environments is essential for addressing strategic progress.

Swim In Blue Oceans²³

Cirque du Soleil reinvented the circus. They did this not by competing directly with Ringling Brothers or Barnum & Bailey, but by blurring the lines between theater, ballet, and spectacle. Another way that we can move forward is by entering into uncontested domains. This is called Blue Ocean strategy. Here’s how it works:

Red oceans represent all services or products in existence today—the known marketplace or everything currently available. Boundaries are well defined in this crowded environment and the space is driven by competition.

Blue oceans, by contrast, denote all services

or products that are not yet in existence. This unknown space is untainted by competition; demand is created, not fought over.

While white space encourages us to move beyond our core operations, blue oceans encourage us to move into areas that are outside of everyone’s space and into completely new domains. Sometimes new industries emerge, such as eBay developing the concept of online auctioning. But often, blue oceans are created by altering the boundaries of existing industries; this is what Cirque du Soleil did.

A library example: suppose that you’re considering adding a multimedia lab. You could build one based on benchmarking with other peer libraries in conjunction with surveying your users. Before proceeding, you review the landscape and realize that your campus already hosts numerous computer labs with design software. You could duplicate this, hence entering a red ocean. Or you could rethink the approach and find a blue ocean. Maybe your lab features one-on-one consulting or maybe it offers a plotter printer, 3D prototyping, or other value-added services. Or maybe instead of focusing on undergrads, you develop a multimedia sandbox for faculty and graduate students that addresses their design needs? The key is to differentiate what you do from what is also currently available.

Search for Black Swans²⁴

Prior to the *discovery* of Australia, people in the Old World believed that all swans were white. This notion was confirmed by empirical evidence: no one had ever seen a black swan before. And hence the confrontation with an unexpected phenomenon challenged the beliefs of what’s possible.

Black swans encourage us to consider possibilities outside the realm of regular expectations. This is part of adopting a discovery-driven outlook rather than a reliance on data-driven decision making. Just like the emergence of automobiles, iPhones, e-book readers, and MOOCs, unexpected breakthroughs lead to climatic changes. Disruption can’t be *measured* while it’s happening. All the old data, metrics, and processes become irrelevant. The key is being aware of impending obsolescence early enough to evolve.

These three mindsets establish a process of recognizing emerging opportunities and consequences. Adapting involves discontinuous thinking and stochastic tinkering. Experimentation and discovery-oriented fact collecting are preferred over a top-down directed approach focused on improving existing services. The driving question for the R&D-minded librarian is: *what else should we be doing?*

Ideation & Implementation: *approaches*

Every idea requires a different approach; each has to be nurtured and grown individually. What works well for one concept isn't necessarily the best option for another. A small team working on a large project requires a different process than a large team working on several small projects.

When it comes to innovation there isn't a one size fits all model. Part of the challenge is finding the processes that give your ideas the best chance for success.

Project management keeps groups on task, but product development unlocks the potential. New ideas can't simply live as action items for a committee to debate, but should be treated as small entrepreneurial ventures moving through your organization's pipeline.

Product development philosophy provides models and metrics for implementation. Granted, these approaches are designed for commercial endeavors, but the methods and spirit of them enable us to systematically grow and develop new spaces, services, tools, resources, instructional activities, outreach efforts, and other possibilities. What it boils down to is ideation: the formation, incubation, and advancement of ideas into tangible outcomes. Here are a few approaches:

Customer Development²⁵

Serial entrepreneur Steven Blank provides a model focused on customer development rather than product development. He argues we should start with users rather than services or technologies. His method devises ways to *prove* value via feedback, assessment, and usage, before scaling too quickly. Blank feels that many concepts fail because they are untested and don't reflect real needs. This program includes: Customer Development,

Customer Validation, Customer Creation, and Company Building.

Lean Startup²⁶

Eric Ries advocates for the lean methodology: build, measure, learn. His expertise is with startups, but the approach has been adopted by other organizations including the federal government.²⁷ Ries expands the customer development model by launching prototypes (building) as soon as possible. After observing how potential customers interact with the service (measuring), the initial concept is improved upon (learning) and the cycle repeats itself. Assessment is integrated into an iterative process refining how the concept grows.

Agile Teams²⁸

Agile refers to a software development process that can be applied to other projects. The framework is ideal for collaboration on large undertakings in which the objectives are uncertain or frequently changing. Agile promotes iterative and incremental work that can be broken down into a series of smaller parts and coordinated in a decentralized manner. Teams respond quickly to evolving needs, insights, and emerging possibilities.

Positive Deviance Approach²⁹

The Positive Deviance methodology consists of five steps: define, determine, discover, design, and monitor. It is based on the philosophy that within every community or organization there are positive outliers who are exceptionally more successful than others, despite having the same resources. These groups or individuals use uncommon approaches that generate more effective outcomes. By learning from these exemplars, organizations can incorporate and promote these methods more broadly.

Design Thinking³⁰

IDEO presents a field-tested methodology of innovation: observe, visualize, evaluate and refine, and implement. The design thinking process revolves around empathically exploring the problems that users experience and then designing solutions around apparent needs. This practice expands beyond usability or user-friendliness, taking instead a systematic look at the tasks involved with accomplishing objectives. Steven Bell provides a helpful article about applying design

thinking to a library context.³¹

Challenge Driven Innovation³²

Ambitious and auspicious challenges can be an effective motivational tactic. CDI divides large problems into smaller subsets and tasks groups with solving separate portions. When fused together, these distinct components can help organizations move forward with difficult goals or challenging objectives. This strategy consists of seven stages: idea gathering, filtering, dissection, channel distribution, evaluation and confirmation, assembly and integration, and launch.

Percent Time³³

Google popularized 20% time, but the concept has been around for decades. Hewlett-Packard and 3M both encouraged “free time” which fostered many breakthroughs.³⁴ Percent time essentially gives employees a small portion of work time free from their daily-to-daily core duties to explore or tinker with new ideas. Staff can pool time together to work collaboratively on large projects or individuals may focus on a small side project of tangential interest. Percent time nurtures an entrepreneurial culture by empowering employees to identify and tackle problems, seize white space, and to turn discovery-oriented observations into unplanned impacts.

Hack-a-thons³⁵

Facebook hack-a-thons are infamous late night ruckuses that result in highly creative outputs. After hours in a heavily caffeinated environment, employees brainstorm and work on new ideas for the website. Much of the social network’s ideation happens in this manner, including the development of new tools and features, code improvements, and bug fixes. After an evening of intense coding, teams present their work and the best concepts are pushed forward into production.

Networked-Ness: cross-pollination

In 1856 William Henry Perkin, an English chemistry student, changed the world.³⁶ Using exotic materials from Far East colonies, he created a compound that gave textiles of cotton, wool, and silk a rich shade of purple. This pop of color revolutionized fashion by launching the organic dye industry.

This advancement set off a frenzy in Europe and the Americas. Not only were lush new hues available for fabrics, but chemists started searching for new materials that they could bring to market. This milestone is referred to as the birth of modern R&D.³⁷ Chemical, mechanical, and pharmaceutical labs, such as BASF and Bayer, quickly developed and industrial research emerged.

Often, R&D is portrayed serendipitously. A scientist stumbles upon a medical breakthrough by mistakenly mixing chemicals. Or an engineer tinkers in frustration until that ah-ha moment strikes. While lone inventors do make important discoveries, R&D is typically a social activity.

Most of the groundbreaking efforts constructed at NASA, IBM, PARC, and Google were team efforts. In fact, when Bell Labs conducted a productivity audit they found that it wasn’t environmental or procedural factors that propelled success, but a person.³⁸ Researchers who commonly shared breakfast or lunch with Harry Nyquist, an electrical engineer, tended to secure more patents. Why? It wasn’t that Nyquist gave them specific directions, but he had a way of asking good questions that got people thinking differently.

Kevin Dunbar, a psychologist studying how people think, also affirms the value of social cross-pollination.³⁹ When interviewed, scientists typically described breakthroughs happening while alone in labs or working late at night. Dunbar’s research, though, uncovered that the seeds of creative ideas were planted during weekly lab meetings or in hallway conversations. It was the interaction and exposure to different methods or concepts that resulted in new ways of tackling experiments.

This progression is impacting the very nature of how research is conducted. While academic and corporate research labs dominated R&D over the last century, more complex and collaborative efforts are now emerging. In fact, we are entering into the sixth generation of R&D practices, evolving from lab-based environments toward design-driven networks.⁴⁰

Textile manufacturers are once again leading the way. An emergent framework shifts emphasis from what customers think they need to what they

are actually waiting for. By combining technical knowledge (scientific and engineering processes) with social and cultural knowledge (aesthetics, economics, and marketing) firms can develop and apply insights and expertise across a larger domain.⁴¹

A networked textile environment brings retailers, journalists, and fashion designers together with safety experts, chemists, and geologists.⁴² Traditionally the knowledge needed for new innovations is created separately and interpreted across various research centers, design studios, and marketing agencies. This new interdisciplinary direction instead recognizes the benefits of collective ideation and shared development through the integration of expertise.⁴³ By combining the diverse spheres of technique and social-cultural information, organizations are able to form a holistic and contextualized understanding of the operating landscape. This opens the door to discontinuous innovation.

Applying this networked approach to library assessment would encourage us not only to partner with others on campus, but also to rethink the intention and output of our efforts. Consider the objective to support learning for undergraduates. Many others share this mission. And while the library obviously promotes an information-driven agenda, the boundaries blur into IT, tutoring, and other support services. As budgets tighten and disruptive possibilities emerge, where does that leave us? Instead of focusing on the discrete fixed role that libraries currently fulfill, assessment can guide us in new directions.

Building together with others sharing our path can result in the arrival at unexpected destinations. By combining the experiential sphere of current and former students along with instructors, together with the support sphere of tutors, advisors, teaching assistants, writing and communication professionals, and librarians we can expand the discovery-oriented outlook and influence the larger learning environment. Networked assessment and development allows us to address issues that we never knew existed.

Culture: aptitude for creativity

When the Vikings migrated across Europe they also established colonies in Iceland and Greenland.

These lands presented numerous challenges. In Greenland the settlers survived for hundreds of years, while in Iceland their descendants still flourish. What happened?

Popular science writer Jared Diamond weaves together an interesting investigation comparing the two civilizations.⁴⁴ While there are many variables, archaeologists pinpoint one glaring difference: fish. The Icelanders adapted to the environment by changing their lifestyle and domestic conditions. This included adopting a hearty diet of fish. The Greenlanders replicated the familiar farmlands and societal structures of their homeland, which didn't include eating fish. The Greenland colonists could not persevere because their *culture* was built around their old environment.

Consider our legacy systems in an era of disruptive change. *The way we help patrons. The way we describe information. The way we provide information.* Migrating from a print to digital environment is very much like establishing a new colony: it requires a new culture. And a critical component of this new culture is the aptitude for creativity.

The profiles of R&D powerhouses highlight the need for many qualities: experimentation, curiosity, ambition, and determination are a few. But a culture of creativity is a unifying and essential trait. Despite working for different industries and on different types of products, the desire and freedom to build ideas is indispensable for success. Organizations can have great talent, inspiring vision, money and resources, but without giving employees the opportunity to discover and develop new concepts, innovation will suffer.

A study interviewing industrial scientists about workplace conditions found that the most important attribute for creativity was intrinsic motivation.⁴⁵ Projects that people felt passionate about and that didn't involve too much external pressure were the ones in which creativity thrived. Here is a representative quote:

"What's important to me is feeling that I've done something that's making a difference, seeing that something I've worked on has turned into a product. It's not about getting pats on the back from my own management, but having the self-satisfaction of seeing my work come to something, feeling that I have

made a contribution.”⁴⁶

When asked about barriers or obstacles to creativity a consistent experience expressed in the study involved supervisors who believed that the creative process could and should be managed. Too much *process* kills the innovative impulse. Directors operated with the illusion that they were *helping* the effort, when in reality they were *hampering* it. The study suggests that leaders should instead focus on managing work environments and organizational climates that support the freedom to create in accordance with broad objectives.

Let's consider three examples of highly creative R&D operations:

Bell Labs embraced a “problem-rich environment” in which employees were pushed to look beyond the day-to-day concerns and consider new areas for advancement.⁴⁷ The goal was to develop new knowledge that could be converted into new products or services. Innovation was considered a total process of interrelated parts—not just about building a new widget, but about how that widget fit into the larger scheme.

PARC nurtured the “pioneering spirit.” Its charge was to lead the company into uncharted territory. This lofty and aspiring mission motivated employees. They felt they were a part of something significant. Retrospectively, *PARC* leadership felt the key to their success was in leaving researchers unburdened by directives, instructions, or deadlines.⁴⁸ This open environment not only fueled creativity, but also resulted in unexpected breakthroughs that could not have been managed from the top down.

IDEO encourages “observation-fueled insight” in which more time is spent understanding problems than trying to solve them. The product design firm contends that methodology alone is not enough and that their secret formula is actually a blend of methodologies, work practices, culture, and infrastructure.⁴⁹ *IDEO* urges empathy-driven development centered on understanding what people are trying to do, rather than what they are currently doing. This is where data-driven decision making fails to accommodate for human need.

Culture is very subjective. What works well at one library wouldn't necessary work in another. It can't be programmed and it's difficult to change. Yet this is another situation in which assessment is vital. By demonstrating new needs, assessment establishes the paths and sets the tone for growth. In short: assessment serves as the “change-making” enterprise in our libraries.

Conclusion

Thirty-five years ago *Voyager 1* set off to investigate the universe.⁵⁰ Its primary mission was to collect data and images of Jupiter and Saturn. After achieving that objective, it was thrust into the outermost edges of our solar system. The satellite is now on the verge of crossing that threshold and entering into the vast unknown of interstellar space: a domain beyond the reach of our Sun.

A similar expedition is necessary for academic libraries. Our mission needs to stretch beyond the legacy role of an established orbit, and venture into the open white space that awaits. It is with this cosmic perspective that librarians can expand beyond their core domain and address the emerging needs of a disrupted future.

We are at an inflection point in the history of libraries. The decisions we make over the next several years will set us down a new a path and result in the establishment of a new identity. R&D practices are critical to this future because we need processes and philosophies geared toward converting new knowledge into new roles, new services, and new applications.

Assessment is our growth strategy. We need it to be more than a reflection on how well libraries are currently operating. It is a discovery tool that can push change and invention. Rather than just looking for continuous improvements with a narrow focus or building “effective, sustainable and practical” measures, we need our assessment programs to unlock the potential of discontinuous innovation. These endeavors should be discovery-oriented satellites exploring new domains and beaming back insights and opportunities we never imagined possible.

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Assessing the Library's Grants Program

Jamie McGowan and Beth Sandore Namachchivaya
University of Illinois at Urbana-Champaign, USA

Abstract

Purpose: In this analysis, seven years of sponsored research projects at the University of Illinois Library at Urbana-Champaign were assessed with the aim of understanding the research trends and themes over that period. The analysis was aimed at identifying future research trends and corresponding support opportunities. Goals included developing institutional research themes that intersect with funding priorities; demystifying grant writing and project management through professional development programs, increasing communication about grant successes; and bringing new faculty and academic staff into these processes. The review and analysis has proven valuable for the library's institutional practices, and this assessment may also inform other institutions' initiatives with grant writing.

Design/Methods/Approach: The authors performed a multi-step assessment of the University Library's grant activities: 1) established a baseline of data on funded grants; 2) identified the motivations for pursuing grants and the obstacles that library professionals face in the process; 3) established a stronger support structure based on feedback gathered, and through collaborations with other groups that support the research process; and 4) identified strategic research themes that leverage local strengths and address institutional priorities. First, analysis of library data on externally funded grants from the University's Proposal Data System provided insight into the trends, themes, and outliers. Second, informal interviews were carried out with investigators at the University Library. Third, efforts to provide effective internal support in the proposal preparation process, including help with budgets, support documentation, and review of narratives, were increased. Lastly, several changes were initiated based on the feedback from the data analysis and the interviews. These included: collaboration with the Library Research and Publication Committee to develop and offer forums to engage more library professionals in initiating grant proposals; developing workshops

through public-facing programs; establishing a library blog that recognizes research and professional accomplishments; developing a LibGuide that focuses on identifying grant opportunities; and providing reviews of grant proposals prior to submission.

Findings: Several key findings emerged from this assessment. Historical trends in library grant funding were identified, along with areas where the library is positioned to enhance grant efforts. Library faculty and staff identified core organizational issues that were perceived as obstacles to pursuing external funding to support research and innovative service development. The analysis revealed that faculty view grant opportunities as having extraordinary value within their careers and for the institution. Finally, this work revealed a need for the library to cultivate an up-and-coming cadre of faculty and professional staff who can transform key research questions into compelling proposals. As part of this effort, several changes were made, including the development of professional forums aimed at faculty and staff who are interested in and ready to pursue external funding, the creation of a blog aimed at recognizing the research accomplishments of library professionals, and the institution of more frequent and consistent communication about grant and research opportunities.

Practical Implications/Value: As a focused case study this can serve as a model to other academic and research libraries interested in two areas: 1) utilizing quantitative methods to understand and track the past and current trends related to research interests and grant funding and 2) using quantitative and qualitative data to design support systems for those in the library seeking grants.

Biographical Statements

Jamie McGowan is the International Program Manager at the Committee on Institutional

Cooperation. She worked with the University of Illinois Library for a year, providing foundation, grants and community research support and is pursuing an M.S. in library and information science. She also has written many successful internal and external grants.

Beth Sandore Namachchivaya is associate university librarian for research and technology, associate dean of libraries, and professor at the University of Illinois Library at Urbana-Champaign. She leads library programs in the areas of digital libraries, e-Research, and innovation. Her research focuses on the evaluation of digital libraries, and digital preservation programs, organizational change, and innovation.

Introduction

For over a decade the University of Illinois Library at Urbana-Champaign has sustained a track record of successful external grant funding. Grants support many types of activities, including research by librarians in library and information science and other fields, collection acquisition and processing, preservation, new user service programs, digitization, digital library development, assessment and evaluation, and professional development and training programs. In difficult economic times, libraries rely increasingly on grants to fund innovation and research. The impetus for this assessment study stems from the library's desire to identify ways to support librarians and staff who were successful at garnering grant funds, and to provide incentives and an ongoing support infrastructure that would encourage more librarians and staff to seek grants and to understand the drivers of success. This paper describes an analysis of the grants "landscape" in the library and the resulting data helped the library identify to better support librarians and other professionals to develop successful grants. In conducting this work, we sought answers to several core questions:

- What are the recent funding trends for the University Library?
- What can the University Library do to encourage success and minimize obstacles to grant submission?
- What can the institution do to support success after the award?
- In what strategic areas could the library expand its grant activities?

Understanding the Context

In today's challenging economic climate, faculty and researchers are both motivated and expected to pursue external funding as a means of developing and sustaining institutional research and service functions. University libraries are no exception, with librarians seeking funding to support a variety of innovative new programs and to perform research.¹ Given these professional and economic drivers, libraries are positioned either to initiate or to be partners in grants and sponsored research. Beyond a climate in which grant funding is good for the institution, grants support a number of the University of Illinois Library's innovations. Grant funds incubate initiatives that extend the library's core activities, projects and programs, and this infusion of support is critical to their success.

In deciding to conduct a baseline evaluation, we are also mindful of the value of assessment to our organization and processes. Extending a "culture of assessment" to grant funding is a signal of its importance in the broader scope of library work.² At the organizational level, this initial assessment also signals a commitment within the institution and among its leadership to prioritize external funding for evaluation. While it appears that libraries seek grants increasingly to support programs, services and research, the literature revealed scant analysis of grant funding programs in libraries. The average number of grants and level of grant funding at the University of Illinois Library has risen steadily over the past decade. This trend suggested that grant funding is evolving into a mainstream program area for libraries, which, like other library programs, should clearly be subject to assessment. As Lakos and Phipps reiterate, "what gets measured gets managed." Quantitative and qualitative measures enable organizations to better support individuals to increase their grant-writing success, and libraries to their infrastructure and culture of institutional research support.

Three common themes emerged from the literature on grant writing and librarianship. First, there are works that are more or less instructional, guiding one through the steps of writing a grant proposal.³ A second grouping outlines potential sources of funding.⁴ The third highlights the value of grants for career development.⁵ A 2004 ARL SPEC Kit survey on grant coordination reported that of 65 respondents, 62 libraries indicated that they

pursued grants. Roughly half of those 65 libraries reported an increase in grant funding within the previous five-year period, and 40% reported that they had no change, and 10% reported a decrease in grant funding. Further, nearly two thirds of the libraries reporting vested the responsibility for managing grants in the librarians who were the grant's principal investigator (PI)⁶ To this scholarship we introduce a new thread, assessment of grant programs. The data analyzed were drawn from a university database that tracks grant proposal information, and from interviews conducted with a librarian and professional staff who are actively engaged in grants that support research and service programs.

The University's Division of Management Information supports a Proposal Data System, providing current and historic proposal data dating back to 1996. Using this database, we accessed the University Library's proposal data to provide the primary quantitative data. The data maintained by this database are sponsored research processed by the Office of Sponsored Programs and Research Administration, and they only represent grants submitted to external entities rather than institutionally based competitions. The database includes information about the status of grant proposals (awarded, declined and pending), the principal investigators names and affiliations, the title of the proposals, the funder, and the amount of money proposed, awarded, and spent, and the length of the awards.

We initially sought to represent ten years of grant writing. However, the accuracy of the proposal database deteriorated with legacy data from a system migration that occurred eight years ago. Hence, we focused on seven years of data, presented here. In analyzing these data, we opted to focus mostly on successful proposals, mapping between the award data, the library as an organization, and more nuanced data about each proposal's focus or intent.

The second source of data was informal interviews with ten library faculty who have and/or are actively writing external grant proposals. The informational interviews offered rich qualitative data that added depth to our quantitative assessment. For instance, interviewees highlighted the professional and institutional value of grants, the context in which such grants emerge, and suggested avenues for improving the grant-writing process.

Combined proposal data and interviews provide insights that guide institutional practices—such that the University Library is better placed to develop strategic research initiatives, support initiatives underway, and cultivate grant-writing interests and skills across the library. We present a summary of the quantitative data next followed by the qualitative data. Following our analysis, we outline our responses to these findings. Again, one of our core goals is to support the development and success of grant-funded initiatives. These steps, assessments, and our initial responses are described in greater detail below.

Developing a Case Study: University of Illinois Library Grants Analysis

The Big Picture

At the summary level, librarians and other professional staff in the University of Illinois Library submitted 146 grant proposals during the past 7 years. Eighty-five of these grants were awarded, yielding a success rate of 58.2%. The library's track record of garnering external funding compares favorably with the University of Illinois campus, which sustained a 48.4% success rate during the same period. For the library, new proposal success fluctuated from year to year (Figure 1). However, when multi-year grants are factored in, the distribution of grants levels out by comparison (Figure 2).

Figure 1

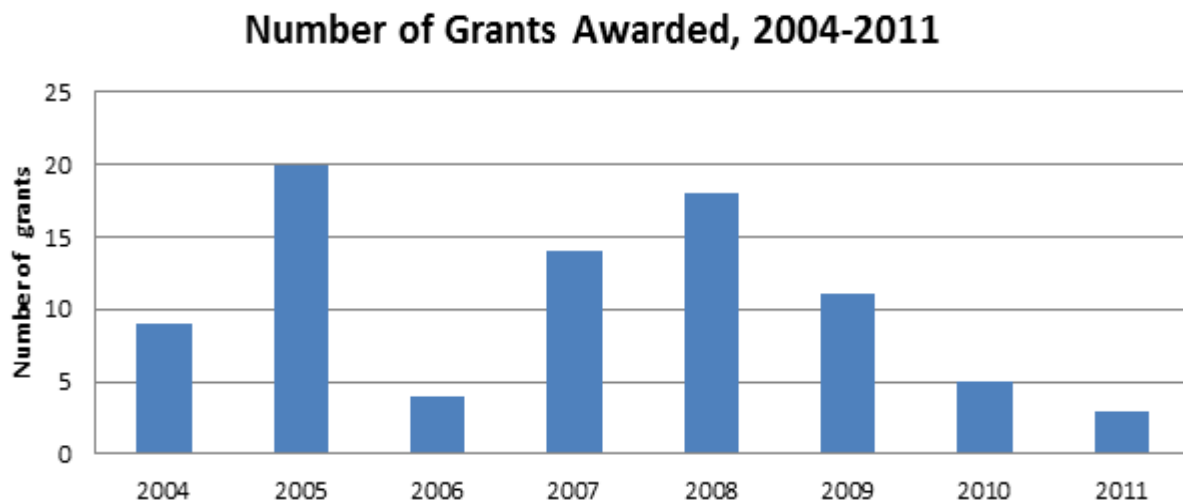
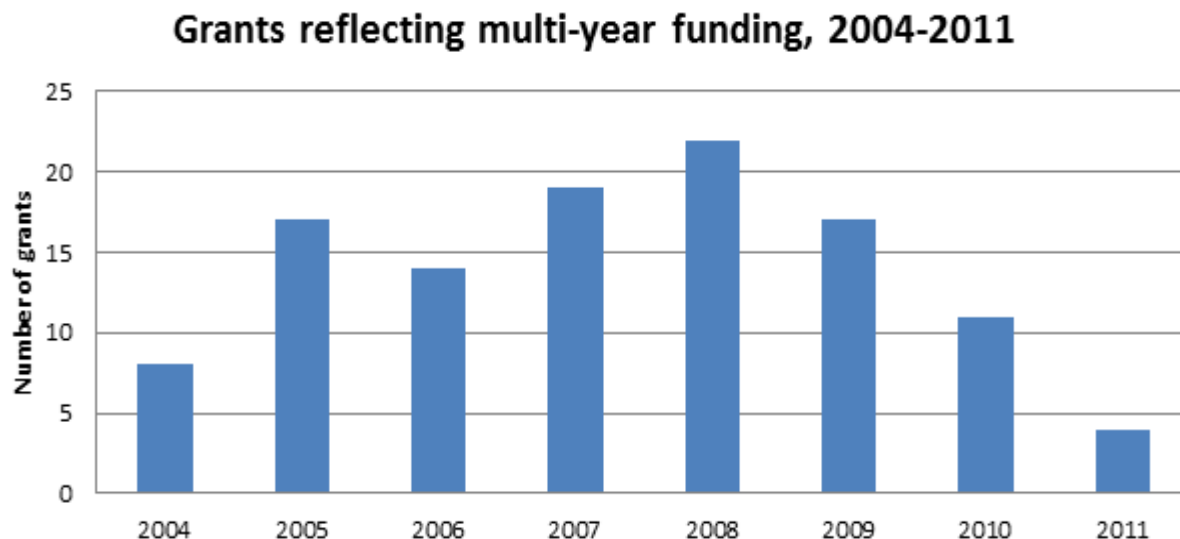


Figure 2



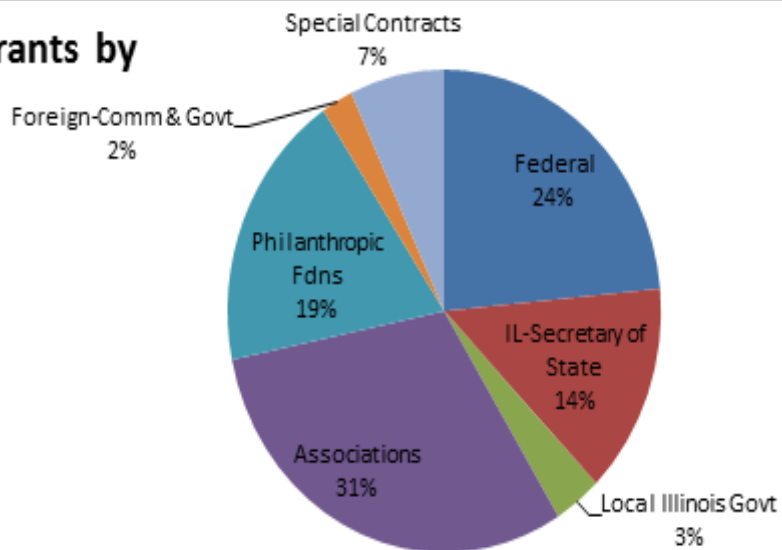
On the whole, funding represents a well-balanced blend of sources with the largest number of grants coming from associations (e.g., membership organizations such as the Digital Library Federation (DLF), and the Council on

Library and Information Resources (CLIR); and professional associations such as the American Library Association (ALA), followed by federal agencies, philanthropic foundations, the State of Illinois, and other lesser sources.

Figure 3

Number of Awarded Grants by Sponsor, 2004-11

N=85



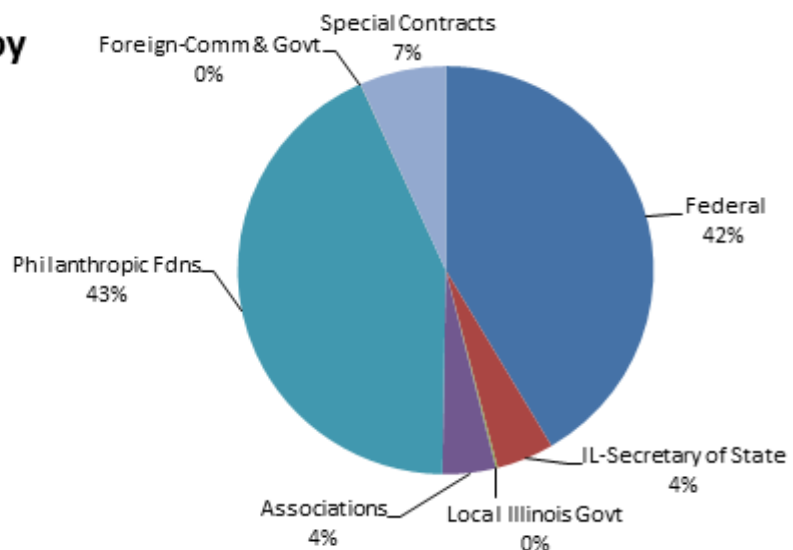
In contrast, looking at the breakdown of actual funding dollars, foundations and federal monies accounted for the vast majority of the grant monies generated (Figure 4). Associations, such as the ALA, DLF, CRL, LAMA, and the State of Illinois

offered many smaller grants that totaled 4% of the total amount. Special contracts, funding mostly archival initiatives, accounted for a 7% portion of the total.

Figure 4

Grant Award Amounts by Sponsor, 2004-11

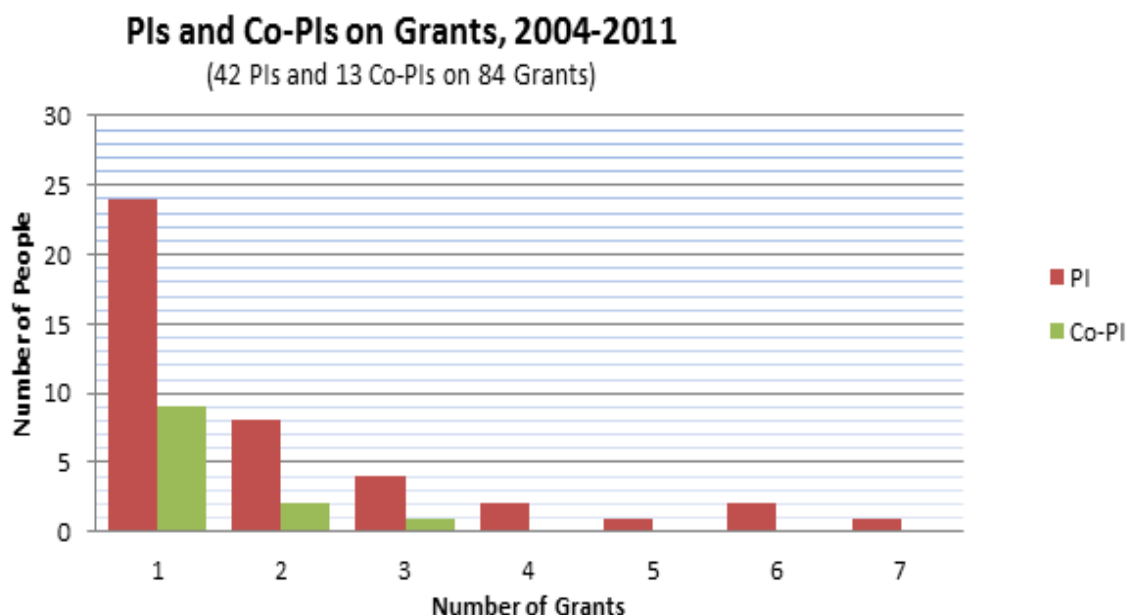
Total=\$10,169,069



To get a sense of faculty participation in grant-funded initiatives, we looked at the number of people serving as principal investigators or co-principal investigators on grants. Figure 5 represents these figures for the seven year period. On an annual basis, approximately 10% of

librarians and professional staff serve as either a PI or CO-PI on grants; however, over time, grant awards go to approximately 30% of the total library professional staff. The data indicated that a small and slowly growing number of librarians were repeatedly successful at getting grants.

Figure 5



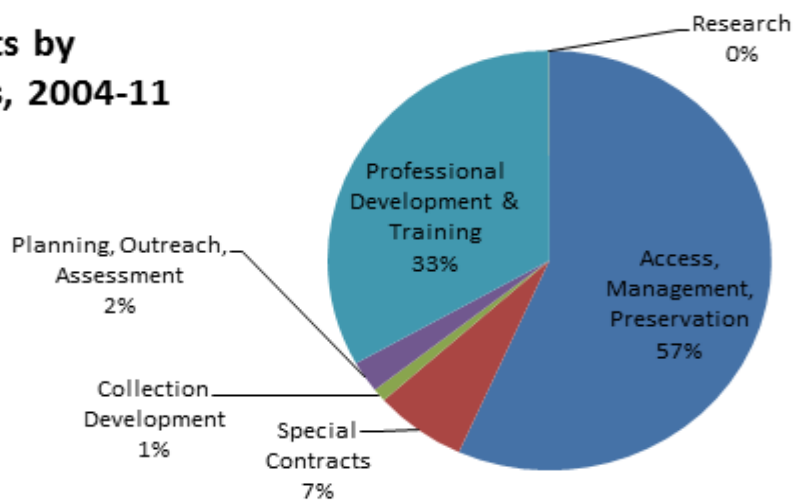
Strategic Agendas of both the library and the Funders

Through this analysis, we also sought to understand how funder's strategic agendas influenced our choice of grant programs, and how Illinois' institutional strengths could be heightened

by identifying programs that were consonant with the library's and the institution's strengths. To assess grant focus, we broke down the grants awards into several key categories of interest detailed in in Figure 6.

Figure 6

Funding Amounts by Grant Categories, 2004-11



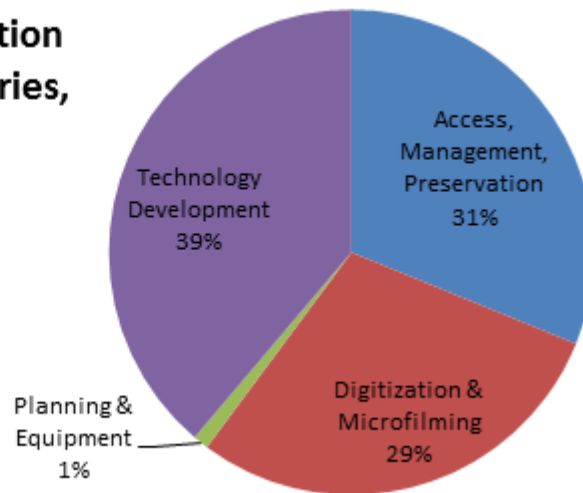
A further division of the Access, Management and Preservation data suggests that there was fairly equal interest in technology development, digitization and microfilming, and access, management, and preservation (Figure 7). The

professional development and training monies are largely used to support the University Library's Mortenson Center for International Libraries Programs, which provides training to librarians globally.

Figure 7

Access, Management, Preservation Grants: Funding by Sub-Categories, 2004-11

Total: \$ 5,765,263

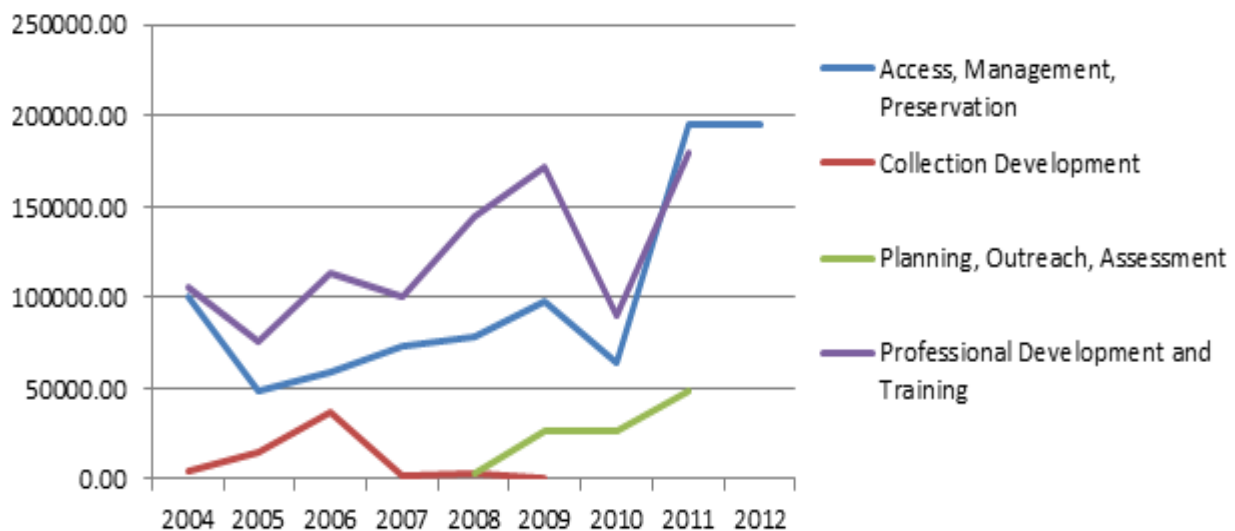


To assess funding levels over time, we also compared average funding by year. The following

graph represents average funding levels over time, divided up by the grant focus (Figure 8).

Figure 8

Average Funding Levels from 2004-2011



These results illustrate the lower levels of funding for collection development as compared to access, management, and preservation or professional development and training. The external state-sponsored collection acquisition grants dwindled to nil by 2009, which reflects the reduction of funds from the LSTA (Library Services and Technology Act) federal funding that is allocated to states. Also the dip in funding in 2010 is striking in most areas of funding. This dip can signal multiple

changes. First, internally, several major grant initiatives ended in 2009. This meant that faculty were actively engaged in wrapping up their commitments to projects in 2009, and they were less involved in writing and submitting new project proposals. Second, the global economic crises also led to increased competition for funds, and University of Illinois Library was one of many institutions competing for reduced federal and foundation dollars. Library grant awards

were smaller and the number of awards was also reduced. Over the past three years, the University Library faculty was awarded upwards of ten grant proposals; whereas in 2010, five proposals were funded. Last, the number of grant competitions and the size of awards may have also been impacted by the economic crises, as funders had to react to the crises.

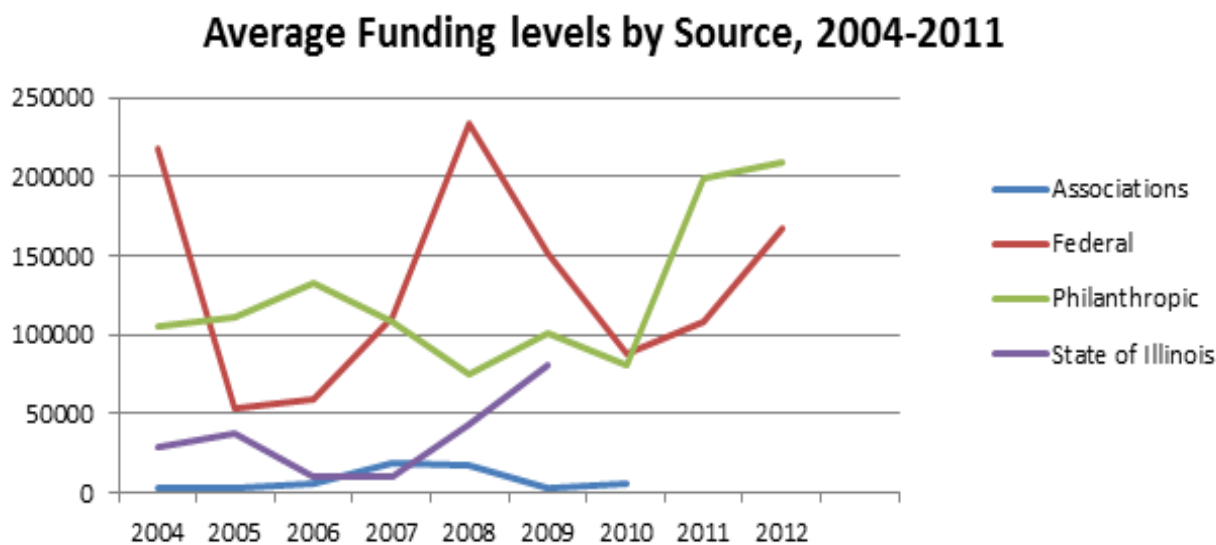
Equally striking is the bounce-back in average funding in 2011, where the level exceeds previous levels in three of the four categories. The number of grants funded in 2011 was even lower still with only three proposals being awarded funding. The rebound in funding levels was due to a number of continuing grants, as well as an award in 2011 of one substantial grant. None of the library's grants awarded during this time were derived from federal stimulus funds.

In addition to comparing grant foci and funding over time, we did a similar assessment, where once again, time was the independent variable

and funding amounts was the dependent variable (Figure 9). The analysis revealed that higher funding levels came from federal agency and philanthropic sources. Also, state sources of funding were on the increase but have disappeared as have associations' funding support.

It appears from these data that philanthropic foundations funded grants at consistently lower levels throughout the past few years of the economic downturn, but funding levels have increased in the past two years, with private foundations providing the library's highest average funding. Also, federal funding fell sharply in 2009 and 2010, and it has in recent years been on the increase. Certainly, the funding levels do not reflect funding sources alone. Grants coming to a close, application success rates, and levels of funding are primary contributors to funding fluctuations. The variables that lead to these conditions may be internal to the institutions, the competition, or the broader economic crises that led to a contraction of funding opportunities.

Figure 9



Feedback from Interviews

The baseline assessment also incorporated qualitative data obtained from informal interviews conducted with ten librarians and one academic professional at the University Library to learn more about their perceptions of library grant writing, the support provided, and processes. All of these individuals had participated in externally-

sponsored grant projects, either as principal investigators, co-principal investigators, or as a part of teams. Their comments can be classified into one of three categories—opportunities, concerns or suggestions, and in some cases, needs or issues that were specific to the context of a particular grant.

*Opportunities****Expanding Library Strategic Programs***

One of the most frequently reinforced viewpoints articulated by the interviewees was that grant funding provided the opportunity to carry out research and to develop new services, technology, or materials that can serve an individual or a department. Regardless of the reach, grants often extend those services more widely across the library. In the case of one of the library's units, the Mortenson Center, grants support a high percentage of the innovative programs in that unit, which provides opportunities for professional development and training to librarians worldwide. External funding is essential to the Center's programs, and they enable librarians to participate in international collaborations and professional development. In other areas, several of the principal investigators pointed to the expansion of collections, services, access, preservation, cataloging, and technological innovations that resulted from grant funds. A specific example of this development is the "EasySearch" locally-developed federated search system that supports searches by title, author, or keyword in a broad selection of freely-available as well as licensed resources. A healthy mix of private foundation and federal agency funding has supported the development and use of EasySearch as a research tool to increase understanding of user interactions with federated search systems. Another factor mentioned by librarians involved in sponsored research was that they enjoyed the autonomy and the sense of accomplishment that came with crafting and carrying out projects. They noted, in particular, that faculty status of librarians is important to their role in securing grant funds, and they cited the value of this status in securing external support. The library supports librarians and academic professional staff to initiate research projects that identify and build on institutional strengths. As a result, their grant activities are an important component of their professional identity and career trajectory. One librarian described her grant-funded projects as a "career highlight."

Professional Advancement

Those who participated in the interviews pointed to professional advancement as another important outcome. Sponsored research contributed to skills development, research and publications, and everyone interviewed noted that they were recognized for their grant successes in their annual

evaluations and in promotion and tenure reviews. A number of librarians also indicated that grant funding helped them to develop their research agendas in a variety of ways, from working with their collections in new ways to developing new projects that helped inform their scholarship. One interviewee explained that he turned an unsuccessful grant proposal into a case study for a publication.

Enhancing Reputation

Another positive perspective on grant-writing is that funded projects enhance the reputation of the library, both on campus and also more broadly. Grants build and serve networks from the local to an international scale, and the outcomes and services reach multiple audiences within those networks, too. Grants can provide important services and outreach on campus, and many funded initiatives reach constituencies at other institutions. Several of the grant-holders pointed to communities that their grants serve; these communities include the university and its units, other state and public libraries and librarians, mayors, government representatives, K-12 schools, and the media.

Positive Feedback and Community Building

Most grants require an evaluation component, and periodic reports that provide useful feedback for the individual as well as the library. In the instance where the reports are publicly available, they increase awareness of the project and enhance the visibility of the institution within and beyond the library community. The data from the evaluation can generate informative baseline information and new tools for ongoing assessment. The University Library also benefits from the grants as the funds support positions for visiting staff and students, who have the opportunity to build skills and experience and to contribute to research, publications and conference presentations. Many of the librarians interviewed noted the growth of stronger communities that emerge from the collaboration brought about through grant-supported projects. Interviewees indicated that grant project collaborations with library and campus professionals produced positive outcomes. Additionally, the processes involved in proposal submission, reporting, and budgeting draws on the expertise of support personnel as well. Involving a wider community of library staff in proposal review and project implementation is an important

avenue towards building wider professional relationships within the library community.

Challenges and Concerns

While most of those who were interviewed emphasized positive outcomes, a number of librarians expressed concerns. Analysis of these concerns, and the suggestions to remedy them, can help to build successful future outcomes.

Relationship to Library Strategic Plan

Some of the librarians interviewed thought it would be helpful for the library to more clearly articulate in the desired synergies between strategic directions and institutional research priorities. The authors note that at the time the interviews were conducted, the library was in the process of developing a three-year strategic plan, and these suggestions were considered in that process.

Bottlenecks and Silos

Junior faculty in particular noted that they encountered bottlenecks in the grant development process that they felt could have been avoided if they had had sufficient access to their expert colleagues and business office staff. This group noted that they expended considerable effort up front “learning the ropes” of successful grant writing. They felt unprepared for what seemed to be unpredictable obstacles that occurred in the course of preparing and submitting a grant proposal. Budget preparation was an area where most interviewees noted they were required to devote significant time. In particular, many commented that were not prepared for the requirement to identify sources of “cost-sharing” in order to address an agency’s requirement for matching funds, and noted that this part of budgeting was complicated and time consuming. Yet another challenge articulated by those who we interviewed was the difficulty of identifying more experienced colleagues who could devote time to planning the grant, and reviewing drafts of the proposal narrative at various stages in its development, to provide advice on the impact of the proposed work and the clarity and completeness of the narrative. At this time, support for grant preparation is limited, with formal support from the AUL for Research and Technology, working with a Grants and Contracts Specialist in the Business Office. Together they help

the investigator shepherd the grants through the library and campus systems. Other colleagues with grant expertise provide advice and support, but this comes on an informal, time-permitting basis.

Internal Submission Timeline

Another concern expressed was that institutional requirements for grant submission did not allow sufficient time for development of the narrative and plan. The University Library and the campus require that both the completed proposal narrative and the budget and submission package are reviewed at each level. This means that the narrative and budget must be completed roughly three weeks before the funder’s submission date. This timeframe enables the University Library to review the narrative and the budget, to complete required paperwork, and to ensure that any commitments made in the proposal can be supported. The Office of Sponsored Programs and Research Administration reviews proposals to ensure that investigators comply with university regulations, as well as funder requirements. Admittedly, there is little that can be done to address the internal review requirements for grant proposals. In actuality, during that three-week timeframe before a grant proposal is submitted to an agency, the investigator works closely with the Library Grants and Contracts Specialist, the campus sponsored research office, the AUL for Research and Technology, other experts, and the proposal team to make additional refinements aimed at strengthening the proposal.

Limited Funding Options for Collections Grants and Specific Research Interests

Several of those interviewed noted the discontinuation of state grant competitions that funded collection development. These collection-enhancement grants, coordinated by the CARLI (Consortium of Academic Research Libraries of Illinois) funds, channeled LSTA funding to strengthen collections in targeted areas. Other interviewees pointed out that funding to support either their collection or research interests is very limited. These barriers hamper an individual’s grant submissions. Some who were interviewed expressed the concern that the institutional culture of the library does not promote grant writing and the associated research. They commented that the pressure of their primary responsibilities detracts from the time available to pursue research.

Recommendations

Interviewees made several suggestions aimed at better supporting proposal development. They requested that the library sponsor discussion sessions about grant proposal development, where knowledge and experience about grant preparation could be shared widely. They recommended involving experienced colleagues, who could share how they developed ideas, identified grant opportunities, and negotiated other factors that shaped grant success. Several librarians recommended hosting a two-part series, with one session focusing on cultivation of ideas, planning, and grant submission, while the second session could concentrate on how actual projects were implemented, and strategies for success. Senior faculty noted that organizing working groups, organized around a research interest, could support internal proposal review and might be a rich avenue to pursue for several reasons.

According to the librarian suggesting this idea, such groups might help with the development of the ideas, literature reviews, and review the final proposal, as well. Several interviewees also noted that they called upon an expanded pool of people to review their proposals. They developed strong linkages to faculty based in their disciplinary units or with librarians at other campuses. One librarian called upon a representative of the Office for the Vice Chancellor for Research to read her proposal draft and advise her, and she likewise attended grant-writing workshops led by an interdisciplinary campus unit. Interviewees also suggested that the library provide documentation in addition to existing web documentation to support writing grants, but we need to gather more specific information before pursuing this suggestion. Finally, those who were interviewed wanted to see their grant projects promoted to the library, campus, as well as to other constituents with a potential interest in the project. They suggested that this promotion could feature the initiative itself, or specifically funded activities and outcomes. Faculty felt that by showcasing grant accomplishments, there was the potential for more outcomes to be derived, as colleagues might want to become more involved or as local and state representatives might recognize such contributions. Those interviewed suggested that the library develop a web page that featured research and grant initiatives. By having the University Library promote such work, the

administration is also demonstrating the value of such initiatives internally to other members of the library community but also externally to the institution and other potential constituencies.

Interpreting Findings & Implications

These data support a number of findings. First, as an organization, the library now has a baseline of data about grant challenges and successes. As a result of this analysis the library has a clear idea of the number and thematic scope of grants received annually, as well as their strategic value to the institution. Data were generated that describe in detail the breakdown of grants by strategic focus and funder. The library now has a method to assess changes over time that result in successes, and to pinpoint areas in which it ought to pursue future growth. Improving these measures is important to the library, especially as it increases support to librarians who pursue grants to address institutional priorities. The library is reviewing the way it supports grant projects, so that it can enhance the success of future proposals. This assessment leads to opportunities that address the concerns and obstacles raised in the interviews. This assessment is also leading to opportunities that address people's concerns and obstacles to success. This year the library implemented an internal review process to provide librarians with timely feedback on grant proposals. The Office of the Associate University Librarian for Research and Technology worked with the library's Research and Publication Committee to organize two workshops on grant writing for librarians and professional staff. During the first session, experienced grant writers discussed the positioning of their research to obtain grant funds, and a total of twenty librarians and academic professionals attended the session. The next workshop provided information on how to apply for internal competitive opportunities and introduced other campus resource units that support research. The library also implemented a blog called "Recognizing Library Excellence" that promotes the research of the library's faculty and professional staff, posting periodic updates on publications, presentations, research grants, and professional awards.

Further strategies for supporting proposal writing include more presentations and web documentation on grant preparation and identification of grants to support strategic needs. Two workshops were presented as part of the

library's Savvy Researcher series for graduate students and faculty, focusing on grant resources and search strategies for identifying funding opportunities. This material was expanded into a LibGuide on grants, fellowships, and scholarships that presents tools for finding grants and resources for writing successful proposals.⁷ Another avenue for encouraging research is through the library's researcher profile system, known as BibApp/Connections. Library faculty and academic professionals were added to this system during 2011–12 as part of an effort to promote the visibility of library research and innovative work and those who are engaged in it. The BibApp/Connections service enables direct deposit of research publications into the IDEALS scholarly repository. The University of Illinois' Urbana campus has promoted active deposit into IDEALS by over fifty departments and institutes. As librarians seek increased collaborations on campus, BibApp/Connections is another important tool for enabling scholars within the library and across the campus to connect around common research interests.

A number of the points raised by librarians and staff, and the data analysis are issues or concerns that can only be changed at a broader level. For instance, the library's strategic planning process solicits multiple inputs. A group of librarians and staff prioritizes those ideas that best support the university's overall mission and the strengths of the organization. New ideas that are incubated in grant projects have the potential to shape strategic directions. The National Science Foundation's Digital Library Initiative Phase 1 program spawned numerous creative developments, including Google. Conversely, areas that are targeted for strategic development, either in a single library or within a large professional organization like the ARL, can serve as guideposts for further exploration supported by grant funding. The library has several long-standing internal competitions for funding collections, innovative programs, and research projects. The library makes available approximately \$30,000 annually that is awarded on a competitive basis to librarians in support of research and publication, juried by the Research and Publication Committee. Further, the library supports an Innovation Fund that seeds the development of innovative ideas and programs. The library's virtual reference system—the only tool that enables management of geographically dispersed virtual reference—was developed with

seed funds from the Innovation Fund. The campus also supports research initiatives with funding for both research and travel, for which librarians are eligible to compete. These funds provide avenues for librarians to develop initiatives that can leverage external funding into large-scale demonstration or research projects.

Conclusion

The most important outcome of the assessment was that it revealed the need for the library to support grant efforts as an integral component of the research process. Although it appears obvious in retrospect, the assessment enabled the library to integrate support for grants into a more cohesive research infrastructure than it had previously supported. This evaluation of grants awarded to the library identified trajectories of funding in different areas, and opportunities that grants provide to librarians. It was clear from the interviews that librarians view grants as significant milestones in their research and program-building activities. The feedback from the interviews revealed additional ways to support funded research projects after they are awarded. Participants in the interviews suggested that it was important for the library to recognize the efforts of those engaged in grant activities by communicating systematically the outcomes and successes to a broad audience. The analysis and the interviews also identified gap areas where the library could stimulate the development of new programs services, or new areas of research. Continued monitoring of these data points, and periodic interviews with investigators are ongoing organizational goals.

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Notes

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Is Experience the Best Teacher? Field Experience and Student Learning in LIS Education Programs

Susan E. Searing

University of Illinois, Urbana-Champaign, USA

Scott Walter

DePaul University, USA

Introduction

"Library experience is as important in getting hired by a library as the MLS, maybe even more so."¹ In his 2005 essay, "The Practice Prerequisite," *Library Journal's* editor John Berry argued that professional education programs in library and information science (LIS) must provide structured opportunities for students to complement their coursework with workplace experience gained through practicums, internships, graduate assistantships, and the like. Berry may have based his conclusion on the persistent identification of the field experience as "crucial to job success" by respondents to the magazine's annual placement and salary survey. His view is a common one; library employers take it on faith that field experiences produce better prepared entry-level librarians. But what is the evidence for this common claim? What, specifically, are the learning outcomes to which field experiences contribute? How can we maximize the benefit of the field experience for both the student and the supervising library?

It is often hard for new librarians to find work today. At the University of Illinois Library, which has enjoyed a partnership with the top-ranked LIS program in the nation for many years, we are assessing what we currently do—and asking ourselves what more we can do—to help our graduates to gain a leg up in a difficult job market. We began by asking ourselves the following questions: What contribution to established student learning goals in LIS programs do we make through the work we do as supervisors of internships, graduate assistantships, or independent study courses?

Was Berry right that experience in the field prior to graduation is as important to getting hired upon completion of the MLS as the content learned in classes? If so, could we document it? If we could document it, could we improve it? And, equally importantly as we develop opportunities in our libraries for students to gain real-world experience, could we think more intentionally about incorporating the new skills and knowledge that tomorrow's librarians need to sustain and transform academic libraries?

The fieldwork component of LIS education, Berry stated, should be developed collaboratively by librarians and LIS educators in order to bridge the gap between theory and practice and strengthen connections between faculty members and library managers.² In a recent study of emergent needs in the preparation of future academic librarians, Berg, Hoffman, and Dawson noted that "the creation of successful and meaningful field experiences for library students has been a consistent challenge" since the origins of LIS education over a century ago.³ As earlier researchers found, prevailing practice is characterized by multiple forms of field experience, students' lack of information about their options, unclear connections between field experiences and the content of LIS courses, and lack of communication between LIS educators and librarian site supervisors regarding the design and evaluation of the students' work.⁴ To lay the foundation for addressing these problems, librarians and library educators at three universities are collaborating to gather evaluations by recent LIS graduates who completed a field experience in an academic library setting as part of their preprofessional education and to assess the impact of those experiences on student learning.⁵

Neither author of this paper attended library school at Illinois, but we had both heard stories from our colleagues about the value of the field experiences that people gained there. In the words of a recent graduate of the Illinois program, “My field experience was by far the most important aspect of my LIS education and I draw on it every day as a professional librarian.”⁶ While employed ourselves at Illinois, we observed firsthand the powerful contribution that practical experience made to students’ acculturation to our profession. Whether it was watching how people who had been graduate assistants together formed an ongoing, professional network or seeing how long-time Illinois librarians built a professional “family” of former students, we could tell that something meaningful was happening—something that seemed, as Berry suggested, as important to the professional education, induction into the profession, and continuing professional development of academic librarians as anything they learned in the classroom.

Also, as librarians and faculty members at Illinois, we felt that we were “leaving something on the table” in terms of our promotion and tenure packets, our requests for new positions, and our annual reports to the provost, if we couldn’t talk with authority about our contributions to student learning in our own field.

Finally, as researchers, we perceived a gap in the literature. There have been prior studies of field experiences in LIS education, but few, if any, have attempted to explore the creative and complementary way in which the classroom and the clinical setting (the academic library) work together to promote positive student learning outcomes. Certainly, there is no standard view of that relationship in the manner found in other professional fields, such as teaching and social work.⁷ In librarianship one is more likely to encounter hand-wringing and finger-pointing about the “divide” between the classroom curriculum and the needs of workplace.⁸ We wanted to go beyond anecdote, to ask more concrete questions about how libraries and library schools can consciously craft field experiences that capitalize on the content learned in the curriculum and its application to the emergent needs of a changing workplace.

The purpose of our research is to uncover evidence of the value of field experiences to students and to better understand the nature of the cooperation between LIS schools and academic libraries that host such field experiences. Our eventual goal is to design and pilot field placements that not only provide students with real-world experiences to list on their resumes, but also to help academic libraries respond agilely to the current and coming changes in higher education and information technologies.

Parameters of the Study

The Field Strength project is a multiphase study. In this first phase, we are applying a mixed-method approach to develop a clearer picture of field experiences as they exist currently at our three institutions. To that end, we are undertaking: 1) a survey of recent LIS graduates regarding their field experience in academic libraries, 2) a content analysis of student learning outcomes identified by ALA-accredited LIS programs, and 3) focus group interviews of LIS educators, field experience site supervisors, and LIS alumni. This paper reports on the first two. The focus groups will take place in coming months in conjunction with the ALA, ALISE, and ACRL conferences.

We have limited our investigation to academic libraries for a number of reasons. First, as academic librarians, we are most naturally concerned about the preparation of LIS graduates to fill positions in our rapidly changing environments. Those of us who work at universities with strong LIS programs are arguably less pessimistic about the general state of LIS education today than our colleagues who don’t come into frequent contact with LIS professors and students, but we still worry that what’s taught in the classroom alone won’t be sufficient to produce the highly competent and creative entry-level professionals we so desperately need. Second, we focus on academic libraries for a practical reason: that’s where we, as academic librarians, can make a difference. By uncovering the strengths and weaknesses of current field experience programs, we hope to point the way toward improvements that will benefit both future students and our libraries. And third, we can focus on academic libraries because, fortuitously, a parallel study is underway of public libraries by Sian Brannon, a doctoral student at Texas Woman’s University.

Definitions

What, exactly, is a “field experience?” An online education glossary defines field experiences as “practical experiential learning activities under institutional or organizational sponsorship, usually away from the classroom or campus.”⁹ The *Online Dictionary of Library and Information Science* doesn’t include the term “field experience,” but its definition of “practicum” is relevant: “A limited period of hands-on work in a library or other information service agency structured to provide an opportunity for a novice to relate theory to practical experience, usually in the student’s field(s) of specialization.”¹⁰

For the purposes of our study, field experience covers any work experience in a library that occurs because of one’s status as an LIS student. This broad definition covers graduate assistantships, research assistantships, internships, practicum courses, independent study, service learning, volunteering, and similar experiences. Routine employment in an academic library, however, is not covered by our study. Our focus is squarely on field experiences—whether paid or unpaid, whether arranged by the school, the host library, or the students themselves—that are intended to complement formal coursework in the master’s program.

Learning Objectives

Our research interests led us to examine the ways in which field experiences are described by the LIS schools that promote them. Specifically, we were interested in discovering what learning objectives have been articulated for the LIS field experience. The description of the field experience component at the University of North Carolina (UNC) School of Information and Library Science (SILS) is illustrative. At UNC, a credit-bearing field experience “enables students to meet personal learning objectives and to gain professional experience in an information organization.”¹¹

The student engaged in a field experience is engaged in a form of apprenticeship. This mode of learning can be especially valuable in the context of a degree-granting program, as one is able to gain active guidance on both the practice and on integrating the skills and competencies learned through practice into one’s overall education.¹²

UNC SILS is notable for clearly articulating the complementary nature of what a student learns in the classroom and in the field, but the identification of the learning goals is left to the individual student.

In a more detailed description from Illinois, learning objectives remain highly individualized, but potential outcomes are indicated, ranging from the acquisition of useful skills to more affective components:

This opportunity allows students to integrate the theory and knowledge of course content with the application of principles and practices in a work environment, including these specific objectives:

- To gain practical experience based on the understanding and application of theoretical knowledge.
- To observe the analysis of and solutions to problems arising in professional work settings.
- To interact with colleagues in a professional work environment.
- To participate in a representative range of professional activities in the work setting.
- To develop a professional self-awareness.¹³

In reviewing LIS program descriptions, it was notably difficult to find any sort of common statement of learning goals that articulated how field experience contributed to the learning outcomes and core competencies associated, for example, with accreditation standards and other guidelines. Just as we felt that we, as librarians and faculty members, may have been missing the opportunity to explain to our campus colleagues how we contribute to professional education in library and information science, we began to feel that our LIS colleagues may likewise be missing the opportunity to demonstrate how their field experience programs complement their classroom and research programs as a core component of their educational mission. Are core competencies and student learning outcomes better achieved when one looks at the professional education going on in the library and in the LIS classroom together? Is there a fuller story waiting to be told than the one we found in some of the “program presentations” prepared by LIS programs and available through the ALA Office for Accreditation?¹⁴

Examples of Field Experiences

In drawing the boundaries of the field experience for the purposes of our study, we ran into some inevitable differences of terminology and practice among our three partners. It may be illustrative to look in depth at how one institution, the University of Illinois, structures field experiences in its academic library.

The Graduate School of Library and Information Science (GSLIS) offers two main pathways to field experiences as part of the formal curriculum. Although not required, students are encouraged to enroll in the practicum course, LIS591, which entails placement in a library or other information workplace for 100 hours. The practicum course combines a day-to-day work assignment with a special project that will benefit the host library. The student has both an on-site supervisor and a GSLIS faculty supervisor, and the practicum is structured to require a sort of contract at the outset and a formal evaluation at its conclusion. At Illinois in recent years, students have completed practicums in a wide range of functional areas, including reference, cataloging, archives, acquisitions, rare books, and preservation. For a more extended immersion in a workplace, also earning academic credit, students may arrange for an independent study. Because librarians are faculty, they can serve as the instructor of record for independent study courses. Upon occasion, librarians have organized group independent study courses, allowing students to engage in collaborative projects much as we do in our daily work as academic librarians. For example, teams of students enrolled in the independent study course have redesigned websites and developed new instructional workshops and topical guides. GSLIS also sponsors Alternative Spring Break, a work immersion experience which has placed students in week-long internships in Chicago, St. Louis, Washington, DC, and other locations. On their own, many students seek out opportunities to volunteer in local libraries as a way to build their resumes and explore aspects of the profession that their course schedules don't allow for.

Within the University Library, in addition to hosted practicums and independent studies, the primary opportunity for gaining real-world work experience is to be hired as a preprofessional graduate assistant (GA). These positions are much coveted, since in addition to a salary, they come

with a waiver of in-state tuition. (Out-of-state students have their tuition reduced by the in-state amount.) Most GA-ships involve 10 to 15 hours of work per week, and students often stay in the positions until they graduate. GAs work in many departments but are clustered in units that provide reference and instruction.

Elsewhere, academic libraries aligned with LIS programs offer similar opportunities for field experiences, but with different labels: internships, field studies, directed field work, and for-credit service learning, for example. As we dig deeper into the descriptions of the curriculum at ALA-accredited programs, we may unearth even more variations on the field experience.

Assessing the Field Experience's Impact on Learning and Careers

To begin assessing the effects of the LIS field experience, we proposed a study that was funded as a planning grant by the Institute of Museum and Library Services through the Laura Bush 21st Century Librarian program. The goal of the Field Strength project is to explore thoroughly the phenomenon of the LIS field experience and to discern how participants, librarians, and LIS educators perceive its value in preparing new professionals to enter a changing workplace. As importantly, we hope to identify the specific benefits of such programs, as perceived by professionals, and the curricular and co-curricular connections between libraries and library schools that promote those benefits. We would like to advance the field experience as a key means of bridging the gap between theory and practice—classroom and library—that has been the sticking point of the dialogue between LIS educators and academic librarians in the past.

In the first stage of the study, we investigated the experience of recent alumni in terms of the field experiences pursued and their perceptions of the value of the field experience to their overall professional education, their induction into the professional community, and their pursuit of their first professional positions. A limitation of our study is an artifact of the way in which field experience is treated—because there are so many modes of field experience, and because it is tracked only in limited cases by LIS programs as a required component (e.g., for school library certification), it

is difficult to a) define the pool for our study and b) compare the pool of those who completed field experiences with the overall pool of graduates. In this paper, we reveal the ways in which students who participated in field experience deemed them beneficial, but an obvious path for future research would be to examine differences in perceptions and early career paths between those who completed field experiences and those who did not.

Methodology

In October 2012, a 31-item online questionnaire was administered to 388 graduates of the Graduate School of Library and Information Science at the University of Illinois. The target population consisted of students who were employed as graduate assistants in the University Library and/or completed a practicum course at the Library between 2006 and 2012. These were students whose field experiences in our library had been recorded, and for whom we were able to obtain e-mail addresses. (The GSLIS alumni database proved invaluable in this regard.) The questionnaire was developed using the University's web tools, with input from partners at Maryland and Washington, who will administer the same survey to their alumni. As of October 18, 102 people had completed the survey for a response rate of 26.2%.

The survey asked about the setting and duration of field experiences, the relationship between field experience and classroom learning, the impact of

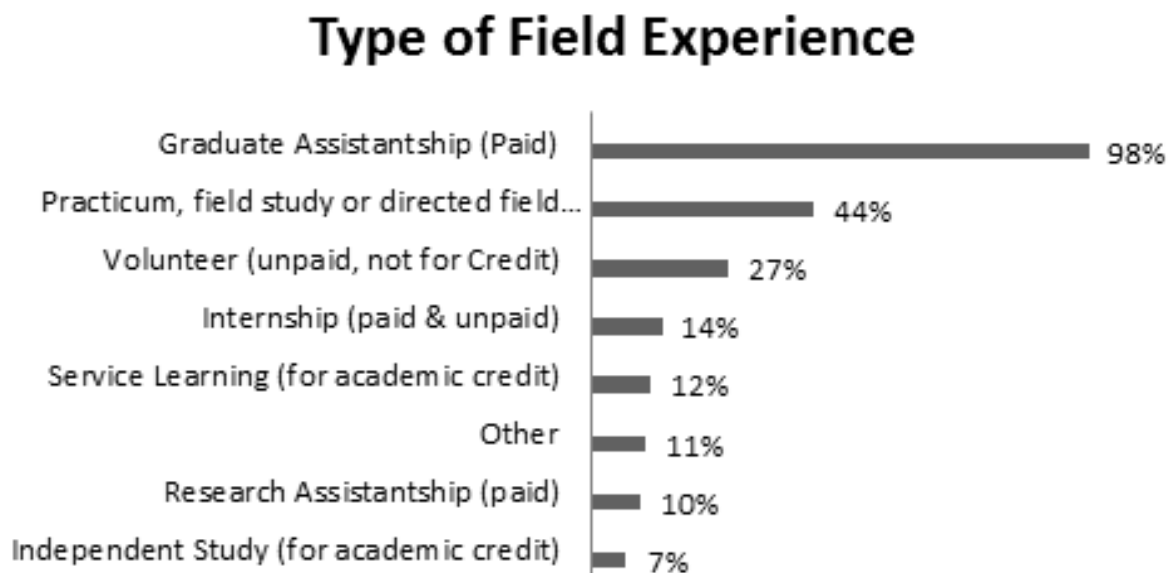
the field experience on entry into an LIS career, and the nature of the first professional position.¹⁵ Two open-ended questions were broadly framed to invite comments on other aspects of the respondents' experiences.

Creating a questionnaire that would work for all three partner institutions posed certain challenges, the foremost being to agree on a list of library departments. Our initial list was drafted after reviewing employment categories used by ARL, ALA, and others, but it didn't adequately reflect the organization of our actual libraries. After some discussion, we recast the question to be about responsibility areas rather than departments. That proved even harder to synchronize across our three organizations, and so we reverted to a departmental listing. In the end, we still weren't entirely satisfied with the list but hoped that the availability of an "other" option with a blank text box would make it possible for any respondent to answer the question accurately. It does appear that some respondents may have answered not in terms of their home department, but rather the types of work assigned to them.

Findings

Respondents indicated which types of field experiences they had had, choosing from a list of seven types plus an "other" option. More than one type could be selected. (See Figure 1.)

Figure 1

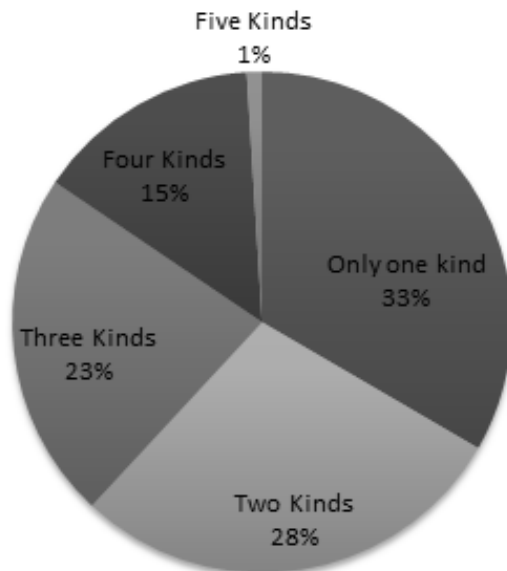


The most common field experience was the paid graduate assistantship. Ninety-eight percent of the respondents had worked as GAs in our library. Although there is a great variety in the way in which field experience is conducted nationally, Illinois is notable for the size of its Graduate Assistant program. Thus, it is not surprising that the vast majority of our respondents reported

having held a Graduate Assistant position. Many of them reported other types of field experiences as well, the most common being the practicum course, in which 44% of the respondents had enrolled. Twenty-seven percent gained experience as volunteers. Two-thirds of the students had more than one type of field experience. (See Figure 2.)

Figure 2

Number of Types of Field Experience



These percentages will surely change when we survey alumni of other LIS programs, but it is worth noting how often, even at Illinois, students pursue a variety of field experiences. Given the nature of the responsibilities shouldered by our Graduate and Research Assistants, one might expect those experiences to be sufficient to meet the student demand for workplace experience, but that does not appear to be the case. In a crowded curriculum, people with a taste of field experience seek out more. There is evidence that that decision is not necessarily motivated by external rewards. For example, 27% of our respondents reported pursuing volunteer experiences for which they received neither pay nor course credit.

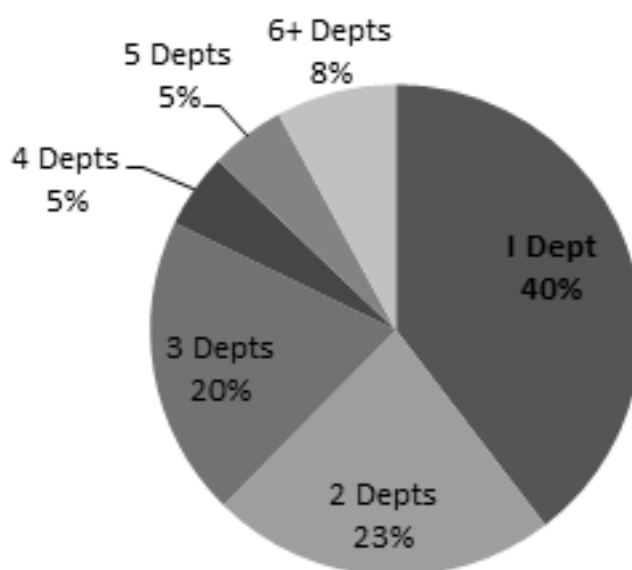
Anticipating that a portion of respondents would indeed have multiple field experiences, we instructed them to identify their single most significant field experience and to keep it in mind when answering subsequent questions. We defined most significant to mean “that you learned the most and/or it made the most difference to your subsequent career.” As might be expected, the vast majority of them (89%) identified paid

assistantships as most significant. Assistantships permit the student to integrate most fully into the workplace and to be assigned a wider variety of responsibilities. At the opposite end of the spectrum were volunteer experiences. Although more than a quarter of the respondents worked as volunteers, none chose that type of field experience as their most significant.

The survey instrument presented a list of 22 library departments and asked respondents to check those that they worked in during their field experience. The most common jobs were in reference (68%), instruction (31%), and collection development (23%). IT positions—programmer, technical support, web developer—accounted for only 16%. Other newer areas of the profession—including digitization, e-resource management and licensing, and scholarly communication support—also scored low among the departments where field experiences occurred. While about 40% of the respondents worked in a single department, another 20% indicated two departments; and another 40% worked in multiple departments, ranging from three to ten. (See. Figure 3.)

Figure 3

Number of Depts Experience



The prevalence of reference and instruction, which reflects the way in which GA positions have traditionally been designed at Illinois, may be an important finding for us to bear in mind as we extend this research. We look forward to

deploying this survey among the alumni of other LIS programs to determine if the emphasis on traditional areas of academic library practice in field experience opportunities is widespread, and to consider if and how this should change if we are interested in providing experiences that prepare new professionals for emergent areas of professional practice.

We also asked whether the field experience was on-site, virtual, or a blend of on-site and virtual. We anticipated that a sizeable minority might be virtual—for example, the student might be involved in creating or maintaining digital information and communicating with her site supervisor via e-mail and phone. Slightly over half of the master's students at GSLIS are in the LEEP distance education program and are rarely on campus. However, only one respondent reported a virtual field experience, while another thirteen had field experiences that were partly on-site and partly online.

We then posed a series of statements with a five-point Likert scale, to measure student perception of the degree to which field experience contributed to their personal learning. The responses overall indicated a highly favorable perception of the field experience and its outcomes. For example, 99% of the respondents agreed (12%) or strongly agreed (87%) that their field experience enabled them to improve their practical skills.

The survey respondents expressed very strong agreement with statements about the value of their field experiences as a practical counterpart to classroom-based learning. Ninety-seven percent agreed or strongly agreed with the statement, "My field experience provided an opportunity for the practical application of theory." Whereas that question assumed a flow of knowledge from the classroom or textbook to the workplace, another question tried to gauge the somewhat different learning that happens when practical experience illuminates theory. Ninety-five percent agreed or strongly agreed with the statement that "My field

experience provided the background to better understand coursework by comparing course concepts to real world experience." On the other hand, when faced with the statement, "My field experience was directly related to my courses in the LIS curriculum," 9% disagreed, and another 11% chose "neither agree nor disagree." This should not surprise us. Some students focus their coursework on specialties like children's literature and youth services, but gladly accept work in our academic library as a form of financial aid.

Other notable responses on the relationship of learning through field experience to learning in the classroom include:

- My field experience provided the background to better understand coursework by comparing course concepts to real world library experience (A = 20%, SA = 76%).
- My field experience provided an opportunity to select future courses based on a more informed perspective on the profession (A = 32%, SA = 51%).
- My field experience provided an opportunity to learn valuable skills that would be difficult to learn in a classroom (A = 17%, SA = 81%).

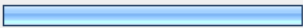
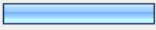
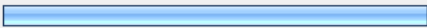
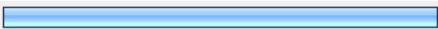
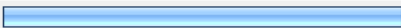
Another set of statements on the questionnaire provide evidence of positive perceptions of value that alumni had of the field experience and its role in professional preparation distinct from the lessons received in the classroom. We especially noted the majority of respondents who saw their field supervisor as a professional mentor.

- My field experience enabled me to gain an understanding of a wide range of job opportunities within the academic library (A = 35%, SA = 48%).
- My field experience provided an opportunity to gain real world work experience that is valued by my profession (A = 20%, SA = 78%).
- My supervisor in my field experience is (or was) a mentor to me (A = 27%, SA = 60%).

Open-ended responses also highlighted the field experience as the initiation of the professional network to which one returns frequently for support; as one respondent noted, "The people in my department have given me professional advice years later." Overall, the reactions to the statements, reinforced by comments, confirmed that field experiences are perceived as highly

valuable and educational by students who participate in them.

Figure 4

25. In what ways did your field experience help you get your first professional position? Please check all that apply.		Percent	Count
I defined more clearly my areas of interest.		62%	63
I got advice on job searching.		59%	60
My field experience led to a job with the same organization.		10%	10
I got leads on open positions or professional networking opportunities.		29%	30
I gained experiences that I mentioned in my application.		83%	85
I listed my site supervisor as a reference.		85%	87
I described my field work or project during my interview.		78%	80
I included materials from my field project in a portfolio or presentation.		34%	35
My field experience DID NOT help me get my first professional position.		3%	3
Other		6%	6
Answered			100
Skipped			2

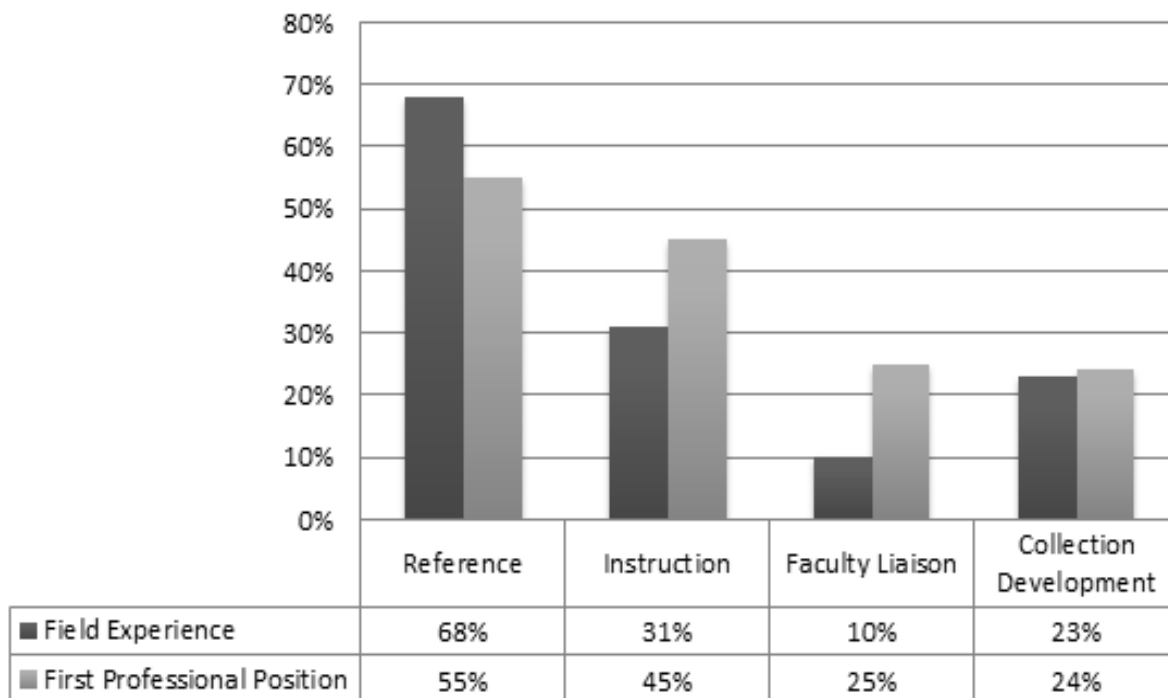
Through the survey, we also sought to determine how the field experience contributed to the specific objective of obtaining a job after graduation. Over 80% of the respondents either agreed or strongly agreed with the statement that, “My field experience was a factor in my selection for my first professional position.” We asked people to articulate the specific ways in which the field experience helped. (See Figure 4.) Some of the most important connections included the ability to use the field supervisor as a reference or a source of job-seeking advice, and the ability to describe specific, field-based projects during the application or interview phase. As one respondent commented,

“Very few entry level positions require no experience. While I couldn’t claim professional experience, my graduate assistantship provided the two years of reference and instruction experience that was a preferred qualification for the position.”

As mentioned above, the field experiences reported by our alumni were concentrated in traditional fields such as reference, instruction, and collection development. For the population overall, there was a visible correlation of field experience areas with the areas of responsibility in the first professional position. (See Figure 5.)

Figure 5

Common Field Experience vs. First Professional Job



It is interesting that reference experience—long a hallmark of our Graduate Assistant positions at Illinois—is not as strongly correlated with the first position’s responsibilities as are areas such as instruction and liaison work. This result may be specific to Illinois, where the majority of our GA positions are involved in reference and instruction, so that graduates are most competitive in those areas. We look forward to comparing our data to data from Maryland and Washington alumni, to ascertain how large an effect, generally speaking, the content of the field experience has on subsequent professional employment. We also speculate that the high numbers of first positions in reference (55%) and instruction (45%) among this population may simply reflect the greater frequency of openings in these areas for entry-level librarians.

Preliminary Thoughts on the Implications of the Survey Data

In keeping with anecdotal feedback from LIS students and our own observations of

field experiences as they unfold, we expected respondents on the whole to view their field experiences positively. The results were even more positive than we’d anticipated, however. Answers to the open-ended questions brim with comments like “My field experience was the core of my LIS education.” One alum reported being told by a hiring committee member, “Book learning is great, but getting your hands dirty is what matters.”

Although our questions anticipated some of the specific ways in which field experiences are valuable to students, these emerged even more strongly in the two open-ended questions. One asked students to share thoughts about the “significance” of their field experience, and the other was a final broad invitation to share any other “opinions, memories, and thoughts about your field experience.” A number of themes were repeated. For example, students clearly value the intellectual and practical intersections of their classroom and workplace learning: “In class I get the theory, especially with practical things such

as reference service, but it is so valuable to work at a desk in the Main Library. I got to apply the theory and test my limits. . . .” The hope that the field experience will complement and amplify the LIS curriculum appears to be fulfilled: “This experience really gave me some context for what I was learning in classes—I could apply it and think about it in a more concrete way. It really was invaluable.”

The comments also revealed that, for a few, the field experience is most valuable in clarifying that academic librarianship is not for them:

- “I learned through my field experience that I did not want to work in an academic setting. Skills that I learned in the academic setting have easily translated to skills I use in my public library job.”
- “My field experience provided me with a great glimpse of cataloging, and some insight into reference and collections. The experience was superb, but I realized that the field of library science was not for me. . . and as a result I changed paths and am now in medical school.”

We also confirmed what we had suspected regarding the types of library work to which students are exposed in field experiences at Illinois. Relatively few reported direct involvement in cutting-edge, technology-intensive areas of academic library work while earning their MLIS. The paucity of virtual or blended field experiences was also striking. We need to consider the implications—for the students and for the future of the profession—of continuing to offer fairly traditional field experiences, when our profession and the information world around it are changing so rapidly.

Looking back, alumni express very positive views of the field experience, but we should be concerned about the lack of significant involvement in areas of emergent academic library need—e-resource management, scholarly communications, data curation, digital preservation, web archiving, metadata, information policy, etc. The authors’ own student field experiences stand in contrast to the situation today. In the mid-1970s, one of us held a graduate assistantship in a library where she was able to ride the incoming wave of interest in bibliographic instruction, a topic so new that it wasn’t covered in her classes. When the other of us

was studying for his MLS in the late 1990s, his field experience immersed him in the then-emergent area of web design. Nowadays instructional services and web design (or content management) are part of many field experience opportunities at Illinois, as are the use of digital reference tools and, to a lesser extent, social media tools to provide traditional services such as reference and instruction. But where are the truly “cutting-edge” experiences?

Next Steps and Envisioned Outcomes

The immediate next step in the Field Strength project is to extend the survey to recent graduates of Washington and Maryland. A larger pool of respondents will generate more confidence about our findings. Interesting comparisons may emerge among the universities, or we may find that opinions about the field experience are consistent across the three campuses. The survey results will help to shape the topics for the focus groups in January and April. Those sessions, as we’ve mentioned, will include not only graduates who completed field experiences, but also librarians who have served as on-site supervisors, and faculty and staff of LIS programs who are planners, advisors, or evaluators of field experiences. The final phase of the project, for which we’ll seek another grant, will design and evaluate new field experience opportunities, emphasizing areas of emerging need and importance in academic libraries. Such areas might include data curation, user experience, or mobile application development.

We also discovered that students valued having a defined project during their field experience, because this gave them a boost during the job search. Thirty-four percent reported including materials from a field project in a portfolio or presentation for potential employers. But only two-thirds of our respondents reported having had such a project as a component of their field experience. A distinct project is a mandated component of the Illinois practicum course and is a formal component of assistantships in some, but not all, departments of our Library. We need to look into these issues locally, but they also suggest interesting areas to explore as we deploy the survey across additional institutions and engage focus groups of field experience supervisors. Clearly projects benefit the students. But how much do they benefit, or burden, their supervisors

in the field?

So, what have we learned? We have learned without a doubt that the field experience matters. The anecdotal reports we had heard for years about the importance of the field experience as a part of professional education and as a resume builder appear to be supported by the data. We need to see if this holds true across other institutions.

We have also learned that the current state of the field experience in LIS education is ill-defined. Unlike fields like teacher education, where there is an entire literature dedicated to the field experience and its place in the curriculum, LIS education addresses this facet of the program in varied, and often highly individualized, ways. We need to continue our study of program documentation and to explore whether there are best practices already in place that would help to promote the sort of benefits that alumni associate with the field experience.

We also need to design a complementary survey aimed at academic librarians, not as alumni but as practicing professionals. As mentioned earlier, our goal is not only to explore the student perspective of the librarian's contribution to student learning outcomes in LIS education, but to demonstrate the benefits of collaboration. Most field experience descriptions found on LIS program sites note that the student will be supervised both by an information professional and by an LIS faculty member, but, again beginning with anecdotal evidence, we do not know how often this is the case. Therefore we must ask: at the student level, what promotes collaboration between the LIS faculty advisor and the field experience supervisor? At the program level, what promotes collaboration between an LIS school or department and the academic library on its campus? In documenting, for example, the ways in which its program meets the ALA *Core Competences of Librarianship*, how much data is the library school receiving from the field about the experiences offered to their students?¹⁶ As we deploy this alumni survey across additional programs, we will also be gathering data and insights from field supervisors, LIS field experience coordinators, and LIS program administrators by means of surveys and focus groups.

In the end, the goal of the Field Strength project is to identify and implement best practices for field experiences in academic libraries. Ultimately, this research should lead us to develop and test new models for field experiences in academic libraries. Such new models might emphasize work assignments centered on new technologies and concepts. And they might open more opportunities for students in online distance education programs. Before then, however, we have more fact-finding ahead of us!

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Cracking the Cryptopticon: An Agenda for Investigating the Implications of 'Big Data'

Siva Vaidhyanathan¹
University of Virginia, USA

Consider two American films, 24 years apart, both starring Gene Hackman as a reclusive surveillance expert.

The difference between the work done by Harry Caul, the naïve, emotionally stunted private investigator played by Hackman in Francis Ford Coppola's 1974 film, *The Conversation*, who used audio and video surveillance to investigate private citizens, and the work done by Edward Lyle, the disaffected, cynical former spy Hackman played in the 1998 Tony Scott film, *Enemy of the State*, is more than a matter of tools.²

Lyle is a master of the pervasive digital tools and techniques that mark the early 21st century as an era of total surveillance. His work in the past, before he chose to disappear "off the grid," involved some high-level work for either a governmental office like the National Security Agency or a private contractor working for the NSA. It's never fully revealed in the film. To anyone familiar with *The Conversation*, Lyle seems to be Caul 24 years later, with a new name, a deeper sense of nihilism, but the same allergy to sharing any information with anyone. Caul's tools, analog and cumbersome, were remarkably effective at capturing the conversations and images of known people. He worked on targets. He worked for private firms and people. And he focused on the personal, rather than the criminal or national security realms.

Lyle, in contrast, introduces both Robert Clayton Dean (played by Will Smith) and the audience of 1998 (composed of people not yet shaken by the specter of global networks of terror killing thousands in a single morning and the overwhelming state surveillance apparatus that sprung up in the early 21st century) to an invisible web of constant data mining and tracking. The team of geeky spies assigned to track Dean as he rushes through Washington, DC, has at its disposal

credit records, mobile phone signals, and hundreds of surveillance cameras perched throughout the city.

Lyle lives in a completely different information ecosystem than Caul did. Caul, in the age of Nixon, did not live under a friendlier, more humane or more liberal government than Lyle did in the age of Clinton. Caul did not encounter private firms with more noble motivations than in those Lyle did. And Caul certainly did not lack the ability to track individuals and record their intimate expressions in stark detail. Caul, like Lyle, has the power to ruin lives via surveillance and revelation. But Caul did not imagine anything beyond methods of precisely targeted surveillance of individuals. Lyle, in contrast, lived at the dawn of the Era of Big Data. In Lyle's information ecosystem, firms and states maintain massive databases that contain records of commercial transactions, motion, and expressions. There is a permeable membrane between data collected by private firms and data used by state security forces. And our electronic devices, as Dean learns the hard way, facilitate this constant and nearly total environment of discreet surveillance. Data collection is so cheap and easy that it's unnecessary to judge a priori what among it might be important. Firms and states collect first; ask questions later.

"Big Data" is a widely used term that encompasses many activities and projects within state activities, commerce, science, and society. Cuzzocrea, et al. define "Big Data" the following way:

"Big Data" refers to enormous amounts of unstructured data produced by high-performance applications falling in a wide and heterogeneous family of application scenarios: from scientific computing applications to social networks, from e-government applications to medical information systems, and so forth. Data stored in the underlying layer of all these application scenarios have some specific

characteristics in common, among which we recall: (i) large-scale data, which refers to the size and the distribution of data repositories; (ii) scalability issues, which refers to the capabilities of applications running on large-scale, enormous data repositories (i.e., big data, for short) to scale over growing-in-size inputs rapidly; (iii) supporting advanced Extraction-Transformation-Loading (ETL) processes from low-level, raw data to somewhat structured information; (iv) designing and developing easy and interpretable analytics over big data repositories in order to derive intelligence and extract useful knowledge from them.³

We have just begun to try to understand the ramifications of this information ecosystem, even though it has its roots in the development of basic computer mainframe systems, bureaucratic state functions, and commercial credit databases of the 1960s.⁴ While scholars in such disconnected areas as computer science, science and technology studies, library and information studies, communication, marketing, political science, media studies, and the philosophy of science have been picking away from different angles at the problems and opportunities that Big Data presents, we lack a synthetic and ecological understanding of the phenomenon. We lack, for instance, a synthetic history of “Big Data” that would cover the major technological leaps, theoretical ideas, and public policies that have led us to this moment. Much of the most interesting work is being conducted by researchers in the private sector and thus might not ever reach the public or offer data that can be scrutinized or studies that can be replicated.⁵

This paper surveys many, but not all, of the major functions of commerce, government, and science that hope to exploit the new information ecosystem. It calls for a comprehensive, multidisciplinary, open, and coordinated approach to assessing the costs and benefits of building and using surveillance systems, networks, storage systems, and algorithms to assess “Big Data.” It may be too late, but the need to make sense of the ethical, legal, and philosophical implications of Big Data is urgent.

In such a political and commercial environment, institutions have every incentive to follow, trace, save, and analyze every trace of human activity.

Many have assessed “Big Data” as a function of the available technologies (huge server farms; algorithms designed to quickly reveal patterns within otherwise meaningless pools of data; faster bandwidth and processing capacities; etc.). But this mode of analysis misses the central challenge of the age: There have long been potential payoffs for tracing and tracking subjects (consumers, citizens, criminals, “users”). The returns are much clearer now because of specific changes to the global political economy and the dominant ideologies since 1980. When incentive systems such as securities markets and consultants praise “efficiency” above all other values, states place “security” above all other public needs, and mass-market advertising demonstrates at best murky returns for each dollar spent, the incentives to target, trace, and sift grow in power.

Meanwhile, regulations and markets offer few, if any, disincentives to pursue “big data” as a tactic. Because “Big Data” analysis offers clear public benefits as well, such as quicker and broader epidemiological analysis, we should not wish to dispense with these technological systems and practices. Instead, we should strive to understand the costs and consequences as well as the benefits and deliberately pursue a strategy that maximizes the benefits and minimizes the negative externalities. The most important concept at work in this discussion is that the speed and urgency with which institutions have pursued “Big Data” have blunted efforts to generate an influential critical conversation about “Big Data.”

I have called the information ecosystem of massive corporate and state surveillance “The Cryptopticon.”⁶ Unlike Jeremy Bentham’s Panopticon, which Michel Foucault used to illustrate the methods of social control that the modern liberal industrial state uses to keep its citizens in line, the Cryptopticon is not supposed to be obvious.⁷ Its scale, its ubiquity, even its very existence is supposed to be hidden from clear view. So while a CCTV camera perched over a counter of a convenience store warns shoppers to behave or risk being caught by the obvious eye, the techniques of the Cryptopticon include browser cookies, data streams retained by telecommunication firms, satellite imagery, global positioning system traces, covert voice surveillance, store discount cards, e-book reader devices, and mobile applications. Each of these techniques

masks its real purpose, to gather data and track behavior of millions of people with stunning precision. Instead, each technique appears to offer something really valuable and convenient, often “for free.” Theories of privacy and surveillance, discussions of law and ethics, and appropriate assessment of technologies all depend on having a clearer picture of the environment in which we are operating. For that reason, I suggest that we replace the Panopticon as the operative model of surveillance in the world with the Cryptopticon.⁸

The original Panopticon, conceived by English philosopher Jeremy Bentham, was a design for a circular prison with a central watchtower, in which all the inmates would behave because they would assume that they were being observed at all times. “The fundamental advantage of the Panopticon,” Bentham wrote, “is so evident that one is in danger of obscuring it in the desire to prove it. To be incessantly under the eyes of the inspector is to lose in effect the power to do evil and almost the thought of wanting to do it.”⁹ Fortunately, Bentham was never able to test this assertion, as no such prison was ever built.

In his influential book from the 1970s, *Discipline and Punish*, Foucault applied Bentham’s model to analyze the very way of life that 20th-century liberal republics had developed. Foucault posited that state programs to monitor and record our comings and goings create imaginary prisons that lead citizens to limit what they do out of fear of being observed by those in power. To Foucault, the Panopticon was now embedded in every structure of life, rendering everyone, not just prisoners, docile and compliant to the will of the powerful. Various systems of surveillance, from government documents to schools to police on the corner, generated “no need for arms, physical violence, material constraints,” Foucault said in an interview. “Just a gaze. An inspecting gaze, a gaze in which each individual under its weight will end by internalizing, to the point that he is his own supervisor, each individual thus exercising this surveillance over, and against, himself. A superb formula: Power exercised continuously and for what turns out to be a minimal cost.”¹⁰ The gaze, the theory goes, works as well as iron bars to control the behavior of most people.

Those who write about privacy and surveillance

usually can’t help invoking the Panopticon to argue that the great harm of mass surveillance is social control. However, the Panopticon does not suffice to describe our current predicaments. First, mass surveillance does not inhibit behavior: people may act weirdly regardless of the number of cameras pointed at them. The thousands of surveillance cameras in London and New York City do not deter the eccentric and avant-garde. Long before closed-circuit cameras, cities were places to be seen, not to disappear. Today, reality television suggests that there may be a positive relationship between the number of cameras and observers pointed at subjects and their willingness to act strangely and relinquish all pretensions of dignity. There is no empirical reason to believe that awareness of surveillance limits the imagination or curbs creativity in a market economy under a nontotalitarian state. Obviously, coercive state violence still exists, and at times metastasizes. The 21st-century state still needs prisons, guns, and handcuffs to exert control over those who flout laws and—occasionally—norms. Bentham predicted that prisoners under the gaze would be docile and even happy. Foucault asserted that late-20th-century citizens were just as docile and happy as Bentham predicted prisoners were. Neither can explain how or why the gaze fails to quell anger and dissatisfaction, or why the state still needs violence.

Certainly the Stasi in East Germany exploited the controlling power generated by widespread awareness of surveillance and the potential for brutal punishment for thought crimes. But that is not the environment in which most of us now live. And unless the Panopticon is as visible and ubiquitous as agencies like the Stasi, it cannot influence behavior as Bentham and Foucault assumed it would.

In his stirring and revealing book *The File*, Timothy Garton-Ash describes how he perused the file that the Stasi compiled on him while he was living in East Berlin doing research for his doctoral dissertation. The File, as other accounts have shown, reveals that the East German system of surveillance went far beyond the obvious signals that would make a Panopticon. There were extensive methods of surveillance that were cryptic and clandestine, not least of which was a network of informants placed in places where dissidents might find each other. So even in East Germany

before unification, the Panopticon was not enough to maintain control for the state. And, ultimately, nothing was.

Commercial and state forces at work in Europe, North America, and much of the rest of the world are the opposite of a Panopticon: not the subjection of the individual to the gaze of a single, centralized authority, but the surveillance of the individual, potentially by all, always by many: Not a Panopticon; a “Cryptopticon.” Unlike Bentham’s prisoners, we don’t know all the ways in which we are being watched or profiled—we simply know that we are. And we don’t regulate our behavior under the gaze of surveillance: instead, we don’t seem to care. The workings of a “Cryptopticon” system are cryptic, hidden, scrambled, and mysterious. One can never be sure who is watching whom and for what purpose. Surveillance is so pervasive and so much of it seemingly benign (“for your safety and security”) that it’s almost impossible for the object of surveillance to assess how she is manipulated or threatened by powerful institutions gathering and using the record of surveillance. The threat is not, as under a Panopticon, that expression or experimentation would be quashed or disciplined. The threat is that subjects would become so inured and comfortable that they gladly sort themselves into “niches” that enable effective profiling and behavioral prediction.

The Cryptopticon is intimately linked to the Era of Big Data. And the dynamic relationship between the two concepts reveals urgent needs to understand both. We must establish a clear research agenda to confront emerging issues that are altering how commerce, state power, science, and society all operate. Because these three major areas of human activity are linked in both theory and practice, we should not sever them in our efforts to understand their effects and prescribe policy prescriptions to maximize positive externalities and minimize negative. But for the sake of illustration, this paper will walk through each area distinctly to highlight a few issues worthy of further study.

Commerce

Facebook, Google, and Amazon want us to relax and be ourselves. They have an interest in exploiting niche markets that our consumer choices

have generated. These companies are devoted to tracking our eccentricities because they understand that the ways we set ourselves apart from the mass are the things about which we are most passionate. Our passions, predilections, fancies, and fetishes are what we are likely to spend our surplus cash on and thus make us easy targets for precise marketing. As Joseph Turow explained in *Niche Envy*, and former editor of *Wired* magazine, Chris Anderson, describes in *The Long Tail*, market segmentation is vital to today’s commerce. In order for marketers and vendors to target messages and products to us, they must know our eccentricities—what makes us distinctive, or, at least, to which small interest groups we belong. Forging a mass audience or market is a waste of time and money unless you are selling soap.¹¹

A responsible scholarly analysis of Big Data would include research on best practices for data accumulation, retention, and profiling. And it would include efforts to render liability for data breaches and failure of security.

The State

Even the modern liberal state, like those of North America and Western Europe, wants us to be ourselves. It wants subversive and potentially dangerous people to reveal themselves through their habits and social connections, not to slink away and hide in the dark.

Repressing dissent and subversion does not eliminate them: the Stasi lost its efforts to control the East German people despite the enormous scale of its operations and the long-lasting damage it inflicted on both the observers and the observed. In the 21st century liberal state, domination does not demand social or cultural conformity. The state, like every private firm that employs a sophisticated method of marketing, wants us to express ourselves—to choose—because mere expression of difference is usually unthreatening, yet remarkably useful to the powerful.

Big Data did not just happen. Specific state decisions since the 1950s to develop computer technologies, protect databases as property (at least in Europe), limit personal autonomy over data, and fund research into data analysis all contributed to recent changes. The methods of gathering and assessing data are not necessarily a radically new

set of ways to understand the world. But the changes in recent years are significant enough to demand rigorous analyses of the history, ethical ramifications, and philosophical issues raised by Big Data.

One area of study in urgent need of definition and depth is the historical analysis of Big Data. The Era of Big Data is not necessarily new if we define “Big Data” as the ability to gather, algorithmically and statistically analyze, and distill large sets of information using powerful computers. As James B. Rule explained in his 1974 book, *Private Lives and Public Surveillance: Social Control in the Computer Age*, the rise of commercial and government databases and credit bureaus in the 1960s alarmed civil libertarians already shocked by the abuses of the Nixon administration. This led to a series of relatively strong federal privacy protections that were quickly undermined or ignored in subsequent decades.¹² But the level and complexity of big data collection has ballooned. Since late 2001 the United States and other powerful states such as the United Kingdom and the People’s Republic of China have installed sophisticated and covert surveillance systems to track the expressions, movements, and social networks of their citizens.¹³ Companies such as Google and Facebook put Big Data collection and analysis at the heart of their revenue-generating functions, always described by company officials as enhancements to “the user experience.”¹⁴ The line between “state” and “commercial” surveillance hardly matters any more, as state security services regularly receive significant datasets on people’s movement and habits just by asking or do so by licensing the data on the open market.¹⁵

Scholars of Big Data should take seriously the flows of data between private firms and the state and consider the ramifications of policies that might limit those flows. In addition, scholars should examine policy proposals that could restore personal data rights to individuals, allowing them to have some stake in the collection and use of information about them by the state.

Science

Beyond questions raised by the generation and manipulation of large datasets by commercial and state agents, “Big Data” is altering theories and practices of knowledge creation as well. Chris

Anderson, the editor of *Wired* magazine, was engaging in his typical brand of hyperbole when he declared the Era of Big Data a new scientific revolution. Anderson writes:

Scientists are trained to recognize that correlation is not causation, that no conclusions should be drawn simply on the basis of correlation between X and Y (it could just be a coincidence). Instead, you must understand the underlying mechanisms that connect the two. Once you have a model, you can connect the data sets with confidence. Data without a model is just noise.

But faced with massive data, this approach to science—hypothesize, model, test—is becoming obsolete. Consider physics: Newtonian models were crude approximations of the truth (wrong at the atomic level, but still useful). A hundred years ago, statistically based quantum mechanics offered a better picture—but quantum mechanics is yet another model, and as such it, too, is flawed, no doubt a caricature of a more complex underlying reality. The reason physics has drifted into theoretical speculation about *n*-dimensional grand unified models over the past few decades (the “beautiful story” phase of a discipline starved of data) is that we don’t know how to run the experiments that would falsify the hypotheses—the energies are too high, the accelerators too expensive, and so on.¹⁶

Anderson’s pronouncements are hyperbolic but indicative of a strong and attractive initiative toward a better understanding of natural phenomena by collecting and analyzing large datasets. The move away from hypothesis-driven experimentation toward pattern recognition is more than a shift from deduction to induction. It is philosophical but also political. Any shift in sparse state scientific research funds from one method of scientific inquiry to another demands careful analysis and judgment. Scholars of Big Data should employ philosophers of science in concert with science policy experts to consider the best methods and optimal level of state investment in Big Data research.

Society

In Michelangelo Antonioni’s 1966 film *Blow-Up*, a photographer clandestinely shoots a couple embracing in a London park. The woman, angered

at discovering that the photographer has captured her image, runs after him. "This is a public place," she says to the photographer. "Everyone has the right to be left in peace."

This is an odd bit of dialogue. The standard American assumptions about private and public spaces would yield a conclusion that everyone has a right to be left in peace in private, but certainly not in public. The incongruity lets the audience interrogate the idea of being "left in peace," and under what conditions someone should be. Social relations, as Helen Nissenbaum argues, rely on a web of trust. Respecting privacy is high among these norms that facilitate social relations.¹⁷ As Daniel Solove has demonstrated, one of the greatest threats to personal dignity comes not from a large firm like Google or a powerful state like the United States. It comes from millions of individuals with audio, video, and photographic recording devices with them at all times in public. Fellow members of society have not only the potential but clearly the predilection to expose, harass, and vilify their neighbors either to satisfy a sense of vigilante justice or just for fun.¹⁸ Soon we will have access to always-on surveillance technologies such as Google Glasses, which will not only record all of our interactions in both public and private but will share the images and sounds with Google—thus rendering them available to state actors as well.¹⁹

Researchers and philosophers of technology should intervene in the coming debates about the norms, practices, technologies, and regulations that would govern what Nissenbaum has called "privacy in public."²⁰ The incentives are clearly on the side of maximum surveillance by as many people as possible. And the devices we might use for that effort are attractive in so many ways that we will need a firm, frank, and informed level of deliberation to make the best collective decisions.

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Notes

1. Robertson Professor of Media Studies and Law, The University of Virginia. I owe a great debt to the work of Michael Zimmer of the University of Wisconsin at Milwaukee, and Danah Boyd and Kate Crawford of Microsoft Research in New York City and Cambridge, Massachusetts.

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TEALS Project: Evaluating Physical Library Spaces

Neda Abbasi, Hisham Elkadi, Anne Horn and Sue Owen
Deakin University, USA

Abstract

The aim of the TEALS (Tool for Evaluation of Academic Library Spaces) project was to establish a setting for the evaluation of academic library spaces. The outcomes of such evaluation were anticipated to provide insights into the impacts of library spaces on students' learning experiences, faculty's teaching and research and lead to identifying areas of weakness and strength, developing improvement plans and defining specific goals and means for project decision makers. TEALS was developed in three phases. In the first phase of *Exploratory Research*, the research and practice of library planning and design along with the existing library assessment tools were reviewed. In addition, eleven academic libraries in Australia were visited. The literature review and site visits helped in identifying ten evidenced-based Criteria of Quality (CoQ) for effective and responsive library spaces. The CoQ were then linked to a number of Quality Indicators (QIs) and formed the basic elements of the TEALS framework. TEALS also included three types of data collection tools—*Students' Library Experience Survey*, *Observational Study Checklist* and *Library Staff Perception Survey*—which facilitate scoring. In the second phase, *Pilot Study*, TEALS was trialled in Deakin University Library at Burwood campus, Melbourne, Australia. This trial of the TEALS package proved to be an obvious success providing critical information on the quality of library spaces, students' experiences and levels of satisfaction with these spaces and library staff perceptions. The evaluation process was also found to be relatively straightforward and user-friendly. Finally, the findings of the pilot study helped in improving the package including modifications to the online survey instrument of Students' Library Experience and development of a survey instrument for library staff and the final launch of TEALS.

1. Introduction

Academic libraries have been facing significant challenges driven by pedagogical, economic, social and cultural change. More than ever before

within academic libraries, a didactic teaching approach is giving way to more student-centred approaches, e.g. collaborative learning and project-based learning. This places demands on libraries to offer a variety spaces for independent research, access to information, team work, discussion and collaboration as well as social and informal learning. Changing student demographic in terms of a higher number of adult and working students as well as an increasing number of overseas students means that new spaces should be provided to meet students' different needs. Libraries are also expected to be places where new technologies can be integrated to provide quick and easy access to an enormous amount of information and electronic data. Today's libraries are no longer merely places where books and journals are stored and students are engaged in quiet reading.

While the traditional roles of academic libraries to store collections and provide quiet reading spaces are still emphasized, a new generation of academic libraries is emerging which place a significant emphasis on learners and learning. The past decade has seen significant library development in many universities to include a variety of learning spaces as well as a range of social and informal learning spaces. Existing research and post-occupancy evaluation studies of new and refurbished libraries provide important insights on the characteristics of 21st century academic libraries. Nevertheless, there is a need to better understand space utilisation in academic libraries, e.g. the ways that academic library spaces are being used and their impacts on student learning.

Among the areas of debate within academic and public libraries across the world are the use (Bryant, Matthews et al. 2009) and the right balance of different types of spaces in libraries. The factors which may determine the right balance of library spaces, e.g. student cohorts, institutions' educational philosophies and pedagogical focus,

are also yet to be examined. Performing systematic ongoing evaluation studies of academic library spaces is an important step which facilitates the development of knowledge about effective space utilization and the balance and combination of spaces in libraries.

There is a clear gap in knowledge and availability of an appropriate and comprehensive tool to evaluate academic library spaces. Currently, there are some tools for evaluating design quality and building performance. The majority of these tools have been developed to apply to a wide range of building types. The few existing self-assessment methods developed for libraries address a few factors related to physical spaces of libraries only briefly and overlook many important issues in this regard. There is a need for an evaluation tool which has been specifically developed for academic libraries which takes into consideration a great deal of relevant influential trends, qualities and impacts.

2. Background

Realising the need for an evaluation framework to be used for structured and ongoing assessment of academic library spaces, Deakin University Library commissioned a project: Development of a Tool for Evaluation of Academic Library Spaces (TEALS) to be carried out in the Deakin University

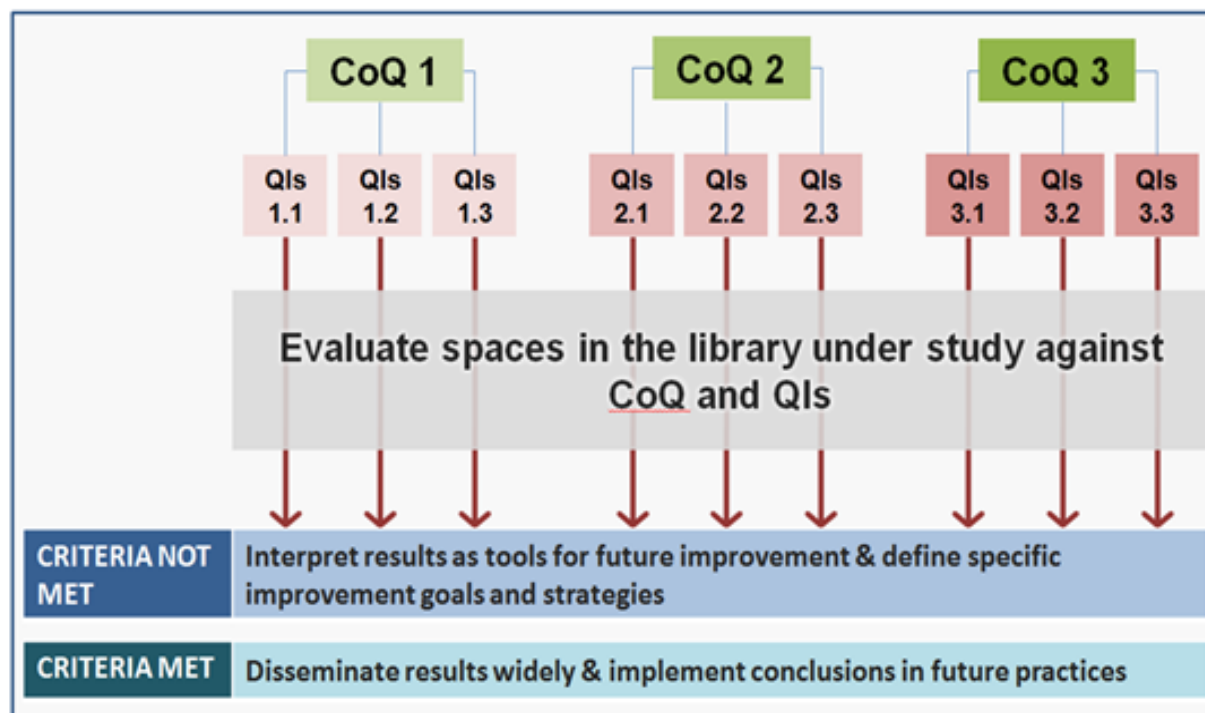
School of Architecture and Building. The aim of the TEALS project was *to establish the setting for evaluation of academic library spaces*, whether new or refurbished libraries. Among the purposes of TEALS were to

1. determine if library spaces function as expected and as designed,
2. examine whether library users' needs are met or not,
3. assess the level of satisfaction of library users and library staff with the library spaces, and
4. understand the issues and problems relating to spaces not working well or not accommodating the demand of the users and staff.

3. Methodology

The TEALS framework has a simple structure built upon a set of *Criteria of Quality (CoQ)* and measures or *Quality Indicators (QIs)* against which physical spaces of any academic library can be assessed (Figure 1). Having a set of criteria or standards are essential in any evaluation study, regardless of what needs to be assessed; a thing, a process, a program or a phenomenon. If the aim is to assess if spaces in an academic library are functioning well, the performance standards for academic library spaces should be established first. Simply put, it is important to have an idea about what a library space that is functioning well looks like and what characteristics it has.

Figure 1. The framework for TEALS, Authors.



3.1. Ten Criteria of Quality

Criteria of Quality (CoQ) are evidenced-based criteria developed through a review of the theory and practice of library space planning and design. Existing research on library spaces was reviewed and synthesised to achieve insights into characteristics of good library spaces and identify a set of CoQ for academic library spaces. Major studies and reports on the qualities of effective and responsive libraries were reviewed. For every work, a summary of the key factors and qualities suggested was prepared (see the bibliography for a list of papers and reports reviewed to develop the ten Criteria of Quality). This provided important insights into the qualities which have high degree of importance and appeared in many studies. In addition to the literature review, the current practice in library space planning and design was examined. A total number of ten site visits were made to academic libraries in Australia. These libraries included four library redevelopment projects at the *University of Melbourne*, *Deakin University Libraries* at Geelong Waurin Ponds and Melbourne Burwood Campus, *La Trobe University Library* at Melbourne Bundoora Campus, *University of Ballarat Library* at Mt Helen Campus, *University of Queensland Library* at Ipswich Campus and *Macquarie University Library*. The aim of these site visits was to examine the different

design features and responses and identify some common planning and design principles. While none of the libraries visited could completely exemplify ideal space planning and design, each library had responded to a certain context and a set of requirements in a unique way and hence could well demonstrate some of the criteria of quality in practice. CoQ are also linked to a number of Quality Indicators (QIs) which are used as measures to evaluate the effectiveness and utilisation of a library's physical spaces. In what follows, a summary of these measures or Quality Indicators for every Criterion of Quality is presented.

3.1.1. Positive Image and Identity

A number of principles and strategies were identified which can foster a positive image and project a clear identity for a library. The first principle is establishing the library as the intellectual hub or heart of a campus. This has to do with factors such as adjacencies, proximity to student centres and natural open areas. It is also important to invest in the external skin of a library building. In this respect, "transparency" can be considered as a factor contributing to a positive and inclusive image of a library. Students and other library users are given the opportunity

to have a glimpse of what is going on inside the library. Giving considerations to aesthetic aspects of outdoor spaces, i.e. landscaping, vegetation, pathways and seating provision, can also foster a positive friendly image. Finally, elements borrowed from the context of a library, i.e. social, cultural, natural and historical contexts, can contribute to its unique identity and image. There are a range of creative design responses in relation to this principle, depending on the special contexts of a library, its values, missions and goals. In refurbishment projects, elements from the old library may be kept as representations of the library history and its unique past.

3.1.2. Welcoming and Inviting Entry

This quality has to do with the strategies which are applied to foster in users the feeling of being welcomed, attract users through the door and encourage them to use a wide range of library facilities. A key consideration in this regard is creating an “intermediary space” which links outside and inside and functions as a space for waiting and informal meeting. The intermediary space may also incorporate a café, a gallery or exhibition space. Recent academic library redevelopment has witnessed a trend towards the provision of a café in close proximity to a library entrance and even as a part of the formal library. A number of key factors can be suggested which determine the success of the library intermediary space: a proper size and layout to accommodate multiple functions, e.g. waiting and walking in and out, comfortable and lounge type furniture with attractive design and vibrant colours and maintaining visual connections using glass walls. Newcomer students and visitors get a glimpse of the buzz of activities, interaction and learning inside a library. The intermediary space may also include food and drink vending machines.

3.1.3. Functionality and Efficiency

Library spaces should support the delivery of services and programs, accommodate the collection efficiently and meet users’ needs. One of the factors determining the functionality and effectiveness of library spaces is “size.” The size of library spaces should accommodate the functions assigned to them. There are currently some standards which can be used as a guide to work out the required size and area when planning and designing library spaces. Nevertheless, considerations need to be given to the specific contexts within

which a university exists. It is also necessary that adjacencies and relationships of spaces work well and support the multiple functions of academic libraries. The materials used should last and be easy and economical to maintain. An efficient and sufficient combination of natural and artificial lighting should be provided which supports different functions of libraries and addresses students’ needs and preferences. “Control” is an important issue in this regard. Students should be able to control the artificial lighting to some degree as different individuals may have different preferences for the amount of lighting required to study or perform a task. Acoustics is another important consideration in relation to the quality of functionality and efficiency of academic library spaces. Different strategies can be applied to control the noise in library spaces including defining zones and using sound absorbing materials. Furniture used should also suit the activities, be durable and ergonomic. The provision of appropriate storage is a particularly important consideration in relation to library staff workspace. In some libraries, students are also provided with lockers to keep their personal belongings, usually on a temporary basis. It is important to provide whiteboards, smart boards, data projection and screens etc. where appropriate. In addition, the design should incorporate elements and systems which facilitate library staff work. Examples of these supportive elements and systems are ‘automatic doors’ and ‘Automated Sorting Technologies systems’ to sort incoming/returned items. Finally, it is necessary that proper amenities are provided for students and library staff.

3.1.4. Flexibility and Adaptability

A number of factors and issues should be considered if library spaces are to be flexible and adaptable. This includes provision of adequate number of power and data connections in appropriate locations within library spaces to maximise flexibility in the arrangement of spaces and accommodate multiple activities in the same space. Consideration also needs to be given to the building structure in terms of the location of columns and load-bearing walls so that they do not create serious barriers to the repurposing of spaces. The design of furniture, i.e. size, shape and features such as moveability and modularity, should also facilitate a range of activities and arrangements. Creative design of furniture can

also allow adding or removing parts and creating different forms and functions. Screening elements and openness of spaces are other factors which can influence the degree of flexibility of a space. The design can explore various ways to define spaces using less fixed elements including furniture, shelves, lighting, vertical elements and changing floor or ceiling heights. Finally, it is important to understand that maximising flexible and adaptable qualities of academic library spaces is not always determined by design-related strategies and spatial features. Promoting flexibility and adaptability also applies to the processes and policies which are in place within academic libraries along with the technologies integrated. For example, developing wireless networks and implementing laptop loan policies are two examples contributing to multiple uses of certain library spaces, e.g. individual carrels or silent study spaces.

3.1.5. Variety of Spaces to Cater for Different Users and Uses

The focus, the starting point of thinking about what library spaces should provide and how they should look, must be students. How they work, learn, interact and use spaces in a wide variety of ways underpins the space development. The variety of library spaces gives students the "CHOICE" to decide "where" and "when" and "how" to work and learn. We identified key categories of spaces in the academic libraries studied and closely examined their requirements along with issues which may be context-specific. These include "individual study spaces," "group study spaces" accommodating unstructured and casual group study, "formal collaborative space" accommodating the formal group work which requires certain equipment and technologies and a higher degree of acoustic privacy, "research support spaces" and "Teaching & Presentation Spaces." In addition to these main categories, academic libraries should provide a range of other spaces including "spaces to enrich social and personal experiences of students" and "spaces to promote inclusiveness and access of individuals with special needs." A number of means can be applied to create and define a space and provide library users with some clues on the potential of the space and expected behaviours and tasks: furniture, colour, lighting and screening elements. Built-in furniture can provide a degree of visual and acoustic privacy while communicating certain messages to library users about appropriate and

accepted uses and activities in specific library spaces. Colours also have an important impact on individuals' moods, behaviours, motivation and nature of uses and activities.

3.1.6. Being Social and People-Centred

Information and Communication Technologies are making much of the information that students, scholars and faculty need accessible from anywhere anytime. This suggests that individuals no longer come to libraries merely to access information and study. Instead, academic libraries are increasingly becoming places for people to meet colleagues, come together for discussion, planning and preparation of collaborative works or simply to relax and spend some quiet time during class session breaks. A number of design-related considerations can be identified which represent the "people-centred" approach taken by libraries and the value placed on "people" by library designers, and higher education institutions in a broader sense. Firstly, it is important that the design leaves room for people to not only find suitable space but also make their own "place." Small pockets of social spaces should also be created throughout the library. The interactions between students and library staff should be taken into account and informed decisions made in relation to service desk facilities. Adopting a people-centred approach to library design also requires special attention to the quality of staff workspaces. A people-centred library also provides spaces which accommodate large group gatherings and the library's major social events. The "community gathering spaces" can be designed as purpose-built spaces. Such spaces may also be incorporated into traffic circulation spaces, i.e. entrance lobbies and stairs. Finally, a people-centred library is one developed out of collaborative planning and design processes.

3.1.7. A Sense of Place and Inspiration

In addition to contributing to students' learning experiences and supporting their learning needs, libraries should be inspiring places where students' engagement with learning and a sense of community are encouraged. This quality has to do with the aesthetics of space and its affective influences on library users. Making the most of any pleasant views to outside or inside and maintaining "visual connection" are among the factors which can contribute to fostering a sense of place and creating an inspirational environment.

Across a floor level, visual connection can be achieved through maximising transparency i.e. open layout and glass screens. Designing voids can also maintain visual connection across different levels of the library building. The lighting and architectural forms can also promote a sense of place. Colour schemes and furniture design can inspire students and visitors.

3.1.8. Environmental Comfort and Sustainability

This quality has to do with indoor temperature and air quality. Thermal comfort should be provided in the library spaces during the winter and summer. The library spaces should not be too humid or too dry and fresh air needs to circulate through them. In addition, the amount and quality of natural light provided in learning spaces should be adequate with little need to supplement it with artificial light. This brings to the fore attention to strategies which minimise any possible glare or excessive heat associated with natural light i.e. provision of shades and shutters to control the natural light. It is important to note that TEALS uses qualitative data to measure quality indicators related to lighting, heating and ventilation, mainly based on observation and staff and users' comments. An in-depth scientific study of lighting, heating and ventilation is recommended to be carried out by relevant experts. Another important area in relation to this quality is sustainability. A great deal of discussion has evolved on this topic using terms such as green libraries or greening libraries (see IFLA's Environmental Sustainability and Libraries Special Interest Group). Nevertheless, there is a need to further explore these concepts in practice and assess the impacts on library users and staff as well as management and operation costs and longer term influences. Applying the principles of sustainability in library spaces includes implementation of sustainable design features, i.e. passive ventilation and solar panels and taking into consideration the environmental impact of the building materials.

3.1.9. Access, Safety and Security

Facilitating wayfinding and encouraging readability of spaces is the first essential issue to be considered in relation to this quality. Among the strategies which can be applied to assist users in finding their way around spaces are placing signage in appropriately visible spots and maintaining clear sightlines across the library spaces. In addition, library spaces need to be safely

and quickly evacuated in an emergency situation. Spaces should also be accessible for library users with special needs. The visual linking of spaces is another factor which can support accessibility and readability of spaces and contribute to a safer environment. Visual links need to be maintained across library spaces and among bookshelves. Finally, some libraries have started providing lockers for students which can be a good approach to consider. Lockers may be provided on a short-term and daily basis for students' valuable personal belongings and as a secure source of power to charge laptops.

3.1.10. Integration of Technologies

A general principle in relation to integration of technologies into library spaces is maximising the flexibility and adaptability. Technologies change at a much faster pace and spaces need to be able to keep up with these technological changes. In addition, there are factors to be considered if technologies are to be incorporated into spaces in an effective way—not approached simply as adding a few computers. Provision of appropriate spaces for access to technologies for different purposes is one issue to be considered. Spaces for quick access to information as well as spaces for collaborative learning and teaching involving the use of and training about technologies all need to be accommodated. It is also important that the number and location of power points support students' needs to use or charge their electronic devices. Finally, furniture design is another factor which has impacts on students' flexible use of technologies. The size and form of the desks for computers should accommodate students' needs and support collaboration, i.e. two or more students working together using one or more computers. Power points can be provided within desk design allowing students to charge their electronic devices while they are using them.

3.2. Data Collection Tools

The CoQ and QIs helped in developing three data collection tools which provide the input to the TEALS framework. *Students' Library Experiences* is the first data collection tool. It is an online survey instrument of, which focuses on collecting quantitative data. The survey starts with a set of questions on student demographics (i.e. what is your age range? Are you a "heavy" or "light" library user? Which year level you are in? And are you a research or course work student?). It

was hypothesised that student characteristics influence their responses, i.e. satisfaction with spaces, preferences and experiences. The majority of questions on library spaces were multiple choice questions to allow gathering of quantitative data. Some open-ended questions were also included to help in collecting some richer qualitative data on spaces.

3.3. Data Analysis

For every Criteria of Quality, a score from 1 to 10 was considered. A score of 10 represents the fulfilment of that quality is the best possible way. A score of 1 suggests a major weakness in relation to each specific CoQ. Three sources of data contributed to the final score given to a certain CoQ: Students' Library Experience Survey, a Library Staff Focus Group and an extensive Observational Study. A table lists the weight assigned to each source of data for every CoQ. For each source of data, the score given to a CoQ is multiplied by the assigned weight. The total score for a CoQ is the sum of the scores based on three sources of data.

4. Early Findings

In the pilot phase of TEALS, the tool was trialled through an evaluation study of library spaces at the Melbourne Burwood Campus of Deakin University. It was anticipated that the lessons learned in applying TEALS from this evaluation study applying TEALS would help to redesign the framework and modify data collection tools. Deakin University students at Melbourne Burwood Campus were invited via email to attend a focus group via emails. Forty students who expressed their interest were provided with a link to a draft version of the online survey instrument *Students' Library Experiences* and asked to complete the survey prior to attending a focus group. Four focus groups were set up with seven to eight students in each session. These focus groups with students had two main objectives: to evaluate the Online Survey Instrument prior to rollout and to collect qualitative data on the TEALS's ten Criteria of Quality (CoQ) for Academic Library Spaces. In addition, eight library staff attended a focus group discussing the features and challenges of the existing library spaces. These focus groups were then followed up by a structured observational study which was guided by the *Observational Study Checklist*.

The students who attended the focus groups pointed to some important limitations of the online survey instrument. Among the suggestions repeatedly made by students were "some survey questions are not applicable to us" and "some multiple choice questions are narrow and restrictive, leaving little room to express our opinions." In addition, there was a common agreement among the focus group participants that some of the terms used in the survey, e.g. "architectural form" and "visual links," are ambiguous. Students' recommendations required some essential modifications to the Online Survey Instrument including

- I. Addition of a N/A option in some multiple choice questions,
- II. Inclusion of more open-ended questions to collect qualitative data and
- III. Replacing some terms and presenting the questions in an easily understandable language.

Focus groups with the library staff also provided important insights into the quality and of spaces and challenges facing the operation and presentation of the physical library. These findings highlighted the importance of a structured approach to collecting data on library staff's experiences and perceptions. Development of an online survey instrument targeted at library staff was considered as another priority in order to enhance TEALS.

5. Implications for Future Research

The TEALS package will soon be used to evaluate Deakin University libraries located at two other campuses. Enhanced versions of TEALS will also be further applied to conduct ongoing assessment of existing library spaces and any spatial transformation in the future. The lesson learned during the trial of an early prototype of TEALS highlighted its significant potential to guide both post-occupancy evaluation and ongoing appraisal of the quality and use of academic library spaces. Data analysis and strategies to facilitate this process was found to be a high priority in any further refinement of the tool. Future research should include issues relevant to the transformation and use of public library spaces and aim at developing a comprehensive evaluation framework which can be applied in those contexts.

The development of the TEALS package has made an important contribution to filling the gap in appropriate evaluation methods for academic library spaces which can provide support for long-term decision making by library managers. TEALS adopted a participatory approach to space evaluation and its data collection tools facilitated engagement of students and library staff in the process of assessing the physical library. Developed to act as a reflective tool, the TEALS package is hoped to be used at different stages of a library's life with little adjustment. This will certainly assist libraries in performing ongoing evaluation and reflecting upon the implementation of changes reviewing the effectiveness of the new building and space refurbishment programs and enable a comparison of space utilisation over a period of years.

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Practical Research for Library Space and Service Design

Bertha P. Chang and Honora N. Eskridge
North Carolina State University, USA

Abstract

The findings in this paper demonstrate the importance of gathering user input for library planning. A practical approach was taken for this study, which was designed not as a formal academic research project, but as a means for obtaining direct feedback for planning of spaces in the new Hunt Library at North Carolina State University (NCSU). This allowed the team to quickly turn around all aspects of the study: questionnaire design, interviews and analysis. In particular, using interviews to obtain user input provided rich details that would not have been revealed in a survey. By understanding the underlying motivation and factors for space usage, nuances among our users were teased out. This allowed groups that previously did not have high visibility within the Libraries to be uncovered, i.e., users who traditionally have not had high contact with librarians or library services. User personas created from the interview data included these less visible groups as well as those users that academic libraries have traditionally served. These personas now provide the NCSU Libraries an effective way to account for all user groups in planning and assessing of library spaces and services.

I. Introduction

Founded in 1887, North Carolina State University (NCSU) is a land-grant university with approximately 35,000 students located in Raleigh, NC. NCSU is made up of three campuses: the original “Main” Campus, the Centennial Campus and the Centennial Biomedical Campus, each located one mile away from Main Campus. The Library system is fairly centralized—with one large central library on Main Campus (D.H. Hill Library), and four small branch libraries, each located within the confines of the college they serve.

The NCSU Centennial Campus is a research campus made up of university units alongside corporate and government partners. Two of

NCSU’s 10 colleges live on Centennial Campus: Textiles and Engineering. The College of Textiles is made up of two departments, with approximately 50 faculty, 1,000 undergraduates and 100 graduate students. The College of Engineering, with nine departments, approximately 300 faculty, 5,900 undergraduate students and 2,800 graduate students, has been moving over in stages since 2004. At present, three of five planned engineering buildings are open, with six of the nine departments permanently located on the new campus.

In terms of library services, the Textiles Library, a branch library located in the College of Textiles, has been the only library service point on Centennial Campus. With each passing year the need for a large, central library with spaces, facilities and staffing to support thousands of students and faculty has become greater. In 2010, the NCSU Libraries began construction of a new library building. Slated to open in January 2013, the James B. Hunt Jr. Library is meant to redefine the library of the 21st century in terms of services, technology and learning spaces. The long-awaited opening of Hunt Library will provide an intellectual heart to Centennial Campus with spaces and services that will scale to this diverse and growing community.

In this new building, learning spaces will be emphasized over collections spaces, with the vast majority of the print collections stored in a two-million-volume-capacity automated retrieval system (our “bookBot”). The building will have multiple learning commons spaces, approximately 80 bookable group study rooms, and dedicated spaces for faculty and graduate students.

As planning for Hunt Library began and the scope of the project started to become known, it became clear that obtaining input and feedback from library users would be a critical and ongoing part of the planning process. It was especially important

to gather as much input as possible for the faculty and graduate commons spaces to ensure that these spaces would be a success and meet user needs. The Libraries began engaging users through focus groups and other means from the earliest stages of design and planning. This paper discusses the results of one major study of faculty and graduate students conducted in 2011/12.

II. Literature Review

For librarians, the idea of “the library as place” — i.e., the role that a library plays in a community as a place to meet, connect, interact and learn — has always had power. While this central value has remained unchanged, the design of the library environment must continue to evolve to be relevant to users, and for this reason many libraries have invested in space renovations in recent years. Niegaard believes that the library environment is going to “change radically” with “. . . a transition from the book- and shelf-dominated library to a broad cultural and knowledge-bearing holistic library, where the focus is on the user’s stay in the library and on the user having access to both physical and digital resources.”¹ Bennett describes the change in library spaces as a shift of paradigms, from reader-centered to book-centered to learning-centered. “Putting the learner at the center of library space planning . . . the design challenge is less with the interaction of readers and books and more with the connection between space and learning.”² Sweeney also emphasizes the user’s centrality to the future of libraries when he states that “changing user expectations are more important than other trends that affect libraries.” He cites the differences between Millennials and other generations, stating that they are “digital natives; frequent gamers; expect nomadic, anytime, anywhere communications; are collaborative multi-taskers; learn experientially and continuously; and read less than other generations.”³

This emphasis on user-centered design of spaces, combined with the very different expectations that Millennials bring, underscores the importance of learning about the user community through formalized means such as ethnographic studies. Many universities have published the results of user studies conducted for the purpose of space design (see Applegate, Crumpton and Rempel for recent examples⁴). However, the roots of user studies go deeper than the recent focus on space

planning. Bowler notes that “The shift . . . to a user-centered perspective in LIS arose from the emergence of information retrieval systems that could be operated without the intermediation of experts.”⁵ Once users could search databases for themselves, understanding their information seeking behaviors became important in designing interfaces and web sites. Usability testing was the most common method utilized to understand this aspect of the user experience. Library space planning, however, has utilized other means — including observation, surveys, focus groups and interviews. In a paper published earlier this year, Khoo attempted to identify all of the ethnographic studies done in libraries. He found 81 published studies, most since the year 2000, with over half conducted since 2006. Of the various methodologies available, Khoo found that observation and interviews were the most frequently cited.⁶ In planning for Hunt Library, the

NCSU Libraries have taken a mixed approach, employing a variety of methodologies, from photodiary studies and focus groups to the faculty and graduate student interviews discussed in this paper.

One of the major products resulting from the interviews was the creation of user personas.

Personas are fictional characters that embody real users’ behaviors and aspirations. They are most commonly used in web interface design as a tool to help designers better understand and empathize with their users.⁷ Very little literature exists documenting the use of personas in academic libraries, let alone using personas for space and service design. Koltay and Tancheva at Cornell University are one of the few published examples of personas used in an academic library. They state that “Personas combine the benefits of quantitative and qualitative methods,” and that when they are “goal directed and in the setting of a library information landscape, they reverse the emphasis from the library to the user.”⁸ Personas can be an effective tool in building a staff with a common understanding of the user. It is important to point out that personas exist whether an organization makes the effort to create them or not, because each staff member is walking around with his or her own set of “hidden personas” that they are basing decisions upon.⁹

III. Methodology

On January 31, 2011, a team of nine NCSU librarians began planning for interviews of faculty and graduate students in the Colleges of Textiles (COT), Engineering (COE), Agriculture and Life Sciences (CALs), and Physical and Mathematical Sciences (PAMS). An interview questionnaire focusing on the use of spaces and technology was designed by the team. Because these interviews were conducted for the purposes of Hunt Library planning and design, and not research, no IRB approval was necessary. However, once the interview data was analyzed, some of the results were found to be interesting enough to warrant follow-up studies, and for these IRB approval was obtained. At the same time, the original interview

questionnaire was also submitted and IRB approval for the original data was granted retroactively.

An initial group of faculty and graduate students from these four colleges was contacted to participate in the interviews. These faculty members, in turn, recommended colleagues and/or graduate students within their departments as additional potential participants. In all, interviews of 40 faculty members and 31 graduate students were held between February 28, 2011, and April 30, 2011. An additional eight graduate students were interviewed in March 2012. Table I shows the distribution of interviewees among the Colleges and campuses.

Table I. Interviewees by College and campus location

College	Faculty	Graduate Students
Agriculture and Life Sciences (CALs)	9	4
Engineering (COE)	23	24
Physical and Mathematical Sciences (PAMS)	6	7
Textiles (COT)	3	4
Campus location	Main Campus	Centennial Campus
Faculty	20	20
Graduate students	15	24

Two librarians were involved with each interview; one asked questions while the other took notes. The interviews lasted from 30 minutes to one hour. With the consent of the participants, interviews were recorded with a digital audio recorder and later transcribed.

Faculty members were interviewed individually, except for one instance where two professors from the Industrial and Systems Engineering department were interviewed together. Graduate students were interviewed either individually, in pairs, and in one case, in a group of three.

Interviews were conducted in a semi-structured fashion. This allowed the interviewers to delve into various areas as they were brought up while ensuring that all of the questionnaire topics were covered.

Analysis of the interviews was carried out by one librarian. First, the transcripts were examined to find data related specifically to issues and topics of direct interest for Hunt Library planning: available work spaces and their locations; work spaces actually used (including library spaces); work space needs; hours spent on campus; technology needs; furniture preferences (for work spaces); anticipated use of Hunt Library; and library services used and needed. These data were then grouped according to the above categories for quantification and examined for trends. This paper will focus on findings related to work spaces.

IV. Findings and Discussion

The results of the analysis provided specific details of the work space needs of the interviewees. More importantly, insight into the factors underlying these needs was gained, mainly through uncovering the specific activities these graduate students and faculty members were involved in

and the corresponding types of library spaces they needed. Furthermore, by examining the availability and use of existing work spaces, specific user groups and their unique needs began to emerge, particularly among the graduate students.

Graduate students

The graduate students who were interviewed were at varying stages of their graduate careers, from first-year students to those preparing to graduate. Twenty-nine were doctoral candidates, with the remaining 10 enrolled as master's students. Within these 10, five were either pursuing a non-thesis master's degree or had not yet decided which degree option to choose.

The data indicates that the type of work graduate students are engaged in will vary depending on their degree program and the stage of their graduate career. This work can be thought of as falling on various points of a "work spectrum," which at one end is wholly course related while at the other end is completely research focused. Master's and beginning PhD students fall on one end of this spectrum, i.e., their activities revolve around coursework. These activities include studying, either individually or with others, and working with classmates on group project assignments. Students pursuing a non-thesis master's degree will remain at this end of the spectrum throughout their graduate careers. On the other hand, as PhD students complete their course requirements and pass their qualifying exams, their focus shifts increasingly to research-based activities. Their collaborative work becomes

more similar to the types of meetings that faculty participate in, such as group meetings and research discussions, while their individual work consists of conducting research, reading of field-specific literature and writing papers for publication. Master's students who choose to do a thesis also progress toward the research end of the spectrum, but not to the same extent as PhD students. As these students approach the latter stages of their degree programs, they will spend increasing amounts of time writing up their theses and dissertations.

Three types of space needs emerged based on the students' description of these activities. The first is for individual or quiet study spaces that are free from both aural and visual distractions. Primary uses of these spaces would be for solo studying, reading and writing of journal articles, and thesis writing. The second need is for meeting spaces, i.e., formal spaces that could be used for group studying, group projects, discussions, presentations and collaborations. The third need is for a "commons," a less formal shared space that students could use for reading or studying. Several of the PhD students mentioned that their research labs were "isolating" and thus wanted a central place where they could encounter other students.

A different perspective on space needs emerged, however, when looking at actual space usage.

The most frequently mentioned work spaces are shown in Table II.

Table II. Most frequently used work spaces (graduate students)

Work space	COT/COE (n=28)	CALS/PAMS (n=11)	Total (n=39)
Office/lab desk	22	11	33
Libraries (aggregate of all locations; includes past and current use)	22	7	27
Home	15	4	19

Office space was the most commonly cited work space. However, examination of this data shows that because offices are available only to those working in a research group (usually belonging to a faculty member), access was skewed toward those conducting research (i.e., all 29 PhD and

three out of the five master's students). Thus, offices were not available to four of the five COE master's students who were either pursuing a non-thesis degree or had not yet found a research project. The remaining non-thesis master's student held a teaching assistantship and therefore had

access to TA office space within his department.

Campus libraries were the next most often cited work space, with 27 out of 39 students stating that they currently use or had previously used library spaces on a regular basis for both class-based and research-related activities. However, a closer look at the data shows that actual usage depended on several factors. One was distance. For students who had offices, library usage largely tracked with the campus on which they were based. It also was found that once PhD students had finished their course requirements and no longer needed to meet with classmates for projects or group studying, regular use of library space dropped off if they were not located near Main Campus. Hence, higher usage of D.H. Hill Library was seen for students in Main Campus-based departments than for those in Centennial Campus-based departments (largely COE and COT). The exceptions to this pattern were master's students who did not have offices; four out of six of these students traveled regularly from Centennial Campus to study at D.H. Hill Library.

Working at home was mentioned by more than half of the students, but for most, this generally took place during evenings or weekends. Several students mentioned that their advisors expected them to be in their offices or labs during regular working hours. Others mentioned that working at home was not optimal due to distractions from roommates and housemates. Thus, many of the COE master's students described how they resorted to making use of any space they could find on Centennial Campus, such as the lobbies of the Engineering Buildings or unused conference rooms, spaces whose capacity does not match the number of students needing them. Interestingly, the Textiles Library was not generally cited as a work space, possibly due to its limited space and operating hours.

These patterns of space usage highlight the needs of different user groups within the graduate student population. COE and COT non-thesis master's students on Centennial Campus are the least likely to have ready access to personal work space and thus are the students who appear to have the greatest need for Hunt Library. However, even students with offices mentioned a need for alternative places to work. While an office provides advantages such as ready access to

personal resources (e.g., books, papers), faculty and collaborators, these are usually shared spaces and thus are noisy and distracting environments. Finally, teaching assistants (TAs) were another group that emerged from the interviews, with eight of the students mentioning TA or tutoring experience. TAs often need to hold office hours but don't always have access to spaces that allow them to work effectively with multiple students, indicating another need for group spaces in Hunt.

These findings indicate that the design of the Graduate Commons, with its variety of individual, group and common spaces, anticipates and matches up well with the different types of spaces needed by graduate students. Thus, the idea of the Graduate Commons was welcomed by the students, especially those located on Centennial Campus. When asked specifically if they envisioned themselves using Hunt Library, 20 out of 28 COT/COE students answered affirmatively. In contrast, only four out of 11 CALS/PAMS students expressed interest in using Hunt, in part because of the travel/distance factor in going from Main to Centennial Campus.

Less well known prior to this study were the specific needs of different subgroups among the graduate students. In particular, master's students pursuing the non-thesis option emerged as a "hidden population" that up until now has not had a high degree of visibility to the Libraries. NCSU carries a RU/VH Carnegie classification (Research University with very high research activity), and thus the Libraries have tended to focus on graduate students with research needs, i.e., students who are conducting research, particularly doctoral candidates. These students work closely with faculty members in their department, have library needs similar to faculty, and can spend four to six years on campus pursuing their degrees. Master's students who work on a thesis spend a shorter amount of time on campus, generally two years, but also work with a faculty member as they participate in the traditional research process, albeit to a more limited extent. On the other hand, non-thesis master's students may spend their entire time at NCSU without close individual interactions with faculty, with the exception of their academic advisor who they may see twice a semester for registration purposes. Many of these students finish their degrees in three or four semesters. That they are "hidden" even to

faculty in their own departments can be illustrated by the demographics of the graduate students interviewed in 2011, where only six out of 31 were master's students. Most of these 31 graduate students had been recommended by faculty members, and in hindsight, it was not surprising that faculty tended to recommend students they knew personally, i.e., primarily doctoral students. The additional interviews carried out in Spring 2012 were an attempt to gather more feedback from COE master's students.

Non-thesis master's students are not an insignificant population. Fall 2011 enrollment data shows that out of 2,429 on-campus COE students, 1,342, or approximately 55%, were master's students. Although NCSU data does not distinguish between thesis and non-thesis master's students, by comparing the number of master's degrees conferred and the number of master's theses submitted to the NCSU Electronic Theses and Dissertation repository (required of all students) in the 2010–2011 academic year, it is estimated that at least half of these students were pursuing a non-thesis degree. Thus, this is a significant user group that needs to be taken into account in terms of Hunt Library planning and assessment.

Faculty

The faculty who were interviewed held ranks of adjunct, assistant, associate, full professor and lecturer. Three held positions associated primarily with teaching responsibilities (e.g., teaching professor, lecturer). Comparison with NCSU faculty statistics shows that the ranks of faculty interviewed were roughly representative of their distribution within the four Colleges.

Based on the responses of these faculty members, several broad categories of work types emerged: individual, collaborative and student-centered. For the most part, faculty have access to a variety of spaces that suit the needs of these various activities. However, not all of these spaces are optimal, and thus faculty expressed a wish for alternative work spaces. (Note that this analysis does not include spaces associated directly with research, e.g., laboratories or the field.)

Spaces that were frequently used by faculty for individual work are shown in Table III. All of the faculty members who were interviewed had a personal office on campus that they used regularly. Proximity to resources (e.g., books, files, colleagues and their laboratories) was named by approximately two-thirds of faculty as an important feature of their offices. However, distractions such as constant interruptions also made it difficult for many to work effectively, resulting in some having to seek alternative means of getting work done. These included coming in during off-hours, going to off-campus coffee shops or working from home, the second most frequently cited space. It should be noted that while not all faculty considered home a formal work space, many did get work done at home. As several of the older faculty members pointed out, they no longer needed to stay late at the office or come into campus on weekends to use the computer or use library resources. Thus, the majority reported that their on-campus working hours followed a traditional Monday-to-Friday schedule. Most of those who worked during nights and weekends did so at home. This suggests that the need for alternative quiet work spaces will be the greatest during normal working hours, i.e., during the times when faculty are on campus.

Table III. Commonly used individual work spaces for faculty

Work space	COT/COE (n=25)	CALS/PAMS (n=15)	Total (n=40)
Office	25	15	40
Home	15	7	22
Libraries: D.H. Hill	6 (3 from Main Campus)	4 (4 from Main Campus)	10 (7 from MC)
Off-site coffee shops, cafés	5	2	7

Despite this need for campus-based quiet space away from the office, the majority who were interviewed did not use library spaces for individual work and went to the libraries only when they needed to pick up books or access print journals. The most commonly cited reasons for not working in the libraries were distance and issues related to transportation and parking, similar to what was reported by graduate students. Thus, proximity of available spaces is an important factor for these faculty members.

Collaborative work spanned a range of meeting types and included both informal and formal interactions. Faculty members met with others in

their own and colleagues' offices, departmental spaces such as conference rooms, classrooms, and in building lobbies (see table IV). Conference and classroom availability varied by department, in which some faculty reported difficulties in securing meeting spaces. In addition, rooms were not always optimally equipped with the projection or display capability needed for presentations. Collaborations with off-campus partners ranged from in-person meetings to virtual meetings via teleconferencing or videoconferencing. There was significant interest in videoconferencing, which would allow for virtual group meetings instead of the more limited one-on-one interactions available through Skype. However, not everyone has access to videoconferencing facilities at this time.

Table IV. Commonly used meeting and collaboration work spaces for faculty

Work Space	COT/COE (n=25)	CALS/PAMS (n=15)	Total (n=40)
Office	25	15	40
Colleagues' offices	14	4	18
Building/departmental conference rooms	22	14	36
Tele-and video-conferencing (virtual space, includes Skype)	4	4	8
Classrooms	5	2	7
Coffee shops (on-campus and off-campus)	5	1	6
Local off-site meetings (e.g., other schools)	0	2	2
Off-campus lunch	3	1	4

Faculty members' interactions with students fell largely into two categories: advising graduate students in a research capacity and working with students from their classes. In some cases, faculty also served as undergraduate academic advisors. Meetings with students took place most often in aforementioned spaces. Faculty who met with students during office hours expressed the need for

spaces better suited for accommodating groups of students. This is similar to the needs expressed by graduate student TAs.

In all, 18 of 25 COE/COT faculty members said they envisioned themselves using Hunt Library. When asked about potential uses of Hunt Library, two

types of users emerged among the faculty. The first and largest group focused primarily on everyday work, e.g., how Hunt Library could help meet current gaps in spaces needed for individual work and group meetings, and how Hunt could help facilitate cross-campus collaboration. The design of the faculty commons, with individual and group spaces, would appear to meet these needs. A smaller second group of faculty viewed Hunt quite differently. While they found the faculty commons useful, for them, Hunt represented opportunities that have not typically been associated with library spaces. Some described Hunt as a “showcase” for learning and engineering. Others were interested in how the building could be used as a venue for events that would draw upon both the campus and the larger engineering and scientific communities, such as regional meetings of professional societies. Still others said that Hunt would be an ideal place to bring outside visitors and collaborators, both as a meeting location and as a way to impress visitors.

The interviews also hinted at the presence of a third group: faculty who believed they did not have time to use the library. Although many cited lack of time as a major challenge in getting work done, two COE faculty members in particular felt so pressed for time that they did not think they would use Hunt Library, explaining that the walk from the Engineering Buildings to the library would take too long.

In contrast, CALS and PAMS faculty members expressed less of an overall need for library spaces, especially for individual work, group meetings and collaboration. This was reflected in their low usage of D.H. Hill Library (despite 13 out of 15 of them being based on Main Campus), and in their anticipated use of Hunt, in which only three said they were interested in using Hunt Library. Reasons given for not using Hunt included travel logistics and that the collections in their discipline would continue to be based at D.H. Hill.

V. User Personas

After the interviews were completed, user personas were created as a tool to help develop staffing and service models for the new library. The use of personas allowed staff to take into account all of the different types of users that had emerged in the interviews. A total of 10 personas were created: four faculty, two graduate students and

four undergraduate students. (A separate set of interviews was conducted with undergraduate students to provide data for these personas). Since this paper only focuses on the faculty and graduate student interviews, only those personas will be discussed. Each persona is described below. An example of a full persona is included in the Appendix.

Tina Tweed, Associate Professor, Textiles Engineering
Motto: “It’s all about the students!”

Tina’s primary orientation toward the library is as a resource for students. She will rarely use library spaces herself except with students or to drop off some reserve materials at the circulation desk. She gets journal articles through Google Scholar, but is among the first to create library-based assignments and invite librarians to her class. The needs of the “Tina Tweeds” are ones that libraries are generally well set up to effectively meet.

Hunter Powers, Professor, Polymer Chemistry
Motto: “The Library is a Library, Not a Marketplace!”

Hunter is primarily oriented toward the library research collections. He is a heavy user and an expert researcher. Hunter’s motto was actually stated by a faculty member in one of the interviews who didn’t approve of activities, like video gaming, going on in the library. Hunter could be dismissed as a Luddite, but that would mean ignoring a group of users who value going into the library space to see, be near and use the collections. The library should not only be for Millennials. Although Hunter is fictional, in the interviews we met many people like him, scientists and engineers who want all their content online, but also value the role of the library in collecting and preserving information. These individuals have great respect for the expertise of subject-specialist librarians. In an age where libraries are constantly reinventing themselves to remain relevant, we never have to prove ourselves to people like Hunter Powers. Among our greatest supporters, they are the people who become financial donors, establish endowments and remain active in library friends organizations.

Larry Leadwell, Associate Department Head,
Mechanical and Aerospace Engineering

Motto: "Wait till you see this!"

Larry represents one of the more interesting findings from the interviews—that some faculty are most oriented toward the library as an asset to the university. These individuals support library initiatives, but they aren't necessarily interested in collections or services. They are "big picture" thinkers, they know people from all over campus, and are great at making connections between people from different areas. Being highly social, they are frequently called upon to represent the university. Oftentimes they are administrators—chancellors, provosts and deans—but they don't have to be, and to highlight this, Larry was intentionally made a mid-level manager. The lesson here is that these are natural born leaders, and they act like leaders at all stages of their career. Everyone knows how to handle requests from VIPs, but opportunities can be missed when an (as yet) unimportant Larry Leadwell wants to partner in some way and is turned down.

In terms of the new Hunt Library, a Larry Leadwell will want to bring people into the building, to utilize it as a showcase for the University. He may want a staff member to be available on short notice to meet and speak with visitors. A Larry Leadwell is probably not going to approach a service desk; he would rather contact someone he knows when he needs a favor. Nevertheless, it would be helpful for staff to learn to recognize this type of user to ensure for positive interactions and to help build the perception that library staff and users are all on the "same team," because that is the way Larry Leadwell views the relationship. These are politically sensitive people who believe in partnerships and doing favors. They never ask for anything without being willing to give something back, and they are generous in what they are willing to give. They are not interested in hearing about policies and regulations, not because they think they are above them, but because they find them limiting, and they are all about possibility. In general, libraries can benefit from working with this type of user, even if it means making an exception or bending a rule.

David Dwells, Assistant Professor, Biomedical Engineering

Motto: "I just want to be alone!"

David characterizes another set of user needs that libraries aren't necessarily paying a lot of attention to, but perhaps should be: the very busy junior faculty member who is working toward tenure. These individuals are carrying heavy teaching loads and working on multiple research projects at the same time. Stretched very thin, they will go to extreme measures to get work done without interruption. Faculty told us about working in their cars and "hiding" in their offices with the lights off! Meetings with colleagues to discuss research proposals take place on evenings and weekends at restaurants and coffee shops. Many of them have young families, so working from home is not always a good option. Davids rarely use the physical library and are too busy to find out what services and spaces libraries have to offer. This is a group of people who desperately need support, but don't have the time to ask for it. Some basic outreach from subject-specialist librarians could really benefit this group, and Hunt Library's Faculty Research Commons could answer their need for a place to work without student interruptions.

Ahman Green, Master's Candidate, Electrical and Computer Engineering

Motto: "Slowly figuring it out."

Ahman is a second semester international graduate student. He is still adapting to life at the university, and he spends all of his time on NCSU's Centennial Campus, usually from about 9 a.m. to 4 p.m. As a first year non-thesis master's student, he is only doing coursework and will not be given any office space in his department. Ahman spends time between classes sitting in empty classrooms. Ahman's experience underscores the need for a large library on Centennial Campus, with evening and weekend hours, food and coffee, and a variety of spaces to support individual and group study. In the interviews they were not shy about stating their needs. Living under financial constraints and in shared housing with roommates, the ability to borrow technology, to get access to a copy of an expensive textbook, and to have a place to do productive work for long periods of time all play a significant role in their success as students.

Sarah Scribbler, PhD Candidate, Textile Apparel and Technology Management

Motto: "I need everything you have and the best you've

got!"

Unlike Ahman the novice, Sarah is a seasoned veteran of the student experience. In the final stages of her PhD program, she is deep in writing her dissertation. She is in the library at all hours of the day and night. She needs access to all sorts of resources, from online journal articles to bound volumes that are held in offsite storage. She takes full advantage of librarian expertise, having learned that 20 minutes talking to a librarian can save her hours of work. As a PhD student, Sarah has office space but it is in the basement of her College and not very pleasant. Still, when the Textiles Library closes at 10 p.m., she will head back down there to continue working, usually until 1 or 2 a.m. Again, the libraries are well poised to meet the needs of students like Sarah, especially with the dedicated graduate student spaces in the Graduate Commons.

VI. Conclusion

As part of the planning process for Hunt Library, interviews were carried out with faculty and graduate students in order to better understand their needs with respect to library spaces. In many cases, the findings confirmed that we had anticipated many of these needs and thus are prepared to meet them. These include having a variety of spaces to accommodate the different types of activities users are engaged in: quiet individual spaces for solo work, meeting spaces for group or collaborative work, and commons spaces that help promote community.

But beyond the answers given to space-specific questions, the interviews gathered information that provided insight into users who historically have not received significant attention from academic libraries, but nevertheless need to be taken into account in the planning and assessment of library spaces and services. These users include graduate students who are not focused on research and faculty members who are too busy to use library resources beyond the ones that can be accessed from their computers. In addition, another faculty group was identified—faculty who do not view the library in a traditional sense but nevertheless consider the library an important asset of the university. The ability to engage and support all of these groups, both “new” and traditional, will be important to the future of the library. These

unexpected findings have underscored for us the importance of talking to the users to ensure that we understand them and learn about their needs.

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Appendix



**Tina Tweed,
Associate Professor,
Textile Engineering**
"It's all about the students!"

WHAT'S YOUR WORK LIFE LIKE?

I am a member of the Textiles faculty and so I have always worked on Centennial Campus. I rarely go over to main campus except for special meetings. Most semesters I teach two undergraduate courses, one of which has an associated lab. I have a TA to help cover the lab sections and do the grading, so that helps. I also officially advise about 20 students per semester, although informally it's probably a lot more. Students have a tendency to knock on my door when they need advice or just to talk. I generally work about 6 days per week during the regular semester. I have small children so I try to work from home on the weekends if possible. I have a small office, just like everyone else in the College. I try to make it a bit more warm and welcoming for students (I secretly painted over the standard battleship grey color a few years back - that made a big difference!). Still, I can only meet with one or two people comfortably in there. Sometimes I go to the Port City Java to meet with students and faculty; it's a nicer environment, and they have a small conference room you can book.

HOW DO YOU USE TECHNOLOGY?

Basically I just use what they give us. The standard technology provided in our classrooms has become something I can't live without. I am really interested in new technologies that might be useful in the classroom, but to be honest I don't have the time to investigate them.

HOW DO YOU USE THE LIBRARY?

I don't really use the library. I mainly just get my journal articles through Google Scholar, and I bookmark my favorite e-journals. Really, I think the library is for the students, but I truly value all the library does for them. I put about a dozen books on reserve in the Textiles Library each semester and sometimes I use the library to hold an exam (the classrooms are very tightly packed and students need space during a test). I really believe that engineers need to know how to search for information, so I work with our reference librarians and bring them into class once a year to go over the important engineering resources.

ABOUT ME

- 41 years old
- Married with two children, ages 7 and 10
- Originally from Birmingham, UK
- PhD, Mechanical Engineering, University of Manchester
- Tenured, with the University for 13 years
- Hobbies: knitting, needlepoint and crochet

MY NEEDS

- My students to know how to use the library.
- To put stuff on reserve for my courses.
- An alternative teaching space.
- To book a room to meet with my students.
- A room with special technology to use with my students.
- Training or assistance using technology in the library.
- Food and drink

Designing and Assessing Library Services

Elliott Felix

brightspot strategy, USA

Abstract

Library services play a critical role in supporting learning and research, in creating magnetic places, and in building community. However, the design and assessment of library services are currently hampered. Services are often designed from the provider perspective rather than that of their users. Services and spaces are generally designed separately. Services assessment instruments fall short, failing to provide a full and useful picture of performance and impacts. This paper will first describe these current limitations and the trends amplifying them. Then it will offer an overview of tools and provide advice on how institutions can put them to use in addressing these challenges.

Introduction

Cutting back hours at a new library because it was sized by its capital budget but not its operating budget. Separated service points for circulating items, reference help, and technology support, each sending users to the other all day long. An experienced reference librarian in a learning commons, spending all of her shift dealing with room bookings and printing problems. Counting the gate, the checkouts, and the reference questions, but not knowing what the impacts of the visit, the book, and the consultation were.

These are just a few examples of the challenges libraries face when the design and assessment of their services is ineffective. While a complex set of challenges, these can be solved by adopting a new mindset, using more effective design and assessment tools, and better orchestrating the planning and operations. Done right, institutions can ensure useful, usable, sustainable services as well as a culture of responsiveness and continuous improvement. Getting there requires understanding the current gaps as well as the tools and process to address them. This paper will first describe these current limitations and the trends amplifying them. Then it will offer an overview of tools and provide advice on how institutions can put them to use in addressing these challenges.

What is a Service?

Library services play a critical role in supporting learning and research, in creating magnetic places, in building community, and increasing engagement.¹ For our purposes, we'll define a service in the broadest possible sense as the facilitated interaction between a person and information, objects, and other people. Services span from the transactional to consultative, from the exchange of information, goods, or currency to discussing, diagnosing, and advising on a problem and ways to solve it. Services also range from the simple, like providing directions, to the complex, such as patent research. Services can be offered in myriad ways—in-person or online, general or specific, one-time or recurring—and so on. But, crucially services are always co-created with the customer² when they are offered because they rely on interaction and services always involve the element of time, unfolding as a user/customer "journey." And so, services evolve with the environment they are in, technologically and culturally.

Current Limitations in Service Design and Assessment

Problems like those mentioned above often have a variety of origins. Based on consulting work with dozens of institutions and research on dozens more, there are generally three causes: a lack of user-centered design, poor assessment instruments, and separate processes for designing spaces and the services within them.

Perhaps because it's human nature to work from our own perspective and make our own jobs easier when we can, services are often designed from the provider perspective rather than that of their users. For instance, because we have different departments that perform different functions, it might be easier to offer these services at distinct locations with dedicated staff for each, even though that means the library users might then have to go to different places to get help on a related issue or

may go to the wrong place.

Services and spaces have separate budgets, are controlled by different departments, and develop on different timelines. So perhaps not surprisingly, they are often designed separately; for instance, with the physical design of the layout, furniture, and technology of space like a learning commons largely determined with only a list of services to be offered but not a systematic process to think through the service model of what will be offered where, when, how, by whom, and why.³ As an example, one can see this issue play out when a library has to provide additional staffing because of the layout or sightlines in a space.

Current assessment processes and instruments compound these issues. Different tools are used for design and assessment, making it difficult to check back to see if identified needs were met. Institutions may also be preoccupied with or bogged down by tracking myriad measures of usage like gate counts, checkouts, or reference questions without having good measures of the impact of their services or the value they provide. Assessment instruments may also be tied to old paradigms; for example, while LibQUAL+®⁴ provides a great deal of valuable information, it evaluates services in terms of affect and information access, even though libraries do so much more.

Future Trends Amplifying Current Issues

While we are fortunate these problems can be solved, they are unfortunately being made worse by changes in technology, culture, and funding—to name a few—and these are impacting where, when, and how services are provided and by whom. Now is a unique moment to address these challenges as the paradigm of libraries shifts⁵ from information provider to facilitator of learning and research, and libraries move from places to access information to places where users can also create it, share it, combine it, and refine it.

In everything from pharmacies to electronics stores to libraries, there is a shift happening in the location and manner in which services are provided, a shift from face-to-face transactional encounters with users to more side-by-side, consultative interaction.⁶ Because so many of the transactions either are done online or automated

through self-service, a greater proportion of time can be spent (and is expected to be spent) working with users. This creates great opportunity to facilitate learning and research, but also creates new roles with new skills and knowledge required of staff.

Mobile devices now enable users to access information anyway and create expectations for this access as well as for help where they are. This requires digital and physical services to be considered simultaneously as well as new roles for library staff to be proactively roving and engaging with users throughout the library rather than assuming people will ask for whatever help they need and waiting for people to come to them. Brought about by varying funding changes, needs to specialize and/or organizational emphasis on partnerships, libraries are increasingly hubs that bring together a variety of services through collaboration. This may take the form of jointly-offered services such as technology support, providing a place for drop-in sessions with a writing center, or dedicating space to groups like a Center for Teaching and Learning. These partnerships bring complexity, require greater need for collaboration, and need shared measures of success.

How to Address Current Issues

Closing current gaps between design and assessment and between services and the spaces they are in requires a three-part solution—a change of mindset, new tools, and a new process to put them to use. Though the mindset shift will vary depending on the institution, the trajectory is the same. This is the shift to what might be called “service design thinking” and has three changes for libraries.⁷

The Service Design Thinking Mindset

First, it means moving to a user-centered rather than institutionally-centered perspective so that when services are designed and assessed we think not only of what will be most efficient for the library’s staff and systems but rather think through the user’s “journey.” Second, it means moving from the kind of linear thinking in which you can research a problem then come up with the perfect solution, roll it out, and it will be solved. Rather, libraries can borrow from the design world and agile software development and quickly prototype

solutions, put them in place in a controlled way to get feedback, incrementally improve them, and

then roll it out. Third, it means moving from a

world in which the “front-stage” staff who interact with users and “back-stage” staff who do not are separated to one in which they are thought about in an integrated way.

Table 1: The Shift in Mindset⁸

<i>Conventional Thinking</i>	<i>Service Design Thinking</i>
Design the space “container” & its contents Design once, completed when occupied Operational and Capital budgets separate Use standards of what worked in the past Focus on consistency, one-size-fits-all Design from institutional perspective People will ask for whatever help they need “Front-stage” and “Back-stage” separated	Design the activities and interactions Design is an ongoing, iterative process Operational and Capital budgets linked Invent new models, working with users Focus on personalization, responsiveness Design from user perspective Proactive research / service uncovers needs “Front-stage” and “Back-stage” integrated

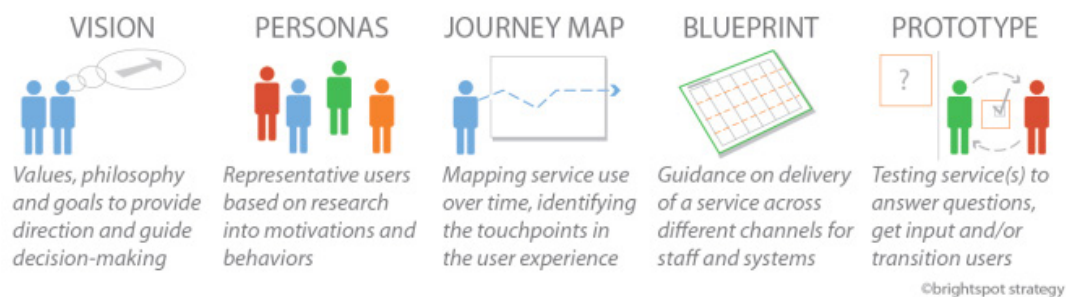
An Integrated, Participatory Design and Assessment Process

With this mindset in place, institutions can then turn to the matter of the process they use to design and assess services. Here again there are three shifts needed. First, institutions must move from being the authoritative designer of their services to facilitating participatory ways of co-creating with users so they have input not only in voicing needs and reviewing options but also in proposing and testing ideas as well. Second, institutions can consider three tiers of assessment measures—usage,⁹ satisfaction, and impact—and look for ways

to move from the former to the latter whenever possible. For instance, while counting the gate, the checkouts, the logins, and the reference questions are a good start, and surveys like LibQUAL+ provide a further layer of satisfaction data, libraries can look at desired outcomes of what they’d like to enable people to do or know, and then correlate use of services with these outcomes. Third, institutions can strive to use the same tools for design and assessment of spaces and services. This reinforces that design should be driven by assessment, enables before/after comparisons of the value added, and demonstrates assessment as an ongoing process.

Figure 1.

SERVICE DESIGN PROCESS AND TOOLS



Apply Time-Tested Tools and Resources

With the right mindset and process in place, libraries can put a variety of proven tools and resources to use. There are many resources that libraries can rely on to access and learn about these

tools. Tools like customer journey maps and service blueprints¹⁰ are proven tools that have been used for decades in the private sector for everything from banking to retail stores to call centers. Many

of these proven tools have been compiled in online toolkit of service design tools,¹¹ a graduate thesis

project by Roberta Tassi at Politecnico de Milano. The Service Design Network,¹² a trade organization for service designers, also includes a variety of resources, including introductory videos. There are also a variety of resources on the user-centered design process, such as the Human-Centered Design Toolkit¹³ created by IDEO.org with the support of the Gates Foundation. Libraries can also find useful tools in the Learning Space Toolkit,¹⁴ a free online resource for planning, operating, and assessing informal learning spaces, developed by NC State, brightspot, and DEGW with the support of the Institute for Museum and Library Services (IMLS).

These tools range from simple to complex, from quantitative to qualitative, and generative to evaluative. These include the following tools (with links provided to the learning space toolkit where appropriate):

- **Surveys** can be either institution-created, which offer specificity, or part of national programs, which offer comparative benchmarking. Surveys can be used to assess needs for planning or evaluate performance, and they can include measures of usage, satisfaction, and impact. A basic way to get at the latter is often to identify the key activities a service aims to enable and ask respondents whether things are currently helping or hindering that.
- **Service Plot**¹⁵ is a tool within the Learning Space Toolkit that institutions can use to prompt conversation about and then agree on their service philosophy. By answering a series of questions individually or as a group, a library can see its current emphasis and future vision among a spectrum of four options: pilot, conductor, concierge, and host.
- **Personas**¹⁶ are portraits of the motivations, behaviors, and needs of prototypical users of a space or service. These can be created through rigorous quantitative analysis, by compiling qualitative information from knowledgeable staff, or a combination. Personas enable user-centered design by making the user needs concrete.
- **Journey Maps**¹⁷ (also known as “Customer Journey Maps”) plot the path of a user of a space/service over time and identify the “touchpoints” where support is needed. Journey maps can be generative when trying to conceive of a service, or evaluative, analyzing

moments along the journey and identifying risks, successes, and failures based on observations, interviews, or surveys.

- **Service Location Planner**¹⁸ is a simple tool to plan where and when services will be offered, using a table with locations as columns, services as rows, and color to indicate hours of operation. It can be filled out individually or as part of workshop activity and can be used to analyze a current state or forecast a future state and can be done iteratively, incorporating lessons from other tools and methods.
- **Service Blueprints**¹⁹ are operational planning tools that give direction on how a service will be provided, what the front- and back-stage staff will be doing, and what tools or infrastructure will be needed. Blueprints can be used to generate a new service or to evaluate current delivery relative to the activities and procedures from a previously created blueprint.
- **Prototyping** is a controlled experiment to put ideas garnered from other tools into practice to mitigate risk, get feedback, and obtain buy-in from other users and staff. Prototypes can vary in their means as well as their level of detail and fidelity with reality, ranging from a skit with role-play to full-scale mock-ups to working pilots. They are also a key way to co-create service concepts with users. Prototypes should always start with a clear hypothesis to test and must have a means of evaluation.
- **Additional tools and methods** to consider include: using “mystery shoppers” to act as customers and gather feedback from the user perspective, benchmarking research against other organizations (especially helpful if looking at other industries), interviews, observations, and analysis of usage data such as gate counts, logins, checkouts, questions, and the like.

Examples of the Mindset, Process, and Tools in Action

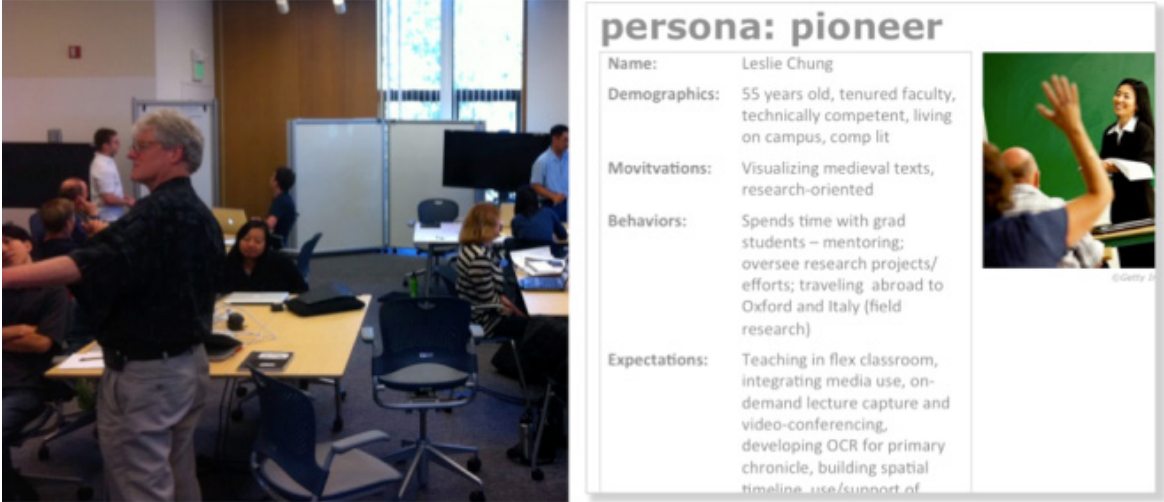
What might it look like to see this mindset, process, and tools in action? To answer this, we turn to examples of brightspot’s work with three different institutions, each using tools and methods institutions can often put to use on their own.

One way to get started is through a one-time, training activity. Brightspot facilitated a day-long

workshop with staff from Academic Computing Services in Stanford Libraries to learn about service design tools and methods in a hands-on way. Over the course of the day, core service design tools such as journey maps and service blueprints were introduced, then put to use on an upcoming project with staff working in small groups, sharing their work, receiving feedback, and charting next steps.

This resulted in a foundational understanding of the tools and process, a preliminary service vision to guide decision making, and reflections on future opportunities; for instance, one realization was that “not all services need to happen behind a desk” so Academic Computing at Stanford could enable more self-service options as well as have more mobile staff consulting with users where they are.

Figure 2. Stanford University: Service Design Workshop and Persona Activity



Institutions can also start by setting aside time to learn the tools and process, and then sustain this work by applying it to an ongoing project. This is the approach Liberty University has taken in planning their new 170,000+ square foot campus library with brightspot. This work started with a two-day workshop for library staff to learn new service design tools and methods in a hands-on way, applying them to planning of the new library; for instance by creating personas and mapping customer journeys through the facility then under construction. Equipped with an understanding of the tools, Liberty then continued the needs

assessment and service design work begun in the workshop, formalizing and branding their customer service philosophy, conducting mystery shopper excursions through current spaces and retail establishments, creating a new staffing model with new roles and responsibilities by level, and developing service blueprints for areas like their Customer Service Center, an integrated service point for circulating items, research support, and technology support. Perhaps most importantly, Liberty now has a working pilot of the service point in their current learning center as a way to

prepare for the new library, and Liberty is using

many of the same design tools to assess the pilot.

Figure 3. Liberty University: Service Design Workshop, Service Point pilot, and Customer Service communication.



North Carolina State University provides another example of sustained engagement with the process and tools for designing and assessing services. In preparation for the opening of their new 200,000+ square foot James B. Hunt Jr. Library, the NCSU Libraries wanted to build on the service strategy established early in the design phase and get down to the detail of what would be offered where, when, by whom, and with what training needs. Over the course of eight months, NCSU staff learned about service design tools in roughly two-month modules, with work to put the tools to use in between each session. This included developing a consensus vision on the service philosophy, analyzing the

overall portfolio of services to be retained, discontinued, and added; and a projection of staffing needs by level and discipline for the new library. This resulted in a service model for different parts of the portfolio, including the support for high-tech space as well as the service point which was prototyped at full-scale with staff and students. It also led to the development of new roles and an organizational change to create a "User Experience" department within the library. Throughout, the needs assessment, personas, customer journey maps, and service blueprints served multiple functions: prompting thinking about mission and philosophy, facilitating service design, and serving as a measure for later assessment.

Figure 4. NC State University: Service Design Workshop, Service Point Prototyping, Future Services Mapping

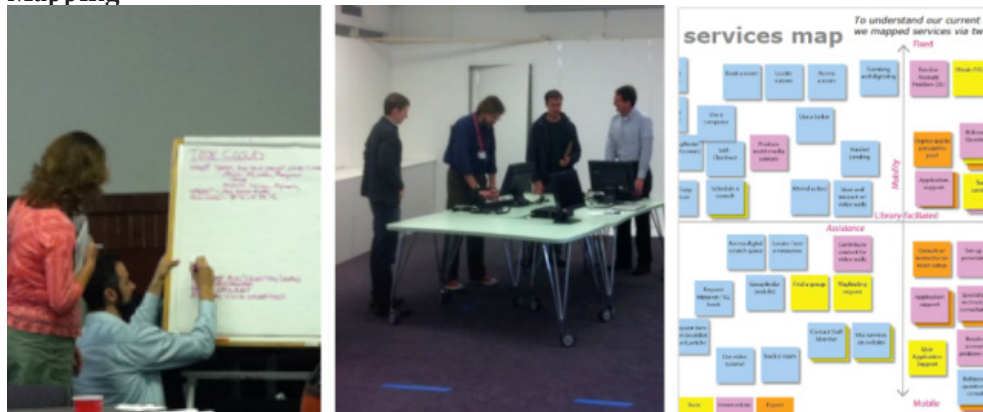


Table 2. Summary of Service Design/Assessment Problems and Solutions

<u>Design and Assessment Problems</u>	<u>Potential Solutions</u>
Ineffective assessment instruments and practices (<i>Assessment and design not linked, lacking measures of impact, and not measuring the right things</i>)	• Use the same tools for design and assessment (e.g.: journey maps) • Create impact measures and evaluate whether spaces/services help or hinder desired outcomes • Create a culture of ongoing assessment and continuous improvement
Design and assessment affected by provider-centered bias (<i>Lacking user-centered emphasis, lacking tools which prompt user-centered approach, and generally linear process instead of iterative</i>)	Employ user-centered design tools such as shadowing, personas, and journey maps Co-create with users to get input, feedback, and buy-in Prototype ideas in an iterative process—fail faster and safely instead of trying to avoid it Always consider front- and back-stage connected
Services and spaces are designed separately (<i>Determined through separate processes, with different people, different budgets, at different times, creating conflicts, inconvenience, and ineffectiveness</i>)	Incorporate service design into design of space Use prototyping to bring together services and spaces, and look for ways to test ideas in current spaces before building them in new ones Use tools that connect the spaces and services, such as blueprints, journey maps, and service location planner

Tips for Getting Started

There are many ways for institutions to get started in addressing the service design and assessment challenges discussed. Regardless of how a library might adopt or employ the mindset, tools, and process described here, it's perhaps most important to avoid seeing this as a daunting task that has to be done all at once by all staff. Rather, you can start small, trying things out in low-risk ways, and build familiarity and momentum. This can be as small as two staff getting together one afternoon to create a few personas and a journey map or as large as a library-wide committee and project. Here are a few tips on getting started:

1. **Create a task force:** bring together a diverse group of 12 to 18 people that represent different levels, disciplines, and affiliations—including users—to design and assess services. No matter the group's charge be sure to get a
2. **Audit your current state to learn the tools:** An easy way to learn the various service design tools described here is to apply them to a current situation you know well, as if you were designing it retroactively. For instance, create a journey map for checking out a book.
3. **Learn from other industries:** While learning from and benchmarking against peers in your field is important, often looking outside your field can be a better source of ideas—perhaps a problem that's emerging for you has already been solved.²² For instance, many museums have long solved the issue of having roving staff who proactively engage with visitors.
4. **Prototype something, anything:** Prototyping can be a very powerful tool to shift to an

diversity of perspectives and roles; for instance using Kantor's "Four-Player Model"²⁰ or De Bono's Six Thinking Hats.²¹

iterative way of working. It can be very liberating to not have to have everything figured out and instead just try something and get feedback. The best way to make this leap is to take a small one. This could be a small as making a few different versions of signs to communicate noise levels and observing how people react.

5. **Don't reinvent the wheel:** There are a variety of resources available that can be your starting point. These include tools like the aforementioned Learning Space Toolkit, Human Centered Design Toolkit, and Service Design Tools. It also include experts on campus from groups like the office of Institutional Assessment, Research, and Analysis

Conclusion

Library services impact student and faculty learning, research, and overall experience. And yet the design and assessment of library services are currently hampered by the separation of space and service design, by ineffective assessment tools and practices, and by outdated ways of thinking that do not center on the user, do not meaningfully engage the user in design and assessment, and do not keep pace with technological and cultural change. With a shift in mindset, more integrated and participatory design process, and better tools and resources, libraries can design and deliver services that are useful, usable, and sustainable while understanding the performance and impacts of these services, even as they change.

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 17. Information on Journey Maps in the Learning Space Toolkit can be found: <http://learningspacetoolkit.org/services-and-support/journey-map-overview/>.
 18. Information on the Service Location Planner in the Learning Space Toolkit can be found: <http://learningspacetoolkit.org/services-and-support/service-location-planner/>.
 19. Information on Service Blueprints in the Learning Space Toolkit can be found: <http://learningspacetoolkit.org/services-and-support/service-blueprint/>.
 20. Learning Space Toolkit can be found: <http://learningspacetoolkit.org/services-and-support/service-blueprint/>.
 21. The Four Player model of Move, Follow, Oppose, and Bystand was developed by Kantor and extended by Ancona and Isaacs. For further information, see: <http://mitleadership.mit.edu/r-fpmodel.php>.
 22. Edward de Bono, *Six Thinking Hats: An Essential Approach to Business Management* (New York: Little, Brown, & Company, 1985).
 23. As an example, public libraries are generally ahead of academic libraries in developing impact measures, including economic return on investment. For instance, Svanhild Aabo’s meta analysis found that for every dollar invested in a public library it had a return of 4 to 5 fold: Svanhild Aabo, “Libraries and Return on Investment (ROI): A Meta-Analysis,” *New Library World* 110 (2009): 311–324.

Multidisciplinary Rethinking and Redesign of Library Space

Patricia A. Steele
University of Maryland, USA

Nancy Fried Foster
University of Rochester, USA

Abstract

In the summer of 2010, the dean of the University of Maryland's library system began a project to renovate the main library on the College Park campus. After years of piecemeal updates, McKeldin Library had become a charmless, confusing, and inefficient building in which library staff labored to meet the many information needs of students, faculty members, and the public. The dean's decision to engage a number of experts—the dean of the architecture and information schools, a practicing architect, a design anthropologist, and a professor of anthropology—set in motion a participatory process to which numerous students, staff, and faculty members provided crucial information and in which graduate students played important roles in defining the program and drawing plans for a reenvisioned library. This paper will summarize the activities that built the informational basis for the quantitative program and qualitative requirements and present designs based on this information that were developed by graduate students in a studio course. It discusses the ways in which the project is both participatory and collaborative, and why we think this approach is both valuable and replicable.

Introduction

McKeldin Library at the University of Maryland shares wonderful strengths and hideous flaws with many other university libraries. It sits nobly at the head of a beautiful mall, the heart of the university. Its large, rich collections are a treasure, and it is a hub of student activity with over a million annual users.

But over the years, McKeldin Library has been updated in piecemeal fashion, and the building has become confusing, hard to use, and inefficient. The inspirational heart of the campus is still beating

but not with the vigor it once had. Dean Pat Steele recognized that there were opportunities to make additional small-scale improvements to the library and she has been doing this, but she resolved also to plan for a unified, full-building renovation. Develop an exciting, forward-looking plan, she reasoned, and support would come. Thus, while McKeldin Library continued to conduct such limited projects as a new learning commons and the repurposing of a campus computer lab, Dean Steele launched a larger effort to reimagine and reprogram the entire building.

The building could benefit enormously simply by updating and improving its lighting, heating and ventilation, the circulation of patrons, and so on. But it would be a shame only to address these obvious problems. Instead, the objective has been to develop a program for the building that understands and takes account of the needs of the students, faculty members, and staff who use the library. We define "needs" broadly to include both activities and states of mind, that is, we consider the head, heart, and body of the many people who use the building to teach and learn, read and write, and the staff who make that possible.

The dean of Libraries worked with the dean of the School of Architecture, a practicing architect, an anthropologist who facilitates participatory design processes,¹ an anthropology professor, and others to approach collaboratively the conceptualization and design work entailed in reprogramming the building.

Librarians and library staff worked with the anthropologist to conduct participatory design activities concerning the use of the building and other spaces for academic work. They offered

their own expertise and knowledge of the library to the analysis and interpretation of data provided by other library staff members and by undergraduates, graduate students, and faculty members.

But this was only one aspect of the groundbreaking, participatory approach that this project took. In other project phases, architecture students developed the quantitative program and anthropology students conducted an ethnography of the library. Once all data had been collected, analyzed and interpreted, students in a studio course taught by architect Sandra Parsons Vicchio actually created designs for a completely reprogrammed, renovated building.

Overall, the project has been more than participatory and collaborative; it has created opportunities for university administrators, faculty members, and students to cooperate across departments and disciplines and for students to contribute to a real project in a way that matters. In the following pages, we review three preparatory, information-gathering methods and share designs that students developed based on that information.

Reprogramming McKeldin Library: Participatory Design Activities

The first set of information-gathering activities was conducted by twelve library staffers, trained and advised by the project anthropologist, Nancy Fried Foster. One team conducted structured observations in seven locations within McKeldin Library. Another team conducted codesign sessions in which students, teaching faculty, and library staff drew and annotated their ideal library spaces. A third team interviewed undergraduates about recent study, research, and project activities.²

Observations

A sub-team conducted observations in eight locations throughout McKeldin Library, three times a day over a seven-day period during the height of the Fall 2011 semester. These observations provide a snapshot of how the building is used now. The picture is partial for several reasons. One is that the observations were conducted during only one week of one semester and only at three different times of day. Another is that the observations were conducted only in eight spaces,

and these spaces are not fully representative of the entire building. Finally, the observers found a degree of variation among themselves in how they used the observation codes. Observed spaces include only public spaces, not library offices or restricted work areas. Due to the limitations on the data, the findings should be taken as suggestive of how McKeldin is being used, not as a full and accurate accounting.

A large majority of the people observed at every time of day and in every location seemed to be young people working individually on academic tasks. Above 85 percent appeared to be doing academic work. More than two thirds were working alone, with the remainder taking advantage of large tables and small rooms to work in groups. Observers reported seeing few people who seemed to be graduate students or faculty members.

One in five observed people was using only print materials of some kind and no electronic devices. Four out of five observed people were using a library-supplied computer, their own laptop or other device, or multiple devices. Most people observed in the library appeared to be deeply involved in reading and writing tasks, taking occasional breaks to relax with Facebook or to socialize. With regard to physical materials, most appeared to be using their own books and papers, rather than library materials.

The ambiance of the library during observations was extremely varied, ranging from quiet to noisy, sometimes smelling of food, and seeing the gamut of behavior from sleeping to quiet intensity to an almost rowdy style of group work.

Perhaps the two most striking findings were that few if any graduate students and faculty members appeared to be using the public spaces of the library and that the vast majority of students appeared to be engaged in academic work.

We found it significant that people were taking advantage of the full range of spaces and furniture offered in the library, and engaging in group and individual work according to the different configurations. We were surprised that the library building is evidently not the primary site for the

use of library materials.

On-the-Spot Interviews

The sub-team conducted 33 interviews at four outdoor, non-library locations across campus. The questionnaire asked students about the most recent time that they studied for a test, worked on a paper, or worked on a lab or project: when it was, how long they worked, where they worked, and why they worked where they did.

The interview sub-team, like the other teams, found that data collection entailed some confusion, especially over the wording of one of the questions. As in the other cases, here too the data are to be taken as suggestive.

Respondents reported that the last time they studied for an exam was a session of less than four hours that occurred in the afternoon or at night. Most reported studying for an exam in McKeldin Library or in their bedrooms. They wanted a place that was quiet and free from distractions, which meant in some cases that they isolated themselves from other people. They said that they work well when they are in a place where others are seriously engaged. A few also reported studying in the library in order to gain access to library resources.

Respondents reported that they had worked for a session lasting two hours or less the last time they worked on a lab or project. About half of them reported working in the library, with the remainder divided equally between home and classroom. Respondents want to be in a place where others are seriously engaged. They prefer places that support meeting up and working together. A small but significant number reported working in the library in order to gain access to library resources.

According to their reports, the last time respondents worked on a research paper, they worked for one to four hours. Almost two thirds reportedly worked at home, with most of the remaining third working in the library. Respondents sometimes want the absence of other people and protection from distractions, and many want a small space where they can hunker down. Interestingly, only a small number of respondents worked where they did in order to use books or

other library resources.

If our sample was representative, we could conclude that undergraduates at the University of Maryland want a quiet and convenient place with computer access in which to do their academic work. Convenience may require that the place be close to a bus stop or a parking lot, or to a particular classroom building. Some respondents indicated that they are comfortable only in their own dorms or bedrooms. Others seek public spaces where they are inspired to concentrate on their tasks.

Importantly, students want different sorts of space that offer different accouterments and conditions, depending on the activity at hand. Over the course of time—and sometimes even over the course of an hour or two—students may need quiet and noisy spaces, privacy and shared space, and so on.

Design Workshops

In five workshops, a sub-team solicited drawings of an ideal library space from 20 undergraduates, 17 graduate students, 20 faculty members, and 20 members of the library staff. The sub-team reports that the constraints on recruitment skewed the results, so we must take the data as suggestive, rather than as reliably representative. That understood, the data suggest that, across groups, there is a desire for the library to:

- Accommodate physical needs but appeal to head and heart with grandeur and open spaces
- Support productivity, especially in reading and writing (for students and faculty members) and in specialized library work (for staff)
- Facilitate collegiality, conviviality, collaboration
- Encourage connections between artifact and text and between the individual and the outside world

The data also indicate that:

- McKeldin Library provides appropriate space for many undergraduates
- The library does not currently provide well for faculty or graduate student needs
- Faculty members care about the physical collections and want to interact with librarians and members of the library staff
- Students care about physical collections and interactions with librarians and library staff

- members, but less so than faculty members
- Staff members want spaces that are better laid out, that put staff who work together closer to each other, and that are set up to support the kind of work that is done in them
- All groups want some degree of noise control, cleanliness, and light, and they want different kinds of furniture to support a variety of work activities

Reprogramming McKeldin Library: Ethnography of the Library

The second set of activities was conducted by graduate anthropology students in a methods class, who observed and interviewed University of Maryland students about their academic work, their use of McKeldin Library, their use of resources in connection with their schoolwork, the obstacles and constraints they encounter, and the ways they hope the library might meet their needs in the future.

Graduate students enrolled in Professor Michael Paolisso's "Methods of Cultural Analysis" course (ANTH 606) for the fall semester, 2011, completed an ethnographic study of how students at the University of Maryland, College Park engage in various types of academic work, how students use the library, and what students would want from libraries in the future.

The students taking the course were divided into four teams, each of which conducted participant observation, informal interviewing, and semi-structured interviewing with undergraduate and graduate students. Teams focused on the following major questions:

- What is "schoolwork," that is, what is the form and diversity of activities that students consider the work of students?
- How do students use McKeldin library for schoolwork and other activities?
- What resources do they need when they use McKeldin library, and what constraints do they experience during their use of the library?
- How do students envision libraries serving their needs in the future?

Based on the ethnography of schoolwork and the library presented above, the students in the class

concluded the following:

There are different kinds of schoolwork and different ways to approach the library

Students in the course identified many different kinds of schoolwork that students have to do, much of which can take place in the library. Collaborative and noncollaborative, as well as intensive and nonintensive work require different kinds of spaces and can be disruptive of one another if occurring in the same area. Likewise, there are different kinds of library users, including students who know exactly what they need and find it, as if they were using a vending machine, and others who browse and find things that they had not planned to seek. The library should accommodate both.

The character of a space is important to consider when determining the kinds of work that can and do happen there

The character of a space, what students called its "vibe," contributes heavily to the kinds of work that can be done in a space. Students take an active role in shaping their environments; in turn, they take cues from their environments to decide the kinds of activities that they will pursue there. Depending on student habits and preferences, different spaces may be felt to foster social interaction or isolation, group or individual work, quiet or noisy activity. Optimally, the library would provide spaces with different physical and aesthetic characteristics to support a variety of activities.

Students want and need control over their work environments

Students are not all alike; they have different needs and characteristics and they respond to spaces differently. Students want the library to implement some flexible features that allow students to customize their environment. Noise is a major distraction for some students, while others require it to do work, so students want the library to allow for different levels of noise, whether through separation, special materials, or otherwise. In the same vein, students would like some flexibility in adjusting light, temperature, and type of furniture, perhaps with adjustable windows and blinds, lamps, fans, and varied, moveable tables and chairs.

Students need physical access to a wide variety of resources

Students need a variety of resources. They need to consult books, talk to experts, get specialized technical help, use certain spaces, and so on. Furthermore, they need resources at different times of day and night, depending on their particular schedules. Students look to a future of round-the-clock access.

Students need ancillary supports in order to use library resources

In order to spend long periods of time in the library students need food and beverages, electrical outlets, wireless, comfortable seating, lockers and other security devices and measures, and other supports. They look to the library to provide all of this in addition to collections, space, and personnel.

Based on these and other findings, students in the class developed a set of recommendations that they offered as if speaking for the student body, in general. Some of their recommendations were:

- Improved signage to direct students to a type of space that will support the particular activities in which they plan to engage
- The establishment of areas for different uses, that is, for quiet or noisy, group or individual work, and so on. They even recommended that these areas be color-coded or otherwise identifiable
- The installation of artwork in the library, preferably from campus art programs, to make spaces more visually appealing
- Expanded hours of operation because students' academic lives do not adhere to a "normal" timetable
- Expanded hours for the library's café to match the library's hours of operation and the availability of more substantial and healthier meals and snacks
- Replacement of warnings about laptop theft—which the students call "scare tactics"—with a laptop lock rental program and an increase in the number of lockers, along with other measures, including surveillance cameras, to increase safety and security for all students and especially for commuters, whose security needs were recognized as particularly acute

Beyond these particular recommendations, the

students in Professor Paolisso's course advocated for a "radically different" McKeldin Library with a large, open, welcoming atrium, higher ceilings throughout, abundant natural light, and customizability through flexible furniture, lighting, and so on. As the students wrote in their report, they "recommend in the long-term the creation of a library for the 21st century."

**Reprogramming McKeldin Library:
Quantitative Program**

The third set of activities was conducted by graduate architecture students.

The focus of the ARCH 678 class was a professional product informed through architectural standards and procedures. The design proposal from the School of Architecture, Planning and Preservation sought to translate a new vision for the library reflecting the changes libraries were experiencing and would continue to experience. Originally three phases of work were identified: Project Goals and Architectural Programming, Design Iterations and Setting a Direction, and finally Master Plan Design and Presentation.

Phase One involved understanding need in the context of library changes and challenges and also gaining knowledge of the existing building. Students read relevant articles and case studies, reviewed trends, and interviewed key library staff. They also sought to gain a conceptual understanding of the historic building and its multiple iterations. This required a visual survey of the existing building, an assessment of existing building systems, and analysis of the existing structure for challenges and opportunities. Results included an inventory of space available for administration/office, circulation of patrons, instruction, lounge, stacks, study, study services, utility, and storage. Students applied these categories to color-coded floor maps that clearly reflected use.

Phase Two was devoted to design alternatives. Information garnered through the observations, on-the-spot interviews and design workshops coupled with the outcomes from the anthropology students drove the initial design options. Those ideas were vetted with stakeholders and then revised to feed into Phase Three.

The Master Plan Design and subsequent presentation included general floor plans and options for the exterior. Visuals that could be used to engage campus stakeholders and possible donors were an important final product. Projected cost and phasing opportunities followed later in the process.

Designing the 21st Century Library

As the three sets of data were brought together—the participatory design findings, the library ethnography, and the quantitative program—the project’s leadership confronted deeper questions.

What we call the “heart” of the library represents the ideals of the academic library, the inspiration that can be drawn from the library, and the rich assets of the library. Some of the people who participated in the design activities expressed this as follows: “When I see all the students studying, it encourages me, motivates me.” Others expressed this idea in drawings as soaring spaces filled with art treasures, fine carpets, and busts of famous thinkers.

These days, library users find reference works, journal articles, and even whole books online, and they can use them from any location, at any hour of the day. While there are still many people who use the library’s physical collections, special collections, and other unique assets, that number is declining. This raises serious questions about the use of library space. Should it still be devoted to stacks of books and bound periodicals that circulate less and less frequently? Should it be turned into office space for faculty members, librarians or library staff or even given over completely to other departments or programs? Should the library be used mainly as a study hall? Or for workshops and seminars? Or for group work on assignments and projects?

Part of the answer to these questions comes from findings of this work related to what people seek in the library. According to the data, many people come to the library, or want to be in the library, to be inspired, to feel part of an academic endeavor that is bigger than themselves, to be in the presence of works of scholarship and, by extension, to be in the presence of great thinkers.

In support of this line of inference, respondents indicate a need to:

- Read, think, and write in a deep, sustained way
- Connect deeply with the collections, in a variety of formats
- Connect to the world of nature and culture
- Collaborate with colleagues; hold seminars
- Converse with colleagues and others and build community
- Explore through library work one’s own identity as a scholar, a worker, or an emerging adult
- Develop a sense of connection to one’s discipline
- “Settle in”—physically and psychically—so one can do demanding work and stay with it to the end

Design for the Future

Students in the studio course taught by Sandra Parsons Vicchio took the data to heart. They formed a team that fully embraced all aspects of the project, interacting with peers from the anthropology class, with staff, and with other stakeholders. They prepared numerous studies and options to solve the problems presented by an old and dysfunctional building. Over the semester their vision and enthusiasm grew and thus did the enthusiasm and vision of stakeholders involved in the process. When a new concept, such as the benefits of a “green” sustainable building, became a significant value, they responded with multiple creative options for the interior but particularly for the exterior. The result is a plan that reflects the extensive input but that also sets a stage for the future—a stage that will be defined by the engagement of an ever-widening group of stakeholders who will use the physical and virtual library while perpetually changing the definition of library.

Practical Implications/Value

At the end, this unique and energizing process had multiple conclusions and products. The original proposal from the School of Architecture, Planning and Preservation was satisfied and the outcomes delivered. The anthropology class completed their assignment and produced a highly valuable report. The consulting anthropologist helped keep all the aspects aligned. Stakeholders were able to express their opinions and inform the process throughout. These are important outcomes but they do not

reflect adequately the collateral benefits.

Those benefits are expressed in the evolution of an initially participatory project into a highly collaborative one. During the project, students, staff, faculty, and campus administrators became excited by the process and virtually owned it. Students wanted to “tell the story” to their peers. Faculty began to see the potential of a vibrant library space for innovation, learning, and experiential practice. Staff were excited by the atmosphere of interest that had resulted.

We know that a relatively straightforward project to address the woes of an aging library became a campus cause that now has even more participants. We believe that it can and should be replicated. Evidence is the fact that on campus the redesign of an iconic space was delayed so that planners could engage the users in a process similar to the one just described. They wanted the excitement, the data,

and the engagement that the McKeldin Project engendered. It can be done.

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Notes

1. Participatory design is described in a large literature; a good overview is provided by Douglas Schuler and Aki Namioka, eds., *Participatory Design: Principles and Practices*, (Hillsdale, NJ: Lawrence Erlbaum Associates, 1993).
2. Methods used in this project were drawn from studies conducted at the University of Rochester’s River Campus Libraries, described in Nancy Fried Foster and Susan Gibbons, eds., *Studying Students: The Undergraduate Research Project at the University of Rochester* (Chicago: ACRL, 2006).

Project RAILS: Rubrics, Results, & Recommendations

Megan Oakleaf
Syracuse University, USA

Jackie Belanger
University of Washington—Bothell, USA

Jenny Rushing Mills
Belmont University, USA

Introduction

Rubric Assessment of Information Literacy Skills (RAILS) is an IMLS-funded research project designed to investigate an analytic rubric approach to information literacy assessment in higher education. RAILS helps academic librarians and disciplinary faculty assess information literacy outcomes exhibited in “artifacts of student learning” including research papers, presentations, worksheets, portfolios, and reflective journals. Using the AAC&U VALUE rubrics and the Information Literacy Competency Standards for Higher Education as starting points, RAILS has yielded a suite of rubrics that can be used by librarians and faculty to assess information literacy outcomes; a transferable model for analyzing rubric scores; training materials for librarians, faculty, and LIS students who seek to use rubrics for information literacy assessment; indicators of rater expertise in rubric scoring; and a clearinghouse for librarians and faculty to share:

- local adaptations of IL rubrics,
- rubric assessment results, and
- improvements to instructional strategies and services made on the basis of those results.

Although RAILS addresses practical assessment issues, it also explores the answers to several research questions:

- Can librarians and disciplinary faculty use IL rubrics to provide valid and reliable scores of student learning?
- What skills/characteristics do librarians and faculty need to produce valid and reliable scores using IL rubrics?
- What training materials do librarians

and faculty need to acquire these skills/characteristics?

- How can rubric assessment be used to improve IL instruction and services and increase student learning of IL skills?

The goal of this paper is to share the rubrics and recommendations resulting from two case studies of RAILS-participating institutions. Librarians at Belmont University and the University of Washington Bothell learned important lessons from their RAILS experiences, and each case study reveals the details of their rubric implementation and the results of their ongoing assessment efforts.

Methodology

The overarching RAILS research design is a multi-step process involving 10 institutions over three years. To begin, librarians from each institution took part in intensive rubric training. As a part of their training, librarians learned to customize the VALUE rubric for information literacy to fit the unique needs of their institutions and formed plans to test their rubrics. Next, they gathered 100+ artifacts of student learning to assess using the rubric and selected 10 participants (faculty, co-curricular professionals, and other librarians) to serve as raters. Then, they scheduled intensive rubric revision, norming, and scoring sessions for all raters. During the scoring sessions, each of the 10 participants rated all 100 student artifacts and inputted rubric scores for each student into Waypoint Outcomes, an assessment management system that facilitates rubric usage. These

scores were analyzed to learn about student information literacy skill levels and explore factors that contribute to inter-rater reliability among rubric assessors. Results are disseminated as they become available via the project website at www.railsontrack.info. Cumulative RAILS data provides insight into best practices for developing information literacy rubrics, norming raters, and selecting statistical analysis approaches.

Case Studies

While the overall RAILS methodology was the same for each institution, each participating school was free to make independent decisions about the information literacy outcomes and assignments to be assessed. The decisions made at Belmont University were very different from the University of Washington Bothell and are illustrative of the ways in which the core RAILS approach (development of rubrics, norming, and collaborative faculty-librarian assessment) can be tailored to local needs.

Belmont University

Belmont University is a student-centered Christian university in Nashville, Tennessee with about 6,500 students. Historically a liberal arts university with strong music and music business programs, Belmont has steadily been growing its professional programs, especially in the health sciences. A robust information literacy program has been integrated into the general education curriculum since 2005, teaching basic information literacy skills to students in first and third year general education courses. A goal of the information literacy program is to develop those skills within the majors with more in-depth, discipline-specific instruction. Another goal is to assess the program and student learning. The Coordinator of Information Literacy, seeing the need for improvement in this area, attended ACRL's Assessment Immersion Program in 2010 and became a participant in the first cohort of the RAILS study. Having some familiarity with rubrics, but no previous hands-on practice, the librarian identified RAILS participation as an opportunity to introduce the rubric assessment of information literacy skills at Belmont.

Belmont—Campus Partners

Having enjoyed a long-standing collaborative relationship with the health sciences, the library faculty chose the College of Pharmacy and School of Nursing as ideal partners in the rubric assessment pilot. Both with research-intensive programs and a willingness by the faculty to share responsibility for teaching the skills, they were among the first on campus to develop information literacy programs for their disciplines. Library instruction for both programs focused on ACRL Standard 2 (accessing information), and students learned to search Medline and CINAHL, respectively, for articles within certain search parameters. Librarians taught a two-hour class on searching the medical literature for Pharmacy 6150 Drug Informatics and for undergraduate nursing in Nursing 3000 Professional Nursing. In past instruction, the first hour included a presentation on search strategies, and the second hour provided an opportunity for students to search the databases on their own for articles relevant to their paper topics. While some students used the time well to search for articles, the unstructured nature of the searching session did not motivate many students to apply the advanced search techniques covered in the presentation. Also, while a learning outcome was identified and taught, it was not assessed.

Belmont—The Assignment

After much discussion about how to revise the instruction sessions in preparation for RAILS participation, a brief in-class assignment was created to assess students' ability to search the databases. The assignment was designed to be manageable and assess very specific search skills such as Boolean searching, the use of controlled vocabulary, and limits. By having students complete the assignment in class, the librarian was able to assert more control over classroom activities. The pharmacy students searched for articles on a drug and disease state, with the goal of finding one clinical trial and one review article within the last ten years in English. The nursing students were all given the same prompt (see Figure 1) and had to find three relevant peer reviewed articles within the last five years in English. The artifact of student work was the search history and three selected articles, all emailed to the librarian directly from the database at the end of class.

Figure 1. Searching CINAHL Assignment for Nursing Students

Search the CINAHL database using the search strategies discussed in class for articles on the following research question:

As a way to alleviate the nursing shortage there are now multiple educational pathways to RN licensure. One can sit for the licensure exam with an associate, baccalaureate, or master's degree and receive the same RN license. What impact has this had on the nursing profession?

Look for articles from peer-reviewed journals, published in the last five years, in English. Choose articles that are relevant to the research question and that provide the best possible evidence.

Belmont—Creating and Norming the Rubric

The most challenging part of the process, and one that had the greatest learning curve for the lead librarian, was creating and norming the rubric. Initially, the rubric was created by the Coordinator of Information Literacy, who is also the liaison to the nursing and pharmacy departments, but the language of the rubric changed dramatically during the norming session with the faculty raters. Beginning with row two of the VALUE rubric (Access the Needed Information) three criteria were chosen along with three levels of performance.

The VALUE rubric in its original, holistic form provided the context and common language for librarians and faculty to begin the conversation and norming process. The specific language in the

analytic rubric, however, was not easily agreed upon (see Figure 2). Only one of the nine cells remained unchanged after the norming session; it was in the "Beginning" performance level, which changed the least overall. The most debate was spent on the difference between the highest and middle levels, "Advanced" and "Developing." In some cases the group eliminated complete phrases from the rubric. In others, single words were moved around. For example, "Determines keywords/subject /subheadings that describe the research question/thesis *partially*" was changed to "Determines keywords/subject/subheadings that *partially* describe the research question/thesis." In many cases, the changes did not drastically alter the rubric, but the process of making the revisions was invaluable. By discussing the language in such detail, the group reached consensus and agreed to accept and use the revised rubric if even they did not feel it was perfect.

Figure 2. Belmont Rubric with Norming Day Revisions

	Advanced	Developing	Beginning
Determine Key Concepts	Student: Determines keywords/subject/subheadings that fully describe the research question/thesis fully including relevant variants	Student: Determines keywords/subject/subheadings that partially describe the research question/thesis partially	Student: Does not determine keywords/subject/subheadings that describe the research question/thesis (pharm disease state & drug; nursing multi-faceted, omit shortage)
Access the Needed Information	Student: - Accesses information using effective, a logical progression of advanced search strategies such as limits, Boolean searches, or combined searches Demonstrates persistence and ability to refine search	Student: ~~Accesses information using simple search strategies~~ - Accesses information using advanced search strategies, such as limits, Boolean searches, or combined searches	Student: ~~Accesses information randomly~~ - Accesses information using only simple search strategies
Retrieves relevant information (Determine the extent of information needed)	Student: Retrieves information sources that fully fit search parameters and relate to concepts or answer research question	Student: Retrieves information sources that partially fit search parameters or relate to concepts ~~answer~~ research question	Student: Does not retrieve information sources that either fit search parameters or relates to concepts or ~~answer~~ research question

Two key discoveries came out of the norming session. First, the librarians and faculty realized that they had different expectations for student work. The librarians were much more concerned with the search process and wanted to see that all techniques, Boolean, controlled vocabulary, and limits, were used. The faculty, on the other hand, focused on the relevance of found articles and were less concerned with the process that led students to those articles. Both groups left the session with a greater appreciation of the priorities of the other. Second, librarians and faculty discovered that the language used in the rubric worked better for the nursing assignment than the pharmacy assignment. The small differences in the prompts given to nursing and pharmacy students ended up making a big difference in how the rubric was applied. In a survey given to raters after scoring student work, one rater commented that "It felt, a bit, like we were assessing apples and oranges as we compared/evaluated the research assignment of the two disciplines." When asked if they would use the rubric again, one rater commented that "the rubric would need to be revised—customized to

either the pharmacy or nursing assignment."

As a side note, it was also evident that the assignment prompt made a big difference in students' experience. The pharmacy students searched for articles on a topic (i.e., anything that had to do with their drug and disease state). It was a very straightforward assignment and most students finished quickly. In contrast, the nursing students had a complex research question with many parts. While the pharmacy students' work received higher scores, the nursing students had to grapple with a difficult question and based on their informal feedback, may have learned more as a result. At the end of the semester, after their research assignments were completed, one nursing student wrote, "the day that we went as a class to the library. . . was probably one of the most beneficial days of my semester."

Belmont—Improvement to Instruction

As a result of RAILS participation, the nursing faculty reassessed where information literacy

skills fit into their curriculum and added a second library instruction session to a newly created class, Evidence-Based Practice. The coordinators of this class took ownership of the rubric and assignment, revising both to integrate into the new course. After these changes took place, the librarian has access to students in both courses and has altered the content of each instruction session. On the other hand, librarians still teach the same class for pharmacy students, and the rubric has not been used again. One challenge is that rubric assessment is very time consuming and laborious. While the results of the RAILS project have been positive overall, questions remain about how to sustain this type of assessment and scale it to individual programs.

University of Washington Bothell

The University of Washington Bothell (UW Bothell) is a public institution that is part of the wider University of Washington system. UW Bothell is a relatively new institution and, until recently, was a 2-year degree-granting institution. The university added a lower-division program and accepted its first freshman class in 2006. The university offers undergraduate and master's degrees in interdisciplinary arts and sciences, business, computing, science and technology, education, and nursing. Current enrollment is 3,700 FTE. The institution is growing rapidly, and plans to add a number of new academic programs over the next few years.

Information literacy is well embedded in the curriculum of UW Bothell, and librarians and faculty have a strong history of collaboration. The UW Bothell information literacy instruction program targets a number of upper and lower-division core courses across the curriculum: these include a 100-level Research Writing course, as well as core, research-intensive courses at the 300 and 400 level from each of the main academic programs. However, while the instruction program is well-established at UW Bothell and there is a strong culture of assessment among the librarians, the library is just beginning to undertake a more systematic approach to the assessment of teaching and learning. Librarians at UW Bothell are now working to establish an ongoing program to assess student learning and document the resulting changes made to instruction and to the wider curriculum. In order

to do this work effectively, a librarian was sent to ACRL's Assessment Immersion Program in 2010 and selected to participate in RAILS. The goal of RAILS participation was to enact processes and procedures for doing assessment across classes and academic programs, rather than just at the individual session or course level, as had been the case in the past.

UW Bothell—Campus Partners

Librarian choices about the learning outcomes, assignments, and student artifacts to pursue for RAILS participation were guided by the dual needs of the RAILS project and the library's local assessment priorities. Librarians decided to assess ACRL Standard 5 (access and use information legally and ethically) and selected assignments that were the most "assessable" in terms of the project time frame and the number of student work samples needed for RAILS scoring.

The RAILS lead librarian at UW Bothell and the Head of Instruction both work closely with the two largest programs on campus: the Interdisciplinary Arts and Sciences program and the Center for University Studies and Programs. As a result, it made sense to target faculty and classes in these two programs as partners in RAILS. Librarians collected student work and recruited faculty raters from both programs. In addition, librarians decided to involve other key campus partners (the Director of the Campus Writing & Communication Center and the Director of the Teaching and Learning Center) as raters in the project.

One difference between RAILS at Belmont and UW Bothell was that librarians at UW Bothell assessed an outcome that they did not typically teach in their classes. Librarians did not provide instruction sessions focused on citation and plagiarism, although they do provide guidance to students on using sources in their work. However, the selection of this outcome made sense in terms of forging connections with campus partners. Librarians wanted their assessment efforts to extend beyond the library, and the selection of the outcome relating to the legal and ethical use of information was one that is of interest to many campus stakeholders. The issue of academic integrity and plagiarism is one that many stakeholders are concerned about, but no one group "owns" instruction in this area.

UW Bothell—The Assignments

Unlike Belmont, UW Bothell did not create an assignment to assess their outcome; instead, librarians drew upon existing research paper assignments across ten different lower- and upper-division classes. The common thread for all the assignments was that students were asked to use and cite research sources in their writing. Research papers provided examples of students' abilities to quote, paraphrase, summarize, and cite sources. The decision to collect existing research assignments was driven in part by the nature of the information literacy instruction program: librarians provide course-integrated instruction for a number of core and elective classes, but there is a wide variation in course content and assignment types even among sections of the same course. At the same time, librarians could not identify a single assignment that would yield the required number of artifacts required for RAILS.

Student research papers varied in length from 5–10 pages. The use of longer artifacts was challenging, and it took a substantial amount of time for raters to move through the work and score with the rubric. The comparison between the approaches adopted at UW Bothell and Belmont (as well as those at other RAILS institutions) resulted in one important best practices finding: for rubric assessment activities, raters appear to be more confident about their ratings when student artifacts under analysis are concrete, focused, and shorter in length.

UW Bothell—Creating and Norming the Rubric

The process for creating and norming the rubric at UW Bothell followed a similar trajectory as that at Belmont. The RAILS lead librarian and the Head of Instruction created the initial rubric. The AAC&U VALUE rubric for this standard included details about the use of citation and references, choice of strategies for incorporating information into a student's own work (summarizing, paraphrasing, and quoting), the ability to distinguish between common knowledge and ideas requiring attribution, and an "understanding of the full understanding of the ethical and legal restrictions on the use of published, confidential, and/or proprietary information." The last category was not incorporated into the rubric, as none of the assignments we were working with directly

addressed this specific criterion.

One of the key issues that arose during the norming process was the extent to which librarians could take into account the parameters of assignments that generated student work. Because librarians did not develop the assignments specifically for the RAILS project and were instead drawing on multiple research paper assignments collected by different faculty, there was a wide variation in the guidance provided to students about expectations for citing and using information. As a result, raters were uncertain whether they were assessing for criteria that students hadn't actually been asked to demonstrate in the assignments. After a discussion of the issue, the raters reached consensus that they would not look at the assignment prompts that generated the student work, but rather score based on the performance evident in the artifacts themselves. Interestingly, an initial analysis of RAILS results reveals that students scored higher when the assignment prompts provided more detailed guidance about expectations for how research information should be cited and incorporated into a student's own work.

As with Belmont, the norming process at UW Bothell was one of the most valuable aspects of RAILS participation. In response to the question "What was your favorite thing about the rubric assessment process?" nine out of the ten UW Bothell raters indicated the norming session and having the opportunity to hear others' perspectives on the outcomes and varying interpretations of the rubrics. Faculty, librarians, and other raters from the Writing Center and Teaching & Learning Center realized that they did not always share common expectations about citation and use of information.

UW Bothell—Improvements to Instruction and Assessment

As a result of RAILS, UW Bothell librarians are more aware of the importance of advising faculty on the provision of detailed assignment prompts that provide students with clear guidelines for citing and using information. One of the key observations made by librarians at UW Bothell during the RAILS project was the difficulty that many students had in recognizing the need to cite images and other media. In order to address this,

librarians now address this question directly in relevant instruction sessions.

RAILS has had a significant impact on assessment practices at the UW Bothell Campus Library. In order to continue the assessment efforts started with RAILS and to formalize and signal to the wider campus community the importance of ongoing assessment, the library created a new position, titled Campus Library Assessment Coordinator. The Assessment Coordinator works with librarians to create library student learning outcomes and rubrics to assess those outcomes. In August 2012, all librarians (including many who did not participate in RAILS) took part in a half-day long workshop in which librarians normed and worked with a rubric designed to assess search skills. Over the course of the 2012–2013 academic

year, student work will be collected and assessed by faculty and librarians based on this rubric. The RAILS framework continues to guide the library's current and future assessment efforts.

Conclusion

Because RAILS offers insights into student information literacy skills, the use of rubrics as assessment tools, librarians and faculty as raters of student artifacts, statistical inter-rater reliability measures, and the use of assessment data to “close the loop,” RAILS results can be applied to practice in libraries and on campuses nationwide as they become available. Final RAILS results are anticipated by the end of 2013.

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Impact of Library Instruction in Different Academic Disciplines: An Analysis of Student Transcripts and Course Syllabi

Melissa Bowles-Terry
University of Wyoming, USA

Abstract

This paper examines the connection between student academic success and information literacy instruction in different academic majors. It follows up on a study that established a positive correlation between upper-division library instruction and higher grade point average (GPA) at graduation,¹ taking a closer look at how the average GPA of graduates in majors that integrate library instruction and research-intensive assignments differs from that of graduates in majors without library instruction experience; it also examines syllabi and learning outcomes for majors that do not integrate library instruction.

Introduction & Institutional Context

Does information literacy instruction make a difference in student learning? Librarians who spend a significant amount of their time planning and conducting classes and instruction sessions are understandably invested in finding out whether that time is well spent and how instruction efforts might be most effectively directed. Attempts to correlate library instruction with markers of student achievement such as grade point average (GPA) or performance on standardized tests have had mixed results,² but the question of whether library instruction can be correlated with greater student success is worth pursuing as a correlation may offer proof of the value of a coordinated library instruction program and offer direction for moving forward in efficient and effective ways.

As the necessity of proving outcomes in higher education increases, University of Wyoming (UW) Libraries have renewed efforts to demonstrate and quantify student learning and achievement. One of the more obvious ways that librarians work to affect student learning is by meeting students in the classroom, so library instruction seems a good place to assess student learning in the library. Information literacy is currently part of the general education program at University of Wyoming.³

each student is required to take a course with an embedded information literacy (IL) component, and most IL courses are freshman-level classes that introduce students to study within their majors. Most information literacy courses meet with a librarian at least once, and other research-intensive classes that are not designated “information literacy” classes also meet with a librarian. In 2011–12 librarians met with a total of over 350 classes and 7500 students, which is about half of the student body.

Background: Previous Research and Academically Adrift

In a previous study at University of Wyoming I examined the connection between student academic success and information literacy instruction via focus groups with graduating seniors and an analysis of academic transcripts of graduating seniors.⁴ I found that students value library instruction for orientation as beginning students and specialized, discipline-specific library instruction in upper-division courses. I also found a statistically significant difference in GPA between graduating seniors who had library instruction in upper-level courses and those who did not. It seems that library instruction makes the most difference to student success when it is repeated at different levels in the university curriculum, especially when it is offered in upper-level courses.

While I was conducting the focus groups and transcript analysis, The University of Chicago Press published *Academically Adrift: Limited Learning on College Campuses* by Richard Arum and Josipa Roksa at the end of 2010 and the book started getting a great deal of press in and out of academic circles early in 2011.⁵ The *Chronicle of Higher Education*⁶ weighed in along with magazines and blogs from *Vanity Fair*⁷ to *The New Yorker*⁸ to *Gawker*.⁹ The main conclusion of the book, that “American higher education is characterized by

limited or no learning for a large proportion of students," was publicized and dissected all over the web and throughout the popular press. The reason that the book caught the attention of the public and the media was the surprising revelation that in the first two years of college most students did not improve test results on the Collegiate Learning Assessment (CLA). The merits of the tool used to measure learning, the CLA, can be debated, but the statistical analysis in the book leaves little doubt that most students make small or no gains in the critical thinking skills that the test aims to assess. One of the most interesting sub-points made in the book is that students from different majors score differently on the test; specifically, students who major in humanities, social sciences, science, and math out-perform students who major in business, education, social work, and other fields. This suggests that students in "classic liberal arts" majors either come to college with better critical thinking and writing skills than students who go into majors that train for a specific job or career, or the "classic liberal arts" students develop those skills more fully and effectively throughout college via assignments and practice in the classes they take.

Arum and Roksa found that students majoring in Humanities/Social Sciences and Science/Math outscored students in Business, Education/Social Work, Engineering/Computer Science, Communications, and Health on the CLA.¹⁰ The authors correlated the gaps in performance between students in these majors to at least two main factors: 1) students in Humanities/Social Sciences and Science/Math were better prepared when they entered the university and 2) students in the higher-performing majors had greater reading and writing requirements throughout their majors. If students reported reading more than forty pages per week and writing more than twenty pages in a class over the course of a semester, they were more likely to score high on the CLA. Reading and writing are (or should be) critical thinking tasks that help students develop greater critical thinking skills.

While performing the initial academic transcript analysis at University of Wyoming it became clear to me that those students who are less likely to have had library instruction fall into majors similar to the lower-performing majors listed in *Academically Adrift*. The critical thinking skills

measured and analyzed in *Academically Adrift* have been tied to information literacy competencies in the library literature, a connection that is well-documented in John Weiner's 2011 systematic review of articles dealing with "critical thinking" and "information literacy," in which he concludes that information literacy could augment instruction in critical thinking.¹¹ The connection between the two ideas is clear in research on critical thinking, as well. For example, the National Science Foundation (NSF) has supported the development of the Critical Thinking Assessment Test (CAT) at Tennessee Tech University; the skills measured by the test include "Identify new information that might support or contradict a hypothesis," "Separate relevant from irrelevant information," and "Learn and apply new information,"¹² all of which are closely related to information literacy competencies. Because of the connections I saw between majors in which performance lagged on the CLA (according to *Academically Adrift*) and in GPA at graduation at UW *and* because of the confluence between critical thinking skills, information literacy, and academic success, I was interested to see which majors have less library instruction and why. I thought that the fact that instructors in particular majors do not schedule library sessions could mean that students are not given assignments that would include library research (a literature review or research paper drawing on previous publications), and I believed it would be worthwhile to explore further to find out if there is a reason that librarians are not reaching students in these particular majors.

Process

In the initial analysis of academic transcripts, I analyzed 4,489 transcripts for students who entered the university between 2005 and 2007 and who graduated between 2006 and 2011, excluding graduate and professional (law or pharmacy) students. The dataset included, for each student, a list of classes taken with grades, major when the student started at University of Wyoming, major at graduation, GPA at graduation, and sex. I created a database to compare the transcript data with records of library instruction sessions offered and sorted the students into three groups: 1) those who received upper-level library instruction, 2) those who received freshman-level instruction only, and 3) those who received no library instruction. Using ANOVA and a post hoc Dunnett test, I found a statistically significant difference between

group one and the other two groups; in other words, students who received upper-level library instruction at the library graduated with higher GPAs, while students with only freshman-level instruction or no instruction had lower GPAs.

In the process of sorting and re-sorting the transcript data, I found that there were eleven majors where graduates were least likely to have

received any library instruction at all. The mean GPA for students in these majors that are less likely to include library instruction is 3.194 at graduation, which is significantly lower than the overall mean GPA for students who received upper-level library instruction, 3.289. (Following common statistical practice, the level of significance is set at 0.05.) The table below lists the majors I identified; rather than naming each major I have broadly categorized the majors by college or discipline.

Table 1: Majors least likely to receive library instruction at UW

Agriculture & Natural Resources 1	Engineering 1
Agriculture & Natural Resources 2	Engineering 2
Business 1	Engineering 3
Business 2	Social Science 1
Business 3	Social Science 2
	Social Science 3

After finding these outliers, I decided to examine learning outcomes for the majors with little library instruction to look for information-literacy-related terms like “research,” “inquiry and analysis,” “critical thinking and writing,” or “synthesis and analysis.” I also began to collect and analyze sample syllabi, searching specifically for research assignments that would require library resources.

What We Can Learn from Majors with Little or No Library Instruction

Findings—learning outcomes

The one learning outcome that is common to

all eleven majors that I examined is subject specific knowledge (major theories, historical and philosophical foundations, contemporary technology related to the discipline, etc.), with critical thinking or communication skills also appearing in nearly every major’s list of learning outcomes. Ten of the eleven majors have a learning outcome related to information literacy, but all are expressed in different terms or emphasize different elements of information literacy. The information literacy learning outcomes for each major are listed in the table below; all are taken directly from the departmental websites.

Table 2: Information literacy-related learning outcomes by major

Discipline/Major	Learning outcome related to information literacy
Agriculture & Natural Resources 1	Possess the ability to analyze problems, critically evaluate information and utilize scientific principles to formulate solutions.
Agriculture & Natural Resources 2	Students must be proficient using contemporary electronic sources to obtain state-of-the science related to their respective disciplines (e.g., internet web sites, computer data bases, etc.) .
Business 1	Students link data, knowledge, and insights together in the decision making process .
Business 2	<i>No information literacy-related learning outcome.</i>
Business 3	Students must demonstrate independent and individual learning skills . Students must demonstrate critical thinking and problem solving abilities .
Engineering 1	Demonstrate the ability to learn independently, without the aid of formal instruction . Incorporate contemporary issues into the identification, formulation, and solution of engineering problems.
Engineering 2	A recognition of the need for, and an ability to engage in life-long learning .
Engineering 3	Demonstrate continued development of problem solving skills through independent learning .
Social Science 1	Student participates in a research experience and understands its process. Student demonstrates ability to analyze and synthesize in relation to [disciplinary] issues or theories .
Social Science 2	Students will critically and objectively examine current research, topics and policy in the [discipline] .
Social Science 3	Students participate in and are able to evaluate the assumptions, purposes, methods, and results of [disciplinary] research and scholarship .

These learning outcomes fall broadly into four categories: 1) evaluating information or research, 2) lifelong or independent learning, 3) using, synthesizing, or analyzing information to make decisions or solve problems, and 4) finding information. Librarians are traditionally sought out for assistance in the fourth category, finding information, but the Association of College and Research Libraries' (ACRL) Information Literacy Competency Standards for Higher Education¹³ address all four of the above categories. Librarians may have less experience assisting students in areas beyond finding information, but can be

valuable partners in teaching the evaluation and use of information as well as developing lifelong learning skills.

Findings—syllabus and assignment analysis

For each major, I read and analyzed a sample of 4–5 syllabi from required courses in each major, looking specifically for assignments that would require finding, evaluating and using information not available in the textbook or class lectures. I focused on sophomore-, junior- and senior-level courses and used a convenience sample of syllabi

that were archived on departmental websites or assistants.
that were provided to me by departmental office

Table 3: Information literacy-related assignments by major

Discipline/Major	Assignment related to information literacy
Agriculture & Natural Resources 1	None found. Evaluations of student learning are primarily exams, quizzes, and lab notebooks.
Agriculture & Natural Resources 2	Two senior-level courses require term projects described as “library research papers” on topics such as recreational or ranch use of land.
Business 1	“Comprehensive company project” requires information finding and analysis to report on a particular company.
Business 2	Two courses (one junior-level and one senior-level) require company analyses. One is a company analysis group project with an oral presentation; the other includes team and individual projects where students evaluate ethical behavior in a chosen industry.
Business 3	Written project that accounts for 20% of grade in senior course. The paper is graded in part on “ethical research methods.”
Engineering 1	None found. Evaluations of student learning are primarily exams, quizzes, and problem sets.
Engineering 2	None found. Evaluations of student learning are primarily exams, quizzes, and problem sets.
Engineering 3	None found. Evaluations of student learning are primarily exams, quizzes, and problem sets.
Social Science 1	None found. Evaluations of student learning are primarily exams, quizzes, and labs.
Social Science 2	Senior-level course requires study of a particular country, with a comparative framework, literature review, and ten scholarly sources.
Social Science 3	Senior-level course requires 10 page research paper using peer-reviewed scholarly articles (empirical and/or theoretical). Paper should comment on major themes, shortcomings and directions for future research.

One difficulty in a comparison like this is that definitions of “information literacy” and of “research” vary between disciplines. Some of the assignments that I came across required students to read, analyze, and evaluate scholarly literature provided by the instructor; these assignments address several aspects of information literacy, but I chose not to include them in my table of research assignments, as they were not inquiry driven. The types of inquiry-driven research assignments that

I found in the 48 syllabi reviewed were mostly traditional, academic research papers in which students were fairly free to choose an aspect of the class theme on which to focus and learn more by coming up with a research question and then finding and analyzing information to answer that question. Some assignment descriptions are more prescriptive, such as those that specify the number and type of sources to be used, and others leave students free to do what they will.

The one business major (Business 2) that did not specifically list information literacy as a departmental learning outcome actually had very robust research assignments embedded in at least two classes I examined. On the other hand, the engineering majors that listed “lifelong learning” as an information literacy-related department learning outcome do not have research assignments but rely on exams, quizzes, and problem sets to measure student learning. Having departmental learning outcomes but faculty members with the freedom to create their own syllabi and assignments can be a source of disconnection between what a department *says* it teaches students and what it *actually* teaches students. And, of course, different disciplines value different types of research and inquiry: some (such as engineering) rely much less on background reading in secondary sources and more on lab work and the scientific method.

Practical implications

The practical implications of this analysis for myself and my colleagues fall in three major categories: 1) we have data to show that library instruction makes a difference in student success and attainment, 2) we know that students in these under-served majors are often not receiving library instruction, and 3) we know that each of the under-served majors has either a departmental learning outcome related to information literacy or at least one inquiry-based assignment with which librarians could assist. These three findings could provide a good starting place for approaching faculty members who may not have used library instruction before and presenting the value of library instruction. By presenting library instruction as a demonstrably useful experience for students and as a way for faculty members to meet their own stated learning outcomes, we should have a stronger case for embedding research instruction in the curriculum.

This research project also highlights the “hit-or-miss” nature of library instruction. In the initial analysis of academic transcripts, I found that some students experienced as many as six library instruction sessions from freshman to senior year, while others (many in the eleven majors highlighted in this paper) had none at all. Students were most likely to have received library instruction in freshman-level classes, which is unfortunately the point at which library instruction

has less impact. The focus on freshman-level instruction also means that students transferring to the University of Wyoming after completing first-year courses elsewhere were a bit less likely overall to have met with a librarian. Some majors (particularly those in education, health sciences, and the arts) have a clear commitment to library instruction at various levels. These and other factors, including possible grade inflation in some majors, all affect the overall picture of which students receive library instruction as well as the average GPA at graduation. The results of the studies referenced in this paper, however, make a strong argument that greater information literacy and critical thinking skills, which are connected with library instruction and with significant reading and writing assignments, can be correlated to greater academic success.

A standardized test like the CLA is an imperfect surrogate for student learning; GPA is also an imperfect proxy for learning, since grades cannot be directly mapped to learning outcomes like information literacy. Despite confounding variables, both proxies can be telling indicators of student performance and attainment. Further, test results and GPA at graduation can generally be collected and correlated to various library-related activity or usage, making correlational research effective, sustainable, and practical for librarians who wish to prove library value and improve library service.

Conclusion

Through an analysis of GPA and major at graduation, I found an overlap between the majors identified in *Academically Adrift* as having lower scores on the CLA and majors at University of Wyoming that have lower GPAs correlated with less library instruction—the two fields in common to both studies were Engineering and Business. In a follow-up analysis of departmental learning outcomes and syllabi in Engineering, Business, and other majors at University of Wyoming, I discovered that many courses in the majors identified as having little or no library instruction evaluate learning mostly through exams and quizzes rather than via writing assignments. The authors of *Academically Adrift* found a correlation between writing twenty pages or more in a class in a semester and higher performance on the CLA.¹⁴ The convergence of three factors 1) classes with few or no writing assignments, 2) having

little or no library instruction and 3) graduates having a lower-than-average mean GPA places these University of Wyoming majors in alignment with Arum and Roksa's findings and suggests a place for librarians to offer assignment consulting and library instruction services to faculty and department heads.

Librarians who wish to focus library instruction on the highest impact areas should consider undertaking an audit of academic programs that make little or no use of library instruction and, by examining stated learning outcomes and assignments, identify areas in which greater library involvement may be beneficial. A service-oriented approach that clearly targets courses and majors with learning outcomes closely aligned with library strengths is most likely to succeed. In addition, correlational research that demonstrates a connection between library interactions and learning measures offers a path to demonstrable library value. When information literacy instruction can be tied to greater student learning, success, and attainment it will be more highly valued in the organization.

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Notes

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Rolling It Up: The Evolution of an Information Literacy Assessment Plan

Elizabeth Dolinger
Keene State College, USA

Abstract

A tiered assessment model was developed, rolling up multiple assessment methods, in order to capture the Keene State College library's contribution to the development of student's information literacy and to more explicitly reflect the development of information literacy that occurs throughout a student's academic career. After three years and four administrations of the Standardized Assessment of Information Literacy Skills (SAILS) cohort test, Keene State College librarians found that the SAILS assessment was not providing as holistic a picture of information literacy development as they had anticipated or desired. Developing an assessment plan with two tiers, campus and library, helped librarians to make connections between what they did in the classroom and the general education curriculum map of intellectual skill development.

Developing a tiered assessment plan also engaged library faculty in a task force to design curriculum for foundation courses. The task force facilitated the development of a community of practice among librarians and an opportunity for professional development on lesson planning, teaching pedagogy, and assessment.

Introduction

Intellectual skills, including information literacy, can be challenging to assess. As students progress through their academic career they build skills from a variety of experiences, in and out of the classroom. Students may gain information literacy skills from a variety of courses taught with or without librarian-lead information literacy instruction, as well as from work-place and life experiences. Librarians design programs that develop students' intellectual skills incrementally over a student's academic career. In addition, librarians are challenged because they are often working within courses that they do not have ownership of. They must work with faculty to

integrate lessons that develop information literacy. Often the result is an opportunity for a one-shot instruction session. In these one-shot situations discussion about an assignment to be assessed for the application of information literacy skills may seem unrealistic due to time constraints and sometimes lack of rapport with the faculty member or students.

However, even in these one-shot instruction situations librarians are positioned particularly well to conduct formative classroom assessments because they are working with students during the *process* of completing assignments. Thomas Angelo and K. Patricia Cross describe in their book *Classroom Assessment Techniques: A Handbook for College Teachers* that formative classroom assessments "aim to provide faculty with information on what, how much, and how well students are learning, in order to help them better prepare to succeed."¹ Classroom assessment techniques allow librarians to provide students feedback on the progress and practice of their learning prior to the completion of the final product and facilitate the opportunity for students to recuperate from mistakes and engage in deeper learning. Angelo and Cross explain that classroom assessment "is particularly useful for checking how well students are learning at those initial and intermediate points, and for providing information for improvement when learning is less than satisfactory."²

Some librarians have the opportunity to work with multiple sections of a core course, for example an entry level course with a research paper requirement. This may be an opportunity to conduct assessments that span across sections and provide a picture of information literacy development at a specific level. However, due to the volume of instruction and time constraints there may not be an opportunity to provide

formative feedback that allows for students to learn from the assessment. The opportunity for the librarian to make connections between the curriculum or their own teaching practice in the classroom and the performance of the students may also be limited. One of Angelo and Cross's basic assumptions of classroom assessment is that "the quality of student learning is directly, although not exclusively, related to the quality of teaching. Therefore, one of the most promising ways to improve learning is to improve teaching."³ Practicing classroom assessment techniques can help librarians to improve their own teaching pedagogy while providing formative feedback to students and the faculty they work with.

Some institutions have used standardized tests, because of their reliability and validity, to assess the level of student's information literacy skills. These tests can provide benchmark data, but do not necessarily reflect the library's role or contribution to developing students' information literacy, and are usually not formative for the students. One could speculate that since librarians teach information literacy skills that there is a contribution; however, in an environment of scarce resources where librarians may be relying on an instruction model that does not share provision of credit hours in the same way as degree granting discipline departments, the need to show direct contribution may be amplified for libraries and librarians in order to secure needed resources.

Approach at Keene State College

In 2007, Information Literacy was identified as one of eight intellectual skills outcomes of the new general education program, the Integrative Studies Program (ISP), at Keene State College (KSC). An embedded information literacy program for first year students developed in two core classes, Integrative Thinking & Writing (ITW) and Integrative Quantitative Literacy (IQL).

In response to the administration's request for assessment plans and in an effort to benchmark students' information literacy, the library administered the Standardized Assessment of Information Literacy Skills (SAILS)⁴ Cohort test to first year students, for three years. In the third year the test was also given to juniors. The SAILS Cohort test benchmarks students' information literacy by comparing multiple institutions.

Participants in a specific test administration are identified by Carnegie classification and can elect to join together and create a specific cohort, for example pre-Information Literacy Instruction. Results of the SAILS test provided a benchmark of Keene State College students compared to students at other institutions who participated in that test administration.

At the time, librarians did not recognize that though they joined a cohort of libraries who also gave the test to students who had not yet received college level information literacy instruction, a majority of the institutions in the cohort were not peer institutions. Comparing the scores between the freshman and junior tests was not possible due to changes to the test over the three year period. Also, the test administration given to KSC junior students unfortunately tested them with primarily freshman students, and of the benchmark that was just junior students a majority were not at peer institutions. Considering that students may gain information literacy skills from a variety of academic and life experiences, the SAILS test can benchmark the level of students information literacy well, no matter where the skills are developed. However, the direct contribution of the librarians to the development of information literacy in students was not adequately reflected in the SAILS assessment. Additionally, the student feedback forms collected by the librarians in each session ask about student's perception and satisfaction and do not assess student learning. At the general education program level, the curriculum map of the Integrative Studies Program tracked where other intellectual skills were being taught but did not reflect the courses where information literacy was being developed. Librarians were seeking to use assessment to get feedback and improve teaching pedagogy and to identify faculty and discipline areas to work with. Librarians were also searching for ways to reflect their direct contribution to the development of student's information literacy, as well as, to reflect the development of information literacy throughout a student's academic career.

In 2010 the library hired an Information Literacy Librarian to focus on curriculum design, teaching pedagogy, and assessment. After attending the ARL Assessment Conference and pre-conference workshop with Megan Oakleaf in 2010 and ACRL Assessment Immersion in 2011, the information

literacy librarian began to design a two-tiered assessment plan. The design intends to capture the development of information literacy that occurs throughout a student's academic career in one tier, as well as capture the contribution of librarian-led instruction and support to the development of students' information literacy in the other tier. In each tier assessment strategies vary by method based on the need for information about learning and teaching and the resources available.

Tiered Assessment Plan

Tier one

The goal of the first assessment tier, the Campus Information Literacy Program, is to capture the development of information literacy skills over a period of time from across campus departments and the general education program. The assessments in this tier primarily serve as benchmarks of student information literacy and capture the development of information literacy during their academic career. Assessment strategies in this tier have included the SAILS test but are now more focused on the use of rubrics to assess student work from different levels of the general education program, and from different classes and departments. Other assessment strategies planned for the future include focus groups of faculty and the use of data from other standardized tests the college administers such as the Collegiate Learning Assessment (CLA) and by adding library specific questions to the National Assessment of Student Engagement (NASE). The information gathered in the first tier informs programmatic needs and changes. For example, the college has determined that completion of the two foundation courses of the general education program, ITW and IQL, within the first year is the best predictor of student retention, particularly for students in at-risk groups.⁵ Both of these courses include information literacy instruction designed and led by library faculty. The next step is to identify what skills from these two courses students are asked to use again throughout their academic career at KSC, and particularly those skills that students in the at-risk group identify.

Tier two

The goal of the second assessment tier, the Mason Library's Information Literacy Program, is to capture the contribution of librarian-led instruction to the development of student's information literacy skills. The information gathered helps to

identify and map courses that are contributing to the development of information literacy and informs programmatic needs and changes. Assessment strategies include the identification of student learning outcomes for all information literacy sessions taught by librarians, the use of classroom assessment techniques with a focus on the collection of performance assessments, statistics from embedded Blackboard units and LibGuides, collection of number of faculty assisted and worked with, and collection of information literacy outcomes data at the reference desk. This information is aggregated and rolled up to the general education level to contribute to a big picture analysis of information literacy student learning activities from the Mason Library and on the Keene State College campus.

The Action Plan

Along with the assessment plan, in the fall semester of 2011, an action plan was implemented for two one year-long task forces. One task force focused on information gathering about departments and disciplines including department assessment reports of student learning, program accreditation standards, and student learning outcomes. This task force helped identify areas where information literacy instruction could be more formalized by working with the department to identify and document information literacy student learning outcomes and designing curriculum and support to reach those goals. The other task force focused on the design of common information literacy curricula for the two first year foundation courses in the general education program, Integrative Thinking and Writing (ITW) and Integrative Quantitative Literacy (IQL). The curriculum was designed to address challenges of not knowing what skills were being taught when and where, of students receiving different experiences across sections of the same course, and challenges with librarians spending too much time preparing to teach sessions for the same course. The curricula also had to include assessment methods in order for faculty to learn more about student learning and to better reflect the contribution of the library's information literacy program to the Integrative Studies general education program.

Engaging the library faculty in a task force to design curriculum for the foundation courses facilitated the development of a community of

practice among librarians and an opportunity for professional development on lesson planning, teaching pedagogy, and assessment. A community of practice is described by Etienne Wegner, Richard McDermott, and William Snyder as “a group of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis.”⁶ Over the course of the year, through a series of meetings and a two-day workshop on instructional design and assessment, the community of practice that developed among the librarians helped to “develop a unique perspective on their topic as well as a body of common knowledge, practice, and approaches.”⁷ Discussing teaching methods with librarians with similar teaching practices and challenges helped librarians to address concerns and design lesson plans that remain authentic to their individual teaching styles. Librarians recognized that challenges and concerns were similar and shared ideas and practical applications to help address them.

Through the process of designing the common curriculum librarians identified their expectations of student learning for first year students in each of the foundation courses and designed methods to collect evidence of student learning. The design of the common curriculum for the first year courses provided the venue through which librarians learned about backwards design⁸ lesson planning and performance assessments. In this community they identified criteria, assessed artifacts of student work, and made changes to the curriculum and their teaching practices based on what they learned about student learning.

Reviewing Artifacts & Identifying Expectations

Tier one

In the first tier of assessment, using the same process in place for the development of rubrics for the other intellectual skills outcomes of the general education program, a rubric for information literacy was developed by librarians and approved by classroom faculty. Librarians also participated in the development of rubrics for the other intellectual skills, which heightened awareness of information literacy, but also of the curricular design and assessment skills of librarians. When rubrics are developed to be used

in a general education program and applied to a wide variety of student work, there is the risk that the rubric will become too general to have enough meaning to be useful in designing the curriculum. Challenges can also develop in operationalizing the language of the rubric during norming sessions. Revising and clarifying the information literacy outcomes and developing the common curriculum for the two foundational courses helped librarians to develop the rubric. The application of the rubric to artifacts of student work is the college’s next step. Participating in the assessment process of the college’s general education program resulted in engagement from more faculty members and facilitated integration of information literacy into the curriculum.

Four of the eight intellectual skills of the general education program: critical thinking, quantitative reasoning, writing, and critical reading were reflected in the campus curriculum map. After one year of identifying which information literacy skills were taught for individual courses the campus curriculum map now reflects where information literacy is being explicitly developed and more importantly, where it is not. Next steps are to identify courses where information literacy is being developed without instruction from librarians. Luckily there are other assessments in place that will help to locate information literacy development throughout the curriculum. The Collegiate Learning Assessment provides information on students’ critical thinking and department assessment reports are used to identify challenges departments are finding in student learning. Librarians can use this information to make the case for explicitly developing critical thinking through information literacy instruction and to identify and approach departments to provide support and design information literacy curriculum.

Tier two

Practicing classroom assessment and developing rubrics helped librarians to clearly identify instructional goals. The process helped move the conversation about information literacy away from talking about which tools to show students, to the skill level of students in particular years or courses in the program. Librarians also reported that rather than focusing preparation time on listing the tools that students might need on LibGuides, they began to focus on the design of activities

and implementing outcomes-based teaching. By engaging in performance assessments, librarians focus on teaching learning outcomes. Complaints of not having enough time to show certain tools were frequent in the beginning, but discussion during meetings about the identified learning outcomes and results of assessments proved to serve as reminders to focus on the development of the skills. The tools became the platform that the skills were delivered upon.

The first semester of the common information literacy curriculum for the foundation general education courses, ITW and IQL, each librarian designed and used a different performance assessment in their sessions and collected an artifact of student performance. The volume and variety of performance assessments collected across sections of the same first year course was unwieldy and many librarians did not have the time to assess the artifacts due to a high instruction load. Also, the variety in format and in questions asked of the students proved to be difficult to assess as a group using the same rubric, even though the artifacts all served the same outcome. The following semester librarians developed common performance assessments to be used across all sections of the same course. Assessing the same student performance artifact multiple times across sessions allowed librarians to readily evaluate student performance and provide quick feedback to students and faculty at the end of the session. At the end of the semester librarians participate in norming sessions and assess a random sample of the artifacts using a common rubric. Development of a common performance assessment for high volume courses alleviates librarians challenged with having enough time to create or assess performance assessments.

Since each librarian works with hundreds of students per semester the expectation of giving feedback to each student individually is impractical. Therefore the feedback provided by librarians to students is usually in aggregate, about their class as a whole, with the skills identified that proved challenging for the students. The performance assessments are usually anonymous but allow for students to see the work of their peers and measure their own learning against their peers. The librarians help classroom faculty by gauging the level of student's skills and informing them of what skills need to be reinforced. For example, a

librarian may use a Google form to create a class list of sources by asking students to provide the citation and link to a scholarly source as well as ask students to state the difference between popular and scholarly sources. The librarian looks over sources submitted, makes note of whether or not students identified scholarly sources and assesses the quality of the student's statement about the difference between scholarly and popular sources. The librarian then shares the source list with the class and identifies what the challenges are. Students see other student's answers and are able to measure their answer against the answers of their peers. Other performance assessments used vary widely and are context specific but often include the use of IF-AT⁹ scratch sheets, student response systems, concept maps, and worksheets.

Based on what they learned from assessment results, librarians made changes to their teaching practices in order to help students meet instructional goals. For example, students were not recognizing the use of background sources to gather key words. Librarians responded by sharing and designing exercises that focus on finding keywords and creating a bank of keywords. Librarians learned that students were applying Boolean search structure successfully, but sometimes identified features of the database rather than features of the article to identify scholarly sources. Results of assessment reflected that website evaluation was challenging for many students because of the variety of sources on the web. For example, students were eliminating sources just because of the type of source (e.g. blogs), rather than on a site's authority, and keeping other sources simply because the source was familiar. In response, the librarians designed exercises that better address evaluative criteria for articles and websites. Librarians improved performance assessments to ask students to identify *why* the source is considered credible. By reviewing artifacts of student work librarians identified, more explicitly, common criteria for their expectations of student learning such as identifying features of scholarly articles rather than database features. Librarians recognized for each outcome how they needed to be explicit in their instruction and began to focus more on developing critical thinking than on instruction of tools.

Other assessment approaches include using data from Blackboard. For example, at the end of the

semester we noted the number of hits on the library's research page within Blackboard and which resources received more hits. Next steps for this assessment could include conducting focus groups with students to learn more about why individual students kept returning to the page while others did not. Data from LibGuides was used to determine if students were returning to sources outside of class. However the data was not as useful as anticipated because at the time, LibGuides only provided data by the month. They now provide data by the day which we will use to track the use of the guide during the semester. This data will also be useful in determining the use of guides created for courses or subjects, where there is not librarian-led instruction currently occurring.

Implementing the assessment plan required developing a system to collect the data on classes, outcomes taught, and results of assessments. While systems are available (e.g., Waypoint, LibAnalytics), and some institutions have created their own using tools like Zoho, we elected to use a familiar system, SurveyMonkey, and accept its limitations knowing that this first year would help us to identify what is needed out of an assessment data collection system. Librarians filled out a form administered through SurveyMonkey for each of their sessions. SurveyMonkey proved to be easy to set up and to use, but querying and data control was virtually non-existent and as a result, the data required a lot of cleanup to be usable and aggregated to the general education program level. Also, to collect data from the reference desk on learning outcomes the DeskTracker system required revision to include the ability to record student learning outcomes. Fall 2012 the implementation of an assessment database developed in-house will be used to track learning outcomes within the library and allow for greater data control and query reports for each individual librarian, course, and the library's information literacy program.

After one year of collecting performance assessments from the sessions for the two foundation courses ITW and IQL, librarians are now beginning to engage in designing performance assessments for courses outside of the foundation courses to learn more about student learning, provide feedback to students and to faculty, and departments. Results from assessing student performance using common rubrics across sections

of the same course are shared with faculty and coordinators of the general education foundation courses. Information literacy instruction for these courses is being revised accordingly, resulting in different methods of delivery being considered. For example, the lesson plan for IQL is being streamlined to hone in on skills of evaluating quantitative information and workshops and online tutorials are being developed for ITW allowing for more flexibility for faculty and students than traditional classroom instruction.

Implications

Developing a common information literacy curriculum across sections of the same course can be helpful for implementing an assessment plan. It facilitates development of a community of practice and serves as a training ground to learn outcomes-based teaching and assessment methods, try them in a shared learning group, and then transfer the applications to other sessions. Development of a common performance assessment to be used in high volume courses helps alleviate librarians challenged with having enough time to assess or create performance assessments. Assessing artifacts as a group using a common rubric focuses attention on intentional teaching of outcomes (skills/literacies) rather than content (tools) and may help to facilitate development of a common core curriculum.

Visualizing two tiers of assessment can help librarians make connections from their instruction session and classroom assessment to the campus map of intellectual skills and the picture of information literacy development on campus. The two tiers also help to communicate to other departments how dynamic the instruction is that librarians participate in, from online units, to one-on-one reference, as well as collaborating with faculty to deliver in-class instruction. Designing assessment in two tiers allows libraries to capture a dynamic picture of information literacy development throughout a college curriculum including the contribution of the library to the development of student's information literacy. Tapping into the assessment processes already on campus facilitates essential buy-in from outside the library and moves information literacy into the conversation of student learning outcomes of a general education program or a department. Thinking of information literacy assessment in two tiers, from campus and from the library, can help

create a picture of how information literacy is the responsibility of all faculty members on campus to develop. The rolling up of assessment results helps provide a big picture analysis of information literacy learning outcomes and contributes to the identification of information literacy outcomes throughout the college curriculum.

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Notes

1. Thomas A. Angelo and K. Patricia Cross, *Classroom Assessment Techniques: A Handbook for College Teachers* (San Francisco: Jossey Bass, 1993), 5.
2. Angelo and Cross, 4.
3. Angelo and Cross, 7.
4. See *Project SAILS*, <https://www.projectsails.org/Home>.
5. Keene State College Office of Institutional Research, *Predictors of Retention and Progression Toward Graduation Part 2* (2011), <http://www.keene.edu/ir/RETENTION%20AND%20PROGRESSION%20PART%202.pdf>.
6. Etienne Wenger and Richard A. McDermott, and William Snyder, *Cultivating Communities of Practice: A Guide to Managing Knowledge* (Boston: Harvard Business School Press, 2002), 4.
7. Wenger and McDermott and Snyder, 5.
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Assessment of Information Literacy as a Student Learning Outcome: Overcoming Barriers and Achieving Standards

Laura Saunders
Simmons College, USA

Megan Oakleaf
Syracuse University, USA

Introduction

Stakeholders across higher education are demanding accountability and transparency from institutions of higher education in how they are promoting quality and improvement in learning. Indeed, as the cost of tuition rises, colleges and universities as well as the organizations that accredit them are coming under increased scrutiny. Direct and indirect stakeholders, including students and parents, employers, and federal and state government, are concerned with the return on their investments in higher education and want institutions to provide evidence of achievement in student learning. Academic libraries are not immune from these demands. As libraries compete with other academic and institutional departments for limited resources, they increasingly find themselves having to demonstrate their value to their parent institution.

Often associated with critical thinking and lifelong learning, information literacy describes a set of competencies needed to efficiently and effectively navigate an increasingly complex information world. While information literacy has roots in traditional library instruction, and has been promoted and advocated for by librarians for many years, it is only recently gaining widespread attention in the broader field of higher education. In the last 10 years or so, stakeholders from employers to research and policy organizations to federal and state government have identified information literacy as crucial for college students and graduates. The Association of American Colleges and Universities includes information literacy as an essential learning outcome¹ and the Lumina Foundation similarly specifies “use of information sources” as a key intellectual ability for students from the associate’s through

the master’s degree level.² Employers also value information literacy.³ Reviews of job postings reveal that, though they do not always use the term, employers are also interested in hiring graduates with information literacy abilities.⁴ All six of the regional accreditation organizations, which are responsible for ensuring quality and improvement in institutions of higher education, include information literacy either implicitly or explicitly within their standards for student learning.⁵

The Association of College and Research Libraries (ACRL) has developed the most widely accepted definition of information literacy. In fact, the Middle States Commission on Higher Education—the regional accreditation association with the most explicit and detailed support for information literacy—bases its standards on the this definition. According to the ACRL, an information-literate person can:

- Determine the extent of the information needed
- Access the needed information efficiently and effectively
- Evaluate information and its sources critically
- Incorporate selected information into one’s knowledge base
- Use information effectively to accomplish a specific purpose
- Understand the economic, legal, and social issues surrounding the use of information, and access and use information ethically and legally.⁶

Each of these standards is accompanied by a set of performance indicators and outcomes meant to assist instructors in designing and implementing

assessments to measure ability and learning in each area.

Information literacy represents a major opportunity for academic librarians to engage more fully with the curriculum on their campuses and to provide evidence of the library's contributions to teaching and learning goals that align with their institution's mission. Such steps could help academic libraries regain some of the centrality they have traditionally held on their campuses. Along with the opportunities, however, information literacy presents challenges as well. Librarians typically do not have the consistent, direct access to students or the oversight of curriculum that faculty have. In order for information literacy to be fully integrated into the curriculum as a student learning outcome, faculty and high-level administrators have to buy in to the importance of information literacy competencies and commit resources and time for instruction and assessment of student learning in this area.

This paper considers how academic libraries can overcome barriers and assume a leadership position by bringing together the research of several studies related to the assessment of information literacy as a student learning outcome. The first part of the paper outlines the results of a nationwide study of institutional responses to accreditation standards for information literacy. These findings offer a snapshot of the current state of information literacy on college and university campuses. The following section synthesizes a number of studies and reports on how academic librarians can implement assessment of information literacy as a learning outcome in order to participate more fully in the curriculum, and to demonstrate library value to the institution.

Information Literacy and the Campus Context

The first part of this paper reports results from a review and content analysis of 326 decennial self-studies submitted from institutions from across the country for reaffirmation of accreditation.⁷ The majority of these reports were posted publicly on institutional web sites, although the researcher also sent requests to all four-year institutions accredited by the Middle States Commission asking for access to their self-studies. Forty-three of the 326 documents were obtained through these requests.

The purpose of the study was to analyze use and context of information literacy in these self-studies to determine how institutions are responding to accreditation standards for information literacy.

The accreditation documents show that the majority of institutions are addressing information literacy in some way, with 228 (69.9%) including the term at least once in their self-studies, with institutions accredited by the New England Association of Schools and Colleges (NEASC) including the term most often. Most institutions include the term within sections of the self-report addressing undergraduate and general education. This placement suggests an understanding that information literacy competencies go beyond library research skills and are relevant and important to students across disciplines. However, a closer analysis reveals that, while the term information literacy has entered the lexicon of higher education, in most places it has not fully permeated the culture.

In most places, instruction for information literacy seems to be stalled at the undergraduate and the course level. Very few institutions discuss information literacy as part of graduate-level education, and even at the undergraduate level, not many institutions appear to integrate information literacy into disciplines and programs. Within the general education program, institutions often do not indicate where and how information literacy is addressed, instead claiming that it is a part of all courses. While this might be true, there is no indication in these cases of how instructors incorporate information literacy or whether they are assessing for it. Similarly, many of the self-studies state that information literacy is course-integrated, but they do not define what that means. In practice, course-integrated instruction could mean librarians and faculty have a conversation before a one-shot session to discuss the focus of the class, it could mean a link to the library embedded in a course web page, or it could be faculty and librarians co-teaching a course. Evidence of co-teaching or other high-level collaboration is rare, however. Instead, the majority of institutions still appear to rely on one-shot sessions to address information literacy needs.

Assessment for information literacy is at even lower levels than instruction. In all, 116 self-studies

(35.6%) indicate some assessment specific to information literacy as a learning outcome. While this number is higher than that reported in the most recent ACRL survey, in which only about 14% of participants indicated that campuses collected data regarding students' information literacy,⁸ it is barely more than one-third of the institutions that are involved in assessment for information literacy. Further, as with instruction, assessment takes place largely at the course level. Fifty-five institutions (16.9%) use tests or surveys to assess information literacy at the institutional level, with only six institutions (1.8%) offering evidence of program-level assessment.

Methods of assessment can be either direct, meaning they measure actual changes in student knowledge or abilities, or indirect, relying on self-reporting and perceptions of change. The methods of assessment included in the self-studies vary, but institutions appear to rely heavily on indirect methods. Surveys and course or class evaluations are both very popular forms of assessment. Seventy-seven institutions (23.6%) report using surveys for assessing information literacy, while 48 (14.7%) rely on course evaluations. While the data collected from such measures can be useful, they are essentially measuring students' opinions and perceptions of learning and not the actual learning itself. Similarly, a number of institutions report using focus groups or debriefings with faculty to measure the efficacy of information literacy sessions, but again these are based on perceptions rather than direct measures of learning.

In terms of direct assessment, tests and quizzes are most popular. In fact, 70 institutions (21.5%) report use of tests, only slightly fewer than surveys. While tests are a form of direct assessment, Megan Oakleaf makes the case that they are less useful or effective than other measures.⁹ Oakleaf argues that, because they often require students only to memorize and repeat information, tests usually do not measure higher-order thinking skills. Other types of assignments and projects, which require students to evaluate and synthesize information and perhaps use the information to create something new, are termed authentic or performance assessment tools. Such tools present students with an opportunity to apply their knowledge and abilities to real-world situations and thus demonstrate their learning. There are fewer examples of such authentic assessments in

the self-studies, although many institutions claim that they use course-embedded assignments, including research papers and other projects, as part of their assessment for information literacy. A handful of institutions report assessment of information literacy as part of a capstone project or portfolio assignment.

Oakleaf also strongly advocates the use of rubrics as scoring devices when implementing performance assessments. Rubrics explicitly define the intended learning outcomes and then delineate performance indicators for different levels of ability from novice to mastery. The advantage of rubrics is that they minimize bias and make scoring more consistent, while also providing students with clear expectations. In a number of ways, information literacy lends itself particularly well to assessment by rubrics. To begin with, as noted above, ACRL provides not only a set of standards, but a framework of performance indicators and outcomes that describe the behaviors and abilities of information literate individuals and that could serve as the basis for a rubric. Further, the Rubric Assessment of Information Literacy Skills (RAILS, <http://railsontrack.info>) project offers a clearinghouse of rubrics submitted by information literacy instructors. Interested users can browse rubrics by category, then download and use or adapt the rubrics for their own courses or projects. Despite this support, the self-studies show little evidence of rubric use for information literacy assessment.

Overall, the results of the nationwide study suggest that information literacy is still in the early stages of integration on most campuses. The fact that such a large majority of institutions include information literacy in their self-studies demonstrates that institutions of higher education in general acknowledge the importance of the concept for college students. However, the reliance on ad-hoc sessions coupled with the lower levels of course- and program-level integration or assessment indicates that neither information literacy nor assessment have become part of the culture on these campuses. The lack of assessment in particular is a major issue for institutions and for libraries. To begin with, assessment is crucial to the continuous improvement of teaching and learning. Unless instructors assess student progress toward learning outcomes, they will be unable to make informed decisions to improve the curriculum.

Further, assessment data is key to meeting the accountability demands of stakeholders. For academic libraries, assessment data demonstrates the library's contributions to teaching and learning and helps to confirm the value of the library to the overall mission of the institution. The next session offers an overview of how institutions can develop and implement assessment programs to overcome barriers and accomplish these goals.

Assessment and Overcoming Barriers

Librarians face a number of obstacles to integrating information literacy instruction and its assessment beyond the course and into the program level. The interviewees involved in campus-based case studies that followed the content analysis of the accreditation reports identified a number of these barriers, most of which also appear in the literature. A general lack of time, staff, and resources plague librarians, who are sometimes hesitant to try to grow their information literacy programs because they are unsure if they can sustain them with the level of budget and staff that they have. Further, librarians are dependent on faculty for access to students, and they often point to faculty reticence as a major barrier. These librarians believe that faculty are reluctant to give up class time for library instruction and often misunderstand what information literacy is and how it impacts their courses. Deans and provosts added that faculty might view information literacy as synonymous with library skills and thus outside of their specific purview. Faculty members, on the other hand, often view information literacy as additional content to cover, and most faculty indicate that they already feel that they have too much content in their courses. However, the biggest barrier to information literacy may be organizational and institutional cultures that do not support it, and a lack of leadership for promoting it and changing the existing cultures. Assessment offers librarians a major opportunity both for assuming a leadership position on campus and for influencing culture change.

One important aspect of culture is that while there is an institutional culture that describes the broad, overarching culture of the campus, different departments and offices within the institution will have their own organizational cultures that might vary from the institutional culture and from each other. In approaching making a case for information literacy, librarians must take these

different cultures into account and tailor their message accordingly.

For example, high-level administrators such as provosts, presidents, and deans, might be most interested in assessment of information literacy as it relates to institutional mission and goals, and contributes to achievement of accreditation standards. Indeed, during case-study interviews, provosts, deans, and librarians consistently pointed to accreditation standards and support or direction of the accreditation organization and visiting teams as the driving force for implementing information literacy programs on their campuses. While accreditation organizations may be reluctant to mandate specific learning outcomes such as information literacy, as noted above all six regional accreditation organizations support information literacy and include language related to it in their standards. Further, there is evidence that as accreditation organizations come under closer scrutiny by the federal government and the Department of Education, they in turn are pressuring institutions to be more explicit and specific in demonstrating how they achieve their learning outcomes.¹⁰

As such, an external impetus and support for setting and assessing learning outcomes for information literacy clearly exists. Working backwards, librarians might begin by highlighting areas of their particular regional accreditation standards that address information literacy and develop institution-specific learning outcomes related to information literacy. They might then identify existing or potential activities in which the library engages that support information literacy development. Finally, the librarians must find or craft tools to assess achievement related to learning outcomes for information literacy.

The next step for librarians is to leverage accreditation as a driving force when making a case for information literacy to high-level administrators. If librarians align library education activities with institutional goals and then assess those activities, they can use assessment data to demonstrate how library education related to information literacy supports achievement of those goals and make a case to presidents, provosts, and others that the library plays a role in helping the institutions meet accreditation standards.

In keeping with the idea of matching the message to the audience, however, librarians should note that arguments based on accreditation standards may not have the same force with faculty that they have with high-level administrators. For example, a faculty member at one of the case study institutions flatly rejected the idea that accreditation standards had influenced the development of an information literacy program on her campus, while the academic dean and the librarians saw accreditation as a driving force. In fact, Colbeck (2002) finds that external mandates can often be a source of tension for faculty and lead to resistance.¹¹ Rather, faculty seem to be more motivated by student needs and helping students achieve success.¹² Indeed, the faculty member from the case study institution asserted that her department created an information literacy course because they realized that there was a gap in students' knowledge and they wanted to address it.

With this in mind, then, librarians might want to approach faculty members with a focus on student learning and improvement. Current research suggests that faculty widely agree that information literacy skills are important to their students and, further, that students often are lacking competencies in this area.¹³ Here, again, local assessment data can help librarians make their case. For instance, librarians might use assessment data to highlight gaps in student knowledge and abilities, and to indicate how student performance improves with information literacy instruction. In cases where faculty members are not yet engaged in assessing student learning outcomes, librarians might play a lead role in introducing the concepts and practices to the faculty.

Implementing an Assessment Strategy

While the arguments for engaging in assessment, whether driven by external pressures, concerns for student learning, or a desire to further integrate into the curriculum, may be compelling, actually developing and implementing an information literacy and assessment plan can seem daunting to many librarians. In developing these plans, librarians should keep in mind that assessment is a cycle, which begins with setting outcomes and is completed when assessment data is used to inform decision making and changes for continuous improvement, at which time the cycle begins again. Megan Oakleaf (2009) identifies seven stages to the assessment cycle: review learning goals, identify

learning outcomes, create learning activities, enact learning activities, gather data to check learning, interpret data, and enact decisions.¹⁴

Librarians should recognize that there are resources and support on which they can draw for many of these steps. For instance, in setting learning goals, academic librarians can be guided by existing standards such as their regional accreditation standards, as well as ACRL's Information Literacy Competency Standards for Higher Education. These frameworks offer librarians a detailed starting point for determining what students should be learning in information literacy instruction sessions.

In order to gather data to check learning, librarians must either find or develop data collection instruments or assessment tools that will allow them to interpret evidence produced by students in achieving learning goals. In her article "Dangers and Opportunities: A Conceptual Map of Information Literacy Assessment Approaches," Megan Oakleaf (2008) offers an overview of various assessment techniques, and makes a compelling case for authentic assessment activities and the use of rubrics to score those assessment activities.¹⁵ Authentic assessment activities include projects, portfolios, and other assignments that require students to demonstrate learning, as opposed to tests that typically only ask students to repeat back knowledge. Authentic assessment activities give students an opportunity to demonstrate their abilities, as opposed to testing memory and recall. Rubrics are documents that define different information literacy competencies at a granular level and identify different levels of learning from beginner to expert for each competency. Further, rubrics have been shown to increase objectivity and reliability when grading or assessing work.¹⁶ Through an IMLS grant-funded project, Megan Oakleaf has developed a website called RAILS (<http://railsontack.info>)¹⁷ that serves in part as a repository for rubrics related to information literacy. These documents can help librarians both in setting learning goals and in assessing achievement of those goals.

While some librarians and institutions are actively engaged in assessment, not all are equally good about closing the assessment loop. Once data have been gathered, librarians and instructors

must interpret those data and enact decisions to improve teaching and learning. Evidence of student learning must be benchmarked against the original student learning outcomes to see how well students are achieving those outcomes. Where gaps are found, librarians and instructors should work together to address those gaps. Where goals are being met, new goals can be set. In this way, librarians can ensure the overall quality and continuous improvement of their programs.

Conclusion

Assessment offers librarians major opportunities for becoming more integrated into their campus curricula and for taking on leadership roles. While librarians might feel overwhelmed when faced with creating an assessment plan, many resources exist to support such work. As useful as such standards and documentation are, it is important that librarians do not rely on them solely, but involve other campus stakeholders in conversations and decisions regarding information literacy. Involving faculty members in early discussions is especially important, as it increases their awareness and understanding of information literacy and helps to build buy-in. Research suggests that faculty members who are aware and knowledgeable of standards related to information literacy are much more likely to address information literacy in their courses and to believe that information literacy is important for their students.¹⁸ Librarians at Trinity University stressed the importance of campus-wide discussions for engaging faculty and staff in the process and increasing their stake in the program.¹⁹ Such conversations allow librarians to build consensus around a vision for information literacy, and bring together a critical mass of followers willing to work toward achieving that vision. Once again, the activities of consensus building and creating a vision offer librarians a chance to take a leadership role on their campuses and influence culture changes around information literacy and assessment.

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A 2CUL Collaborative Ethnographic Assessment of Humanities Doctoral Students

Damon E. Jaggars and Jennifer Rutner
Columbia University, USA

Gabriela Castro Gessner and Kornelia Tancheva
Cornell University, USA

Abstract

This paper examines the processes taken to design and administer a collaborative ethnographic study of humanities doctoral students within an inter-institutional, collaborative framework. Project organization and management, including the creation of instruments and analysis of results across two local research teams and institutional cultures is discussed. Effective communications, among and between project teams, and time management were identified as critical factors for success. Benefits resulting from the project included an improved understanding of the needs of a key user group, a heightened interest in user assessment and data-driven decision making among staff within the partner organizations, and a deeper engagement with important academic administrators on both campuses.

Introduction

Ethnographic studies of various user groups have flourished within libraries in recent years. Most of these studies focus on planning service programs, facilities, and end-user interfaces writ large, following a foundational tenet of participatory design—that systems and tools are best designed with engaged input from their users.¹ The pioneering effort to design library spaces on the basis of ethnographic research findings at the University of Rochester, since extended to other areas of library service,² has led several academic and research libraries to ground planning efforts in similar research methodologies.

The perceived advantages of utilizing ethnographic research as a planning tool derive from observing subjects in the process of performing their work and capturing their experiences in their own

words. Partnered with data measuring actual user behavior, qualitative information gathered from interviews and observations provide a powerful tool for improving customer service and the end-user experience. While many early efforts centered on undergraduate academic work practices, more recent studies focus on the practices of “serious researchers,” a frequently used catchall denoting faculty and graduate students. Examples include case studies produced at the broad discipline level by the Research Information Network, design projects concentrated on advanced researchers,³ and efforts by scholars themselves to examine their own research workflows and the library’s role within those processes.⁴

Graduate students, and specifically doctoral students in the humanities, represent fertile ground for libraries interested in using ethnographic inquiry for service improvement and planning. Humanities doctoral students are some of the most frequent and dedicated library users, given the nature of their research programs. A number of recent studies show that these students take longer to complete their programs and drop out at a higher rate than those in the sciences and social sciences.⁵ Contributing factors are numerous and include the availability of adequate funding, prospects for employment after completion, and the quality of students’ relationships with their faculty advisors—all important prerequisites for completing a doctoral degree in a timely fashion.⁶ This intense interest in doctoral student completion and retention is underpinned by a growing anxiety about graduate education and the future of the academy⁷ which has, in turn, spawned a cottage industry of guide books for both current and future graduate students.⁸

Most research on doctoral student success does not discuss the library as a factor affecting completion or retention. In an attempt to fill this gap, the research libraries at Columbia and Cornell universities conducted a collaborative ethnographic user needs study investigating the needs of doctoral students in the humanities, focusing specifically on the question of whether the library could positively impact student success.⁹ The study was supported by grants from the Gladys Krieble Delmas Foundation, the Council on Library and Information Resources, and funding from the respective graduate schools at Cornell and Columbia. This funding covered equipment purchases, incentives for interview participants, training, and some modest staffing support for the project.

In summary, the study focused on doctoral students in the humanities at any stage of their programs. Between the two institutions, the research team conducted five focus groups with 27 participants and 45 individual interviews. Data gathered from the focus groups were used to refine the two protocols used in the interviews. Written questionnaires were developed and administered at the end of each focus group and interview session. The interviews lasted between 60 and 90 minutes and were conducted in person by teams of two library staff members, except for two interviews, which were conducted via telephone.

The study concentrated initially on students enrolled in English, religion, history and classics doctoral programs, but participation was expanded to include other humanities disciplines at both institutions. History and English were the only two disciplines to overlap and also contributed the highest number of participants. The subjects varied in age from 21 to 75 years old and their academic backgrounds and experience with libraries, archives, and academic writing ranged dramatically. Almost two-thirds of all participants had advanced to doctoral candidacy. Over half of the interviewees had earned advanced degrees (typically a master's degree) prior to starting their doctoral program.

Interviews revealed that even though there is no "typical" humanities doctoral student, there are institutional and library-related concerns that these students share and consider important in their

pursuit of advanced degrees. While interviewees confirmed the importance of other factors already identified in the literature (funding, future employment, the faculty advisor relationship), their comments on what the library does and might do to contribute to their success were of particular interest. The opportunities for libraries that emerged from the study included providing work and social space, fostering community, providing access to deep research collections, providing assistance in supporting both research and teaching, and nurturing the development of doctoral students as scholars.

The detailed results of the study, including an in-depth demographic analysis, are reported elsewhere.¹⁰ The current discussion will focus on the *process* of conducting a collaborative ethnographic study between two research libraries and student populations. The paper will examine the processes taken to design and administer the study and analyze the resulting data within an inter-institutional, collaborative framework. The project leaders identified both opportunities and challenges while completing the project, including addressing differences in institutional review board (IRB) procedures, crafting instruments, and analyzing results collaboratively, across two local research teams and institutional cultures.

Project Organization

Team Structure and Project Management

By the end of the project, a total of 22 individuals (including seven students) across both campuses had contributed in some way to the success of the study. The core research team consisted of 11 library staff members who contributed their time in addition to their regular duties (see Appendix for a listing of team members). Only the Project Manager from Cornell received a 25 percent leave from regularly assigned duties to support the study.

The Columbia team consisted of the Associate University Librarian for Collections and Services (the co-Principal Investigator (PI) from Columbia), the Assessment and Planning Librarian, who managed the overall project and the local IRB process, five staff members from across the organization, including four subject specialist librarians and a paraprofessional access services supervisor, and a graduate student Research

Assistant.

As the Project Manager for Columbia, the Assessment and Planning Librarian served as the primary liaison with Cornell. Working with the Project Manager, the Research Assistant coordinated the many daily tasks, scheduled interviews, ensured that interviewers were assigned for each interview, prepared interview materials, organized and filed interview recordings, and shared data with Cornell.

The Columbia team met routinely throughout the course of the 18-month project. Team members were recruited to participate based on their experience with or interest in user assessment, familiarity with the population to be researched, and ability to dedicate time to a long-term project. The supervisors of each team member were consulted to ensure that time would be made available to dedicate to the project without negatively impacting their primary job responsibilities. Team members were responsible for conducting interviews, data analysis, and the drafting of preliminary results. They were also asked to familiarize themselves with relevant research on the state of graduate education in the humanities (via a literature review assembled by the Research Assistant), and to complete training in ethnographic interview techniques.

The Cornell team consisted of several staff members from across the social sciences and humanities library: the library's director (the co-PI from Cornell), two reference librarians, a staff member from access services, an administrative assistant and a Reference Specialist/Assessment Analyst. In addition, two access services staff members and five students served as transcriptionists. Two members of the Cornell team had previous exposure to ethnographic research methodologies through an earlier project,¹¹ and additional participants were recruited based on their subject expertise and experience with or interest in ethnographic research. Prior to the launch of the study, team members researched the issues surrounding doctoral student success and attrition in humanities programs, collecting the research in a collaboratively maintained online bibliography.

At Cornell, the Reference Specialist/Assessment

Analyst served as the local Project Manager and primary liaison with Columbia. As at Columbia, core team members were responsible for conducting interviews, data analysis, and drafting preliminary results. The core team met weekly or more as needed, depending on the evolving needs of the project. A project wiki was created at Cornell to manage and distribute project documentation, and e-mail was relied on heavily to communicate between meetings.

The Cornell and Columbia teams met jointly a total of five times over the course of the project. The initial face-to-face meeting at Columbia included a one-day training workshop on ethnographic interviewing techniques. The four subsequent meetings were conducted via videoconference and occurred during data analysis and the drafting of preliminary results. The joint team meetings were planned by the Project Managers during numerous telephone calls and e-mail exchanges that began a full three months in advance of the official launch of the project.

Process

Institutional Review Boards

Before launching the study, both teams obtained approval from the Institutional Review Boards (IRB) at their local institutions. The teams discovered divergent IRB requirements and procedures between the two universities, probably due to the fact that the review process for Cornell's Ithaca campus does not routinely interact with human subject research for medical/clinical trials while Columbia's does. Luckily, the only significant impact of these differences was on the timing of data collection, as the study could not begin before approval was obtained at both institutions.

At Cornell, the normal procedure is to request an exemption from the IRB for library-related studies that pose no risk to human subjects and are usually considered "service improvement" activities. For this study, the normal procedure was initially followed but because of the open-ended nature of the instrument questions, an exemption was not granted.

Because many members of the Columbia team were new to human subjects research, it deemed important that the entire team complete the local

IRB training process, obtaining certification as researchers on the project. As at Cornell, the normal procedure at Columbia is to request an exemption for library-related studies. Unlike at Cornell, the Columbia team received an exemption for the study protocol, most likely due to the fact that it was decided not to include former students in the study at Columbia, thus reducing the necessary layers of review and documentation.

Training

Training in ethnographic research methods was supported by the grants and institutional funding that financed the project. The project teams from both universities received training jointly from anthropologist Nancy Fried Foster, who had worked with members of the Cornell team on a previous project (some members of the Cornell team had completed similar training earlier and thus did not participate in the workshop). The training proved valuable not only for its content but because of the successful team building accomplished across the two local teams during the workshop. For the Project Managers in particular, this was an important opportunity to meet and make a face-to-face connection after months of planning and before a year of working together intensively at a considerable distance. This training provided the requisite skills for team members new to ethnographic research and laid a solid foundation for the teams to collaborate effectively during the subsequent phases of the project.

The training was based on the goals articulated for the study, developed jointly by the two teams. Relying heavily on the protocol the teams drafted for individual interviews, the training covered techniques and best practices for conducting effective ethnographic interviews, as well as approaches for analyzing qualitative research data. Live interviews with graduate students were incorporated into the workshop, which team members found both engaging and extremely helpful in their preparation.

Instruments and Written Questionnaires

A total of three instruments were developed for the study: a focus group protocol and pre- and post-qualifying exams for the individual interviews. In addition, a written questionnaire was created to collect additional demographic, funding, and other relevant information.¹² The process of developing

these instruments was an interesting collaborative process because the Cornell and Columbia teams had different applications for the data in mind, as well as differing sets of data available about their local graduate student populations. The Columbia team was chiefly interested in gathering information about the research process for humanists within the local context, whereas significant research of this type had already been completed at Cornell. The Cornell team's goals centered on finding points of convergence between graduate students' needs and opportunities for the library to engage those needs. In the spirit of cooperation, the Cornell team graciously agreed to dedicate a significant portion of the study to gathering information in support of Columbia's goals. In the end, the data gathered in support of Cornell's goals also proved useful at Columbia.

Following a best practice in qualitative data gathering, the teams collected data from study participants using multiple approaches. A written post-interview questionnaire was used in addition to the interview protocol. A pre-interview questionnaire was initially considered, but the teams decided on using a post-interview questionnaire so as not to bias the interviews themselves. The questionnaires were administered on paper following each interview, ensuring a 100% completion rate by the participants. The questionnaires were developed from a combination of questions that each of the local teams had used previously in other assessments. For example, the Columbia team included a set of technology-usage and library satisfaction questions in order to provide context for each participant's responses. These questions were relevant to the aims of the current study, and as they had been used in other assessments could be used in comparisons between local user populations.

A subset of the two teams, led by the Project Managers, developed and edited the focus group instrument collaboratively over a period of three weeks. The teams agreed during the initial study design process that the focus groups would be used to gather preliminary data about the population being studied and to gather information to help refine the individual interview protocol. The collaborators shared documents via the project wiki and held regular conference calls to discuss how to best develop the instrument. This iterative process of development and revision

proved rigorous and engaging for those involved.

A similar process was used in developing the interview protocol, where the same cross-institutional subset of team members worked to ensure that the protocol would cover research questions and gather data useful for both teams. The resulting protocol was reviewed by all members of both teams, who provided useful perspective and feedback. The Cornell team consulted with their IRB to refine all instruments, which were subsequently pre-tested with students. As previously discussed, Cornell had conducted earlier studies gathering information about the research processes of humanists within the local context, whereas Columbia had not yet gathered this information from this particular population. Through extensive discussion, a compromise was struck on the areas to be covered in the interviews, resulting in a rather comprehensive protocol covering research processes for humanities doctoral students, as well as other environmental and behavioral elements.

Focus Groups and Interviewing

The initial plan was to conduct focus groups and individual interviews simultaneously at both institutions; but given staff schedules and other demands on team members' time, this proved impossible. Instead, the Cornell team conducted focus groups a month ahead of Columbia and shared initial results and suggestions for refining interview questions. Similarly, individual interviews began at Columbia a month ahead of Cornell, with both teams completing interviews by a mutually agreed-upon deadline.

At both institutions, focus groups and individual interviews were conducted by team members in pairs, with one person facilitating the focus group/interview and another taking notes with a laptop and an audio recorder. These audio recordings were subsequently transcribed by staff members at Cornell. The Project Managers kept both teams apprised of the focus group and interview schedules via the wiki, posting updated information as this phase of the project progressed.

At Columbia, recruitment for the individual interviews was a collaborative effort between the Graduate School of Arts and Sciences and the local Project Manager. Administrators from

the Graduate School sent recruitment e-mails to doctoral students in target departments, alerting them to the opportunity to participate in the study. The Columbia team also placed fliers requesting participation in high-traffic locations throughout the campus, which turned out to be an effective recruitment tool. At Cornell, recruitment for the focus groups and interviews also relied on e-mail invitations sent to students in target departments. Recruitment was facilitated by close collaboration between the Cornell PI, department chairs, and administrators from the Graduate School, who encouraged students to participate. The Cornell team also used invitational fliers posted throughout key buildings on campus, but this method did not prove to be as effective at Cornell as at Columbia.

Transcription

Undergraduate students at Cornell transcribed the audio recordings of the focus groups and interviews using the Start-Stop Universal system. The time initially budgeted for transcription was significantly underestimated, and the two students hired for the project was expanded to five. Later, two Cornell library staff members were diverted from other duties to complete the task. Given the large number of transcriptionists and potentially uneven work product, the Cornell team closely reviewed and revised the transcripts in pairs before coding began.

Coding

Again, a cross-institutional subset of the local teams, led by the Project Managers, worked collaboratively to develop the codebook and procedures for analysis of the approximately 900 pages of transcripts that resulted from 45 ninety-minute interviews. A grounded-theory approach was utilized to analyze the transcripts and develop the codebook.¹³ Four team members read each transcript independently, developing a preliminary code structure and definitions. Team members then came together to share their work and debate the most appropriate, practical coding structure, considering the original research questions posed for the study and local goals for applying findings. From this exercise, a codebook was developed, providing the agreed upon coding structure, definitions for each code, and examples of a statement describing a code for some complex cases. Instructions were also developed, so that all team members would use a consistent approach for

coding the transcripts.

Although the teams considered a variety of software packages for coding, such as atlas.ti or NVivo, due to cost restrictions (project funding did not cover the purchase of software for all team members tasked with coding), the time necessary to train team members in these software packages, and computer hardware considerations (eight individuals on the Columbia team were using five different computer operating systems), the team chose a coding approach using Microsoft Word, developed at the Brown University Library.¹⁴

To ensure inter-coder reliability, two-person teams coded each transcript. Each member of these teams would read and code a transcript independently; then the two would come together to compare codes and collaboratively decide on a final coding. Each coded transcript was compiled into a single Microsoft Word file, and the aggregate of these files was used to create a Master Index document. The Master Index allowed team members to discover, via the coding structure, quotes from any transcript with a specific code, conveniently compiled together.

Analysis and Writing

Members from the Cornell and Columbia teams paired up for the analysis and writing phases of the project, despite some initial questions about working across organizations from a distance. This early hesitancy gave way to productive working relationships, and team members enjoyed working with their colleagues from the partner institution. These pairs were assigned a set of themes, for which they would analyze the raw data using the Master Index produced in the coding phase of the project. Each pair was responsible for drafting a section of the report, outlining findings and recommendations, which the larger group then reviewed, discussed, and edited.

Tools

The Columbia and Cornell teams used a variety of tools to communicate, facilitate collaboration, and gather and analyze data over the course of the project. Some tools were used only in a local context and others were supported for team members on both campuses by one of the partner institutions. Tools important to the successful completion of the project included:

Wiki—Cornell provided a Confluence (Atlassian News) wiki to support the project. Guest accounts were created for the Columbia team, which enhanced overall communication and enabled all project documentation to be stored and shared in one location. The wiki served as both a document repository for both teams, aggregating IRB protocols, meeting minutes, draft questionnaires, etc., and as the main communication vehicle for the project, providing project timelines, interview schedules, team member information, and status updates on difference phases of the project.

Telephone and e-mail—The Project Managers communicated almost daily via e-mail and held weekly meetings via telephone. Conference calls for larger groups were used frequently throughout the project, especially when sub-teams needed to come together. Sometimes it is the simple technologies that facilitate the frequent, open communication that build the trust and understanding that make a collaborative project work.

Video conferencing—The Cornell and Columbia libraries had invested in video conferencing systems (Polycom HDX 7000 series) to support the larger 2CUL collaboration. The teams were able to utilize these systems during the analysis phase of the project, coming together to discuss the data as a full group. Team members at both institutions were initially skeptical about the quality of interaction that would be possible via video conferencing but were pleasantly surprised by the experience. After a series of icebreakers facilitated by the Project Managers, the teams felt comfortable, and the meetings were productive and engaging.

Microsoft Word—Unexpectedly, the teams used Microsoft Word to code the interview transcripts. While several team members had previous experience using software packages such as NVivo or atlas.ti, it was not possible to acquire one of these packages for all team members due to the financial, time, and technological constraints previously mentioned. Instead, the team successfully used the indexing function in Microsoft Word to code the transcripts, following an approach previously used by colleagues at the Brown University Library.

Audio recording & playback—Audio recorders

(Olympus LS10 Linear PCM) were used to record focus group discussions and individual interviews by both teams. The audio quality produced by this equipment aligned with project needs, and thus optional external microphones were deemed unnecessary. The goal was to create crisp, high quality reproductions of every interaction, so the recorders were augmented with flash storage cards to support large file sizes (Kingston 8GB Micro SDHC Flash Cards). Anticipating the need to review hundreds of hours of audio, Samson SR850 Professional Studio Reference Headphones were purchased for both teams. To ensure technological compatibility, the Cornell team purchased and distributed all equipment for the project.

Data backup—Audio recordings were burned to DVD, and data from Columbia was sent to Cornell for transcription. Both teams purchased external hard drives to save all data gathered from the project, which was stored in accordance with local IRB requirements.

Video tutorial—The Columbia team employed a video tutorial, created in Camtasia, covering proper coding procedures. While this proved an effective training method at Columbia, team members were not able to successfully share the tutorial with colleagues at Cornell because of file size restrictions on the project wiki.

Transcription software—A Start-Stop software system was utilized during transcription, enabling the transcriptionists to pause recordings with a foot pedal, freeing their hands for uninterrupted typing. This system substantially speeds the transcription process.

Google Calendar—The Columbia team used Google Calendar to schedule interviews, ensuring that both an interviewer and note taker were available for each interview. Each team member had access to the project calendar and was able to accept or reject appointment invitations.

Citation management software—The Cornell team used a citation management application (RefWorks) to manage and share a bibliography and articles relevant to the project. A direct feed from RefWorks to the project wiki ensured up-to-date information available to both project teams in

one location.

Successes and Challenges

Any discussion of the relative success of conducting a collaboratively managed assessment of this scale must start with acknowledging the importance of clear, flexible, and constant communication, especially between the Project Managers. The ability of the Project Managers to effectively negotiate potential points of conflict between the teams' goals and work styles was crucial. Project Managers were empowered by the co-PIs to make daily operational decisions, which enabled an easy flow of communication and positively contributed to maintaining the project's momentum. Daily e-mail exchanges and weekly phone calls kept the information flowing and both teams informed of the project's progress.

The positive, supportive working relationship modeled by the Project Managers spread to and across the project teams as the project progressed. Team members at both institutions were almost uniformly engaged and responsive. Successful completion would have proven difficult if team members had not been fully committed to the project's goals and flexible in how those goals were to be met. An important example of this operational flexibility was the extent to which the teams employed various technologies to work at a distance. Collaborating via technology worked much better than expected, and team members from both institutions reported enjoying the experience.

While ultimately considered a worthwhile activity, the project required a substantial time commitment from team members from both institutions. This was time away from their routine job functions, so clear communication with supervisors about the time commitment on the part of the Project Managers and co-PIs was critical. In fact, one team member was unable to meet the time commitment and was released from the project after a discussion with his supervisor. As the activities comprising ethnographic assessment represent a new type of work for many library staff members, the initial comfort level and skill sets of team members varied widely. It was important for project leaders to recruit team members with an active interest in and a proclivity for both qualitative assessment and working collaboratively.

As the project progressed, time management became increasingly important. The Project Managers performed well in terms of keeping local teams focused and on task. But as with most projects, more could have been accomplished with more time on task, especially during the data analysis and writing phases. Project leaders and team members alike commented on the need for more time to analyze and discuss data before drafting results; and in retrospect, more time should have been allotted for those tasks, given the added complexities of collaborating across distance and organizational boundaries. As discussed earlier, the process of transcribing the massive corpus of interview transcripts took much longer than anticipated. Looking back, project leaders would consider outsourcing this task to a professional transcription service rather than relying on student workers, ultimately augmented by support staff diverted from their normal duties.

Conclusion

The overall project was judged a clear success by the administrations from the libraries and graduate schools at both institutions. Much was learned about humanities doctoral students and their research behaviors, and the results from the study were used on both campuses to improve services and launch new initiatives targeted at this user population. Results were used at Cornell to plan and implement a pilot immersion program for humanities graduate students and at Columbia as impetus to relocate the graduate student teaching center within the library, among several other initiatives at both universities.

The immersion of a large number of library staff members in such a project, supported by high-quality training, and followed by visible outcomes based on the study's results, has deepened interest in and enthusiasm for user assessment and data-driven decision making within the partner organizations. In this sense, the project was a positive, effective vehicle for staff and organizational development. In fact, following the completion of the project, library leaders and staff on both campuses actively discussed extending the study to other disciplines, possibly in the sciences or the social sciences. Thus far, this post-completion zeal has been tempered by the reality of how time consuming and staff intensive a project of this type can be.

Of most importance strategically, the execution of the project and resulting service improvements facilitated a deeper engagement not only with an important user group but also with local academic leadership, most notably department chairs and administrators within the graduate schools on both campuses. The conversations enabled by the planning and reporting phases of the project offered invaluable opportunities to position the library as an effective partner in addressing issues affecting students and faculty on both campuses and across the broader higher education sector. Project leaders began this process answering questions from academic administrators and potential funders about why the library was concerned about the broader issues surrounding student success. At the end of the project, the libraries at Cornell and Columbia emerged with not only an improved understanding of an important constituent group but also better positioned as active, visible contributors to solving the difficult problems their parent institutions face in fulfilling their research and teaching missions.

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Appendix: Research Team

Columbia	Cornell
Amanda Bielskas, Team Member	Gabriela Castro Gessner, Project Coordinator
Yogesh Chandrani, Research Assistant	Michelle Hubbell, Team Member
Jim Crocamo, Team Member	Tanjina Islam, Transcription
Fadi Dagher, Team Member	Antonio James , Transcription
Victoria Gross, Research Assistant	Tiwonge Kayenda, Transcription
Damon Jaggars, Co-PI	Rob Kotaska, Transcription
Alysse Jordan, Team Member	Deb Muscato, Revision
Jennifer Rutner, Project Coordinator	Susette Newberry, Team Member
John Tofanelli, Team Member	Dilara Ozbek , Transcription
Jeremiah Trinidad-Christensen, Team Member	Deborah Schmidle, Team Member
	Sana Siddiqui, Transcription
	Kornelia Tancheva, Co-PI
	Jill Ulbricht, Administrative Support

Increasing the Impact & Value of a Graduate-Level Research Methods Course by Embedding Assessment Librarians

Kirsten Kinsley and Rachel Besara
Florida State University, USA

Abstract

Two assessment librarians provided instruction on the interviewing and transcription process, along with a hands-on research data collection and management experience to graduate students taking a research methods course. This study explored whether the hands-on approach would enhance what students learned about the research process. At the end of the class, the librarians analyzed the content of eleven students' reflection papers on both the interview and the transcription experience. The professor's reflections on the effects of this approach were also included. Themes that emerged from the students' reflections were organized according to context, affect, procedures and process. For both the interviewing and transcription processes, students focused most heavily on the procedures: preparation, paperwork, equipment and tools. Their experiences with recruiting live participants to interview in a campus science library evoked the most anxiety, and the most reported struggles were with the process of transcribing audio files. For a few students, their reflections took them beyond learning the technical skills needed with research and into the higher order process skills having to do with analyzing, evaluating, and reflecting on how it would impact their future research or professional endeavors.¹ Both the students and the professor expressed that the hands-on activities and skills gained was an overall positive experience and seemed to give the students more confidence to apply those skills to their own research projects or to their professional work in the future.

students was introduced to this study as a faculty participant. As she heard about the study's background, she realized that many of her interior design graduate students had research projects that were looking at the interaction between space and behaviors, much the same way as the libraries' ethnographic study.

In addition, the interior design professor realized that the research methods she was teaching her students intersected with the ethnographic research methods and topics being used and studied by the librarians. Upon meeting the librarians, she also realized that they had something to offer her students, and so a faculty-librarian collaboration was formed between Dr. Ransdell and the two librarians to pilot a unique learning opportunity for the students in her Interior Design research methods course. The plan was that the librarians were invited to teach students how to conduct interviews and transcribe. Each graduate student in the class was then assigned to join an assessment librarian when going out into the field to interview subjects. Following the interviews, the students were invited to the librarians' office to transcribe the interviews they conducted. Dr. Ransdell saw a unique opportunity to collaborate and integrate her learning objectives to get students involved in some real research while they were also learning about it in theory. The librarians saw this as an opportunity to recruit "volunteer" researchers to help collect data for their study.

Background

Two librarians at the Florida State University Libraries were conducting a user study using ethnographic interviewing techniques and were looking for subjects from each of the departments on campus to recruit for their study. A professor, Dr. Ransdell, at Florida State University, who taught a graduate-level research methods class for Master's-level and MFA-level Interior Design

Methodology

Librarians taught two class sessions:

Librarians sought and received approval to a revision made to their IRB study document to include the graduate students in this class to be research staff in the ongoing ethnographic study. As research staff, they were required the same level of confidentiality and training as the other staff involved in the study. Once that IRB revision

was approved, librarians gave two in-class training sessions in the spring of 2012 on ethnographic interviewing and transcription techniques.

Students' Hands-on Experience:

Following the in-class training session provided by the librarians on conducting the ethnographic interview, students were required to take a human subjects certification training online and sign a confidentiality agreement prior to going out to interview. This was followed by a live-recruiting session in the science library where graduate students were assigned to observe and take notes while a librarian modeled recruiting and interviewing a study participant. Immediately following that, the graduate student switched to the roles of recruiter and interviewer while the librarian took notes. The librarian then gave feedback to the student about their interview. The students were then asked to write a reflection paper about their interview experience.

Secondly, students attended a brief class transcription training session taught by the librarians followed by an appointment to the FSU Libraries' Assessment office to transcribe their interviews. Following that experience, they were asked to write a reflection paper about the transcription process.

Content analyses of the reflection papers were conducted to determine what students learned about the research process from having hands-on research methods experiences that were taught and modeled by assessment librarians. The analyses involved two steps. First, both librarians individually read the interview and transcription papers of the eleven students and wrote down important quotes and themes that centered on both processes. Second, the librarians organized these quotes and themes into four major codes:

Context, Affect, Procedure, and Process (C-A-P-P) Coding

- **Context**=descriptive, facts of what, where, and when
- **Affect**=words that describe their feelings, emotions, attitudes, and expectations
- **Procedure**=how the research was done and data collection: recruitment methods,

equipment, and tools used (e.g., descriptions of recruiting subjects, note-taking, IRB & confidentiality, conducting the Interview, tools, protocol, modeling)

- **Process**=represents their thinking about the process, analysis, synthesis and evaluation of the research process. For example, a reflection on concepts such as sampling and interpreter bias.

As part of this analysis, the professor also wrote a reflection paper on the collaboration with the library and her perception of its impact on students' learning about the research process. Student evaluation forms at the end of the semester were an additional source of information about whether the hands-on experience enhanced their learning of the research experience.

Results

Interview Reflection Analysis

Most students reported both interviewing (nine out of 11 students) and transcribing (all but one out of 11) as positive experiences overall. It is important to note that students in the class were each in a different track in the program, which impacted how they viewed the experience and how they could apply it in their unique track of study. Students in the graduate interior program at Florida State University are classified into one of four basic tracks (with some exceptions, such as a returning student getting her Interior Design Master's degree) in the program which influences the level of research needed to complete the program:²

1. **1st Pro:** Master of Science 1st Professional in Interior Design is a student getting a master's degree in Interior design with no undergraduate degree in interior design or architecture. In addition, no thesis or project is required (exceptions are those students getting a second master's).
2. **4+1** students is an applied or practice degree which requires them to write a literature review.
3. **MFA Project:** Master's in Fine Arts Project Base students are required to create a project.
4. **MFA Research:** Master's in Fine Arts Research Base conduct original writing and research and are not required to do a project.

Table 1: Interview Reflection Themes, Keywords, & Quotes

Student	Librarian Rater One	Librarian Rater Two
Master's	How to approach people Getting people to talk Tools Hands-on: "Integrating technical knowledge with application."	Recruiting Experience Refocusing Process Theory & practice together
MFA Research	Recruiting (Interviewing a stranger; finding a person to interview; "felt daunted")	Daunting Recruiting Sampling Recording/process Experience — "helpful"/"interesting"
Was 1st Pro—Now MFA Research	Recruiting Anxiety Rejection	Anxious Rejection Nervous Date: [Recruiting is like "picking up a date."]
MFA Research	Live recruiting—scared incentive Procedure: informed consent Follow-up questions Leading questions Process—enthralled: "actually enjoyed the process"	Scared of recruiting IRB Informed consent Follow-up questions Procedure Intimidating—exciting experience
Was 1st Pro—Now MFA Research	Recruiting Note taking IRB	Recruiting Notes IRB
4+1—MS ID degree Project	Follow-up questions Recruiting Not as bad as they thought it would be	Nervous Follow-up questions Helpful experience
4+1—MS ID degree Project	Did the assignment and thought it could not apply to applied Master's track—learned that she could employ interview questions with clients Modeling	Wording/Questions Nervous Recruiting Experience good, though at first was skeptical
MFA—Research/Project	Two [interviewers] is better than one Recorder Practice Follow-up questions	Two better than one Note taking Not nervous Follow-up questions Experience

Student	Librarian Rater One	Librarian Rater Two
1st Pro	Conducting interview Self-evaluation Protocol Tag Team interviewing=pressure on interviewee Follow-up questions	Self-conscious Protocol Follow-up questions Two questioners good for her but not subject?
1st Pro	Recruiting—rejection Confidentiality agreement Sampling procedure (bias) IRB Great experience to see how interviewing works	Confidentiality statement “silly” Recruiting Nervous/Turned down Bias IRB
Returning ID degree	Confidentiality Procedures Questions—Redundant Formulating good questions important	Confidentiality Procedure Forming Questions Learned

In summary, the student themes culled out by both librarian raters seem to be about recruiting strangers as a “daunting” prospect, prompting many of the students to comment on nervousness and anxiety because of the fear of rejection by potential study participants. Many students also seemed to focus on interviewing protocol and procedure, such as taking notes, recording procedures, filling out an IRB, asking follow-up interview questions and the understanding confidentiality issues. Higher order reflections about the research process in general seemed to be about topics such as: sampling bias, formulating good questions, and about the helpfulness of putting theory and practice together. A “4+1” student who was not required to do a research project was at first skeptical that the interviewing exercise could really help her. By the end of the exercise, she was able to think about transferring the interviewing skills learned during this research project into the workplace in order to more effectively interview future clients.

Inter-rater Coding of Interviews: Context-Affect-

Procedure-Process C-A-P-P Coding

Both librarians re-read the reflections and did additional coding using the C-A-P-P codes that they had identified as capturing the overarching themes in the student papers. By coding in this way, they wanted to confirm their initial perception that students were focusing more on context, affect and procedure than on “process,” which represented the “higher-level” learning in their writing. Each time the coder perceived that a part of the text or idea fit into one of the four codes, it was counted.

- Context=descriptive, facts of what, where, and when
- Affect=feelings, emotions, attitudes, and expectations
- Procedure=how the research was done, data collection: recruitment methods, equipment and tools used

Process=represents their thinking about the process; analysis, synthesis and evaluation of the research process

Table 2: Frequency Counts for Inter-rater Interview Reflection C-A-P-P Coding

Student	Context Rater 1	Context Rater 2	Affect Rater 1	Affect Rater 2	Procedure Rater 1	Procedure Rater 2	Process Rater 1	Process Rater 2
Master's	0	1	0	0	6	4	2	3
ID degree MFA research	1	3	5	5	3	6	1	5
Was 1st Pro now – MFA Research	3	3	8	6	1	3	1	1
ID degree – MFA Research	2	2	7	4	7	7	1	3
Was First Pro – Now MFA Research	2	2	2	1	4	3	0	1
4+1 – MS ID degree project	1	1	3	2	6	4	0	1
4+1 – MS ID degree project	0	1	1	1	6	5	0	2
ID degree MFA – Research/ Project	1	1	1	1	4	5	1	3
1st Pro	1	4	2	2	2	2	0	1
1st Pro	1	3	5	3	4	3	2	3
Returning ID degree	1	1	2	1	3	3	1	3
Total	13	22	36	26	49	45	9	26

As seen the totals from the frequency count above, a discrepancy between raters, especially with coding for “Process” is evident. One librarian perceived more higher-order learning. Most rater agreement centered on how much students wrote about interview procedures and around their perception that students wrote a lot about their feelings about interviewing process.

Themes & Selected Quotes of Student Reflection Papers on the Transcription Process

The same rating procedure for the interview papers was utilized for the transcription papers. The same two librarians wrote themes and quotes that seemed to be most prominent and then used the C-A-P-P coding system to tally the frequency of overarching themes.

Table 3: Themes, Keywords, and Quotes from Transcription Reflection Papers

Student	Librarian Rater One	Librarian Rater Two
Master's	Procedure Tools Tough Did not feel comfortable Difficult: transcribing while listening Listening again and again Background noise Thankful/Good experience/informative class	Tools Listening Experience Too much to hold in mind at one time
ID degree—MFA research	"Harder part of the process for me" "Dreading whole thing" Self-attribution: nerves, paranoia, trouble remembering Procedure Distracting voices difficult "... experience truly a mind opener. . ."	Too much to hold in her mind Having a hard time distinguishing speakers Good experience overall Difficult Perfectionist
Was 1st Pro, now MFA Research	"Type and type and type. . . I could not keep up" "This was going to be harder than I thought." Did not like the sound of own voice Developed method to transcribe Transcription "is a beast" Get transcribing software	Too fast talking Too much detail Don't like voice
ID degree—MFA Research	First step was to understand equipment Procedure/tools Favorite gadget=foot pedal "Cringed" when hearing own voice Couldn't make out mumbling Transcription less glamorous than interviewing Tedious Stressful "... worried that I would miss the true intention of the participant. . ." "Practicing this skill would be handy for my own thesis project. . ."	Tedious Stressful Equipment Don't like voice
Was First Pro—Now MFA Research	Past experience as file technician helpful Foot pedal was good for efficiency Proud that they did not interrupt interviewee Commented on speaking patterns	Foot pedal/equipment Lack of interruptions when she interviewed Bad grammar stands out Subjectivity difficult to eliminate

Student	Librarian Rater One	Librarian Rater Two
4+1 — MS ID degree project	Hard exercise Commented on how long it took Hard to hear Crosstalk Inaudible sections Repeated sections to hear was frustrating Awareness of own speech patterns Overall exercise useful	Took a long time Instruction Self-aware of speech patterns Hard to hear
4+1 — MS ID degree Project	Eye-opening experience Foot pedals helpful Embarrassed by own voice Quite a bit of work Time consuming	Equipment (foot pedal) Awkward speech Time Experience created more awareness of research process
ID degree—MFA Research/Project	Background noise Tools Interviewees soft voice How they'll do it in the future Interviewee behavior (talkative or not) "Experience extremely valuable to me"	Equipment (program) Hard to hear Background sound Experience
1st Pro	Context Equipment Excited and anxious Inaudible sections Length of time it took Pedal vs. Media Program	Concentrate difficult (lack of sleep night before/hungry) Equipment Tedious Time!
1st Pro	Tools/software Critique of voice and differentiation of different female voices difficult Language/Communication What is actually said vs. what is interpreted by transcriber Interpreting general atmosphere beyond just what is being said Self-evaluation of communication Crosstalk Recommendations to improve process Do interview in quiet space Great to see how transcription works	Use of language Hard to hear/discern voices Communication Experience: "... it was a great experience to see how transcribing works."
Returning ID degree	Procedure Pedal/Tools Difficulty hearing/background noise Media player filtered background noise Difficult to transcribe every single sentence Subject on recording seemed different than in person—missing visual cues/body language Informative experience Pay someone who is faster to do it	Hard to hear Use of language Loss of information Experience of both interviewing and transcribing recommended for future research methods students.

Student Transcription Reflections & Themes:

All students but one reported that they learned something and that it was a positive experience. Again, as with the interviews, the two authors

were the librarian raters who subjectively counted the number of times students focused on four main C-A-P-P areas: context, affect, procedure and process of learning:

Table 4: Frequency Counts for Inter-rater Transcription Reflection C-A-P-P Coding

Student Program	Context	Context	Affect	Affect	Procedure	Procedure	Process	Process
Masters	1	1	3	1	3	5	0	0
Interior Design Degree—MFA Research	1	1	11	4	6	4	1	4
Was First Pro—MFA Research	3	3	2	1	3	3	2	3
Interior Design Degree—MFA Research	2	1	9	3	5	5	1	1
Was 1st Pro to MFA Research	3	3	1	1	3	3	1	2
4+1 MS ID degree project	0	0	8	2	4	3	0	3
4+1 MS ID degree project	1	1	2	1	3	6	0	1
ID Degree—MFA Research Project	1	2	0	1	6	3	0	3
First Pro	1	5	6	2	6	1	0	1
First Pro	2	1	5	3	8	6	1	8
Returning ID degree	1	3	0	0	5	4	1	2
Total	16	21	47	19	52	44	7	28

According to the two raters, students commented most about the procedure and tools used during the transcription process. Some students preferred the foot pedals except when the foot pedal software did not seem to filter out background

noise. Students remarked on how they perceived the interviewee differently when they heard the recording than when they actually met the person for the interview. They understood that what they observed in-person added more

meaning and context to the audio interview during transcription. For example, one student remarked that they remember that the subject smiled a lot during the interview, but when she listened to the transcription the subject seemed more serious. Physical cues or body-language subtext can be “lost in transcription.” Though most students commented on the difficulty of this exercise because of the equipment/software or the time-consuming, tedious nature of the work, most seemed glad to have had the experience.

Student Perception of Teaching S-P-O-T Forms Feedback on Hands-on Experience

At the end of the semester as a standard practice for FSU students, they fill out what are called S-P-O-T forms, which stands for Student Perception of Teaching. On the comments section of the form, only three students directly mentioned the hands-on research portion of the course. All three comments seemed to validate the value of the experience:

- A 1st Pro (who does not have to do a research project to graduate) wrote: “This class changed the way I think about research and I would like to do some in the future.”
- “The interviewing and transcribing ‘exercise’ with the research librarians was very helpful and interesting.”
- “I most enjoyed the hands-on experience of working with the library research team. I found this experience helpful and extremely unique.”

Discussion

Consistency of Inter-rater agreement in Content Analysis

Using the C-A-P-P coding frequencies revealed the differences in inter-rater perceptions of higher-order learning, and it was difficult to get a consistent assessment to some aspects of learning in student reflective papers (Dyment and O’Connell 2011, 81–97). The definition of the C-A-P-P code “process” was not clearly defined and equally understood by the practitioners due to differences in discipline backgrounds.

For example, rater one had a tougher time distinguishing between process as procedure and vice versa. Rater one was much less likely to code anything as higher order learning unless a specific research methods term, such as “social

desirability,” “sampling” or “response” bias, was used in the reflection. This means that rater one did not rate higher order thinking even if the student was in the early stages of reflecting on some process at a higher level, such as when one student remarked that a tag-team interviewer approach, where one of the librarians asked follow-up questions not on the script during the interview, may have put pressure on the participant. Though the student was beginning to think about response bias, they did not use specific terms or elaborate upon it. Therefore, the reflection was not coded as process. Rater one also rated more heavily on affect (28 point difference) due to a background that gave her a deeper understanding of affective issues in learning and development.

Rater two appeared to rate more process learning for both interviewing and transcribing. Rater two had a theoretical understanding of Bloom’s Taxonomy and used that to inform her content analysis. She was perhaps more aware that evaluative, analytic and synthesizing comments revealed higher-order/process learning, instead of only looking for actual research methods constructs or concepts as rater one was apt to do. This seemed to lead her to code more “higher-order” process learning (Sousa 2006) than rater one. This may be why the rating of the student reflections on the code called “process” was different between the two librarians. Rater two was also not as sensitive to affective expressions as rater one was, just as rater one was less sensitive to phrases that indicated engagement in higher level learning.

Overall, librarian rater agreement seemed less in alignment with the transcription analysis, especially with affect and process. Both raters had the most agreement with procedure for both interviewing and transcription. When frequency count unit differences between the raters were considered, it became clear that units being counted were not consistent for both raters. For example, one rater would use words or phrases as a unit to be coded while the other might use a couple sentences or a paragraph as a counted unit. This contributed to a broader point spread among raters, and is something that must be addressed in future coding measures of this type.

Further, raters need to discuss more fully their theoretical approaches before beginning

content analysis. Rater two drew heavily on her understanding of the learning process based on Bloom's Taxonomy, and rater one drew on her background on the impact of effect on experiences. Both librarian raters discovered the differences in the other's approach as the content analysis revealed the scoring spread. The rating probably would have been more even had they discussed their underlying schema before coding.

Summary of the Professor's Reflections

The professor, Dr. Ransdell, seem to reflect back a good summary of what the student generally reflected in their papers. She commented that it would have been good to have given the students an opportunity to "see the data through" to analysis and to have a chance for them to look for themes and key elements presented to them in the interviews. See Appendix A for the full text of the professor's reflections on the course.

Practical Implications and Value

Practical and sustainable benefits from this symbiotic, embedded course collaboration are evident. Librarians received free and motivated assessment labor with twenty-two interviews completed in approximately two weeks. The students benefited from having an applied learning experience and in fact, in some cases, "research-based course experience promotes the development of higher-order research skills."⁵ The professor got the benefit of integrating theory taught in the classroom with the application taught by the librarians in the field. Librarians could become embedded in the instruction of research methods courses for multiple disciplines, especially in the social sciences. As consultants providing "real-life" ethnographic experiences, assessment librarians can broaden library instruction from teaching information gathering and synthesis, to teaching data collection and project management skills for individual research projects, thus increasing our value to the overall teaching and research mission of the university.

Students did not have to fill out the IRB or prepare survey questions. They did not have to do any project management and have to have any of the tools necessary to proceed so they could just focus on the process of interviewing and transcribing itself. This benefitted them because they appear to have gained confidence about the research process,

especially with interviewing. Hearing the fresh perspectives of the students about both processes of interviewing and transcribing helped the librarians to appreciate anew the struggles and the benefits of ethnographic research. They confirmed and made them conscious once again about their own latent feelings about what might improve process and procedure, such as purchasing transcription software. It refreshed both librarians' understandings about issues such as sampling bias, equipment and transcription limitations. How often do we as practitioners reflect on the process of doing research with such a level of introspection (not only about the procedures and process, but about our feelings while doing the research process itself)?

How might these reflections change our practice?: Deliberate Debriefing with Students After Each Activity

Learning how to collect data for research is rather like learning how to ride a bike. At first the learner is so focused on basic skills like balance, pedaling, steering and breaking it can be difficult to avoid the potholes in the road and think ahead about the best route to take. Just so, in gathering data, students seemed more absorbed in the procedure, handling forms, following scripted questions, and handling incentive paperwork, than in thinking of some of the higher level procedural issues, such as sampling bias and formulating further questions. This is an area where the librarians have a chance to scaffold the instruction and help the students not only get an idea of procedure but to move into higher-level process reflection and learning.

Without planning ahead of time, the librarian and student would often have a discussion after the interviews about what the student experienced during the interview process. It often resulted in the librarian encouraging the student to elaborate on some of the student's initial impressions in their reflection papers and for the students to think more broadly about the research process. When librarians deliberately debriefed the students after the interview data collection process about "higher order" topics, the students seemed to reflect it in their papers. In the future, the librarians will deliberately come up with some questions or structure for the discussion after the interview or transcription exercises to help move the students beyond the technical procedural concerns and into broader process thinking. Perhaps that will result

into more students reflecting about higher order research process skills? In addition, introducing students to the analysis phase of the data, as suggested by the professor, might have also provided them the opportunity to learn the higher order scientific process skills.

Assessment librarians can play a vital role in teaching students how to conduct research, by offering hands-on, real-life research experiences to those taking research methods in different disciplines. The assessment librarian benefits by having invested in free labor of those motivated to do well in their class. Students did not get a try all aspects of a research project from start to finish, but did experience a snapshot of data collection procedures and some of the protocol (such as informed consent forms) that are necessary for research endeavors. They did not have to develop an IRB, methodology, develop a hypothesis or questions, or analyze results, but experienced much of the data collection process.

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Endnotes

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Appendix A: Professor's Reflections

The librarians wrote some questions for the professor of the course to reflect on:

1. How effective do you think having the hands-on activities of interviewing and transcribing was for your students in learning ethnographic research techniques? What was your overall impression on what students learned from these activities and lectures?

The hands-on activities were very effective for the students. In class we were discussing interviews techniques and interview questions through examples of research, but to have the experience really made the student understand the importance of an interview and preparing for a good interview. The transcription activity was great because the student was able to revisit their interview and analyze the information they were able to produce during the interview.

2. Based on the reflection papers (about interviewing and/or transcription), were there any themes expressed by the students that stood out to you?

One common theme was how nervous they were to approach someone for the interview. Most also expressed how much more comfortable they felt about approaching someone for an interview after the experience. They seemed to understand the need for preparation for an good interview and transcription experience. Some students talked about how hard it was to transcribe because they had to capture everything they heard. I think they were amazed at how a quick interview can turn into hours of transcription. Because of this they understood that prep time up front would pay off in the end.

3. Will those themes influence how you will teach this course in the future?

Yes - I think that this is a social skill and competency as well...something that the students could not gain from just a lecture based activity on interviewing and creating interview questions. I would like to look at ways to integrate experiences with other data collection methods...pilot test their survey and run descriptive statistics on the data...create behavior maps through observation...We talk about these but rarely engage the student in the complete activity of collecting and analyzing data.

4. Were there any aspects to interviewing and transcribing methods that the students' did not seem to understand as a group?

Some were not too happy about this...especially our first and post - professional masters students. Their MS degree did not require that they write thesis or engage in original research. At first they seemed to feel like it was an exercise they just had to do thinking they would not learn from it because they did not plan to conduct interviews for data collection like the MFA students. I think they eventually understood that this was a valuable experience for everyone because good interviewing can benefit them with their design clients. Good interviewing can extract the needed information from their client in order to deliver the correct design solution. As a group I think they understood the process as a whole.

5. Where there any aspects doing ethnographic research methods that the students did not experience that would have been helpful?

I think it would be beneficial for the students to actually see how the transcription is analyzed to pull out common themes. This could be very valuable for them to see the data through. This could really help them understand what they were able to find out from their interview...as a researcher they could begin to understand how you deal with and categorize data.

6. Any other thoughts?

I think this was a great experience for the students. Both of you made them feel comfortable when they were so nervous during the interview process. I think this is a major factor in the success of their experience. Also the upfront information on the study and why you were doing this was necessary for the students to understand the context of the interview.

Student Information Seeking Behaviors: A Case Study in Collaboration

Allyson Washburn and Sheila Bibb
Brigham Young University, USA

Abstract

A collaborative project between the Harold B. Lee Library at Brigham Young University and the Department of Anthropology focused on the use of ethnographic methods to complete a study. Using this background, this article will discuss the cooperation between the Anthropology Department and the Library. As the project developed, multiple collaborations were identified and accessed. These collaborations included both teaching and library faculty, combined with the use of students, both as researchers and as study subjects. The article will also address the practical application and value of using the ethnographic method as an assessment tool and the advantages of coupling this with collaboration in order to obtain a well-rounded perspective. Using the Student Information Seeking Behaviors (SISB) project as a case study, a critical examination of the methods used, the results obtained, and the ongoing commitments resulting from this collaboration will be shown. The focus will be particularly on the identification and inclusion of stakeholders, the use of peer review and response, the goodwill generated and the positive results obtained. Finally, a look to the future, to new projects, new ideas and new collaborations will be described.

Introduction

Have you heard librarians happily discussing the use of ethnographic methods to study their users, and wanted to attempt a similar project, but lacked the manpower, financial resources, or basic skills necessary to do it successfully? In this article we will explore ways in which these limitations were overcome by embarking on a series of collaborations. As an introduction to this idea, consider this scenario: following a successful project to establish in general terms how students use the Harold B. Lee Library (HBLL) at Brigham Young University (BYU), the library decides to undertake a further study to determine more exactly how students go about completing a

research assignment. In order to do this a second collaboration is proposed between the Department of Anthropology and the Library. Under the direction of their professor and the Assessment librarian, students from the Applied Anthropology course are the main designers and researchers for the project.

Brigham Young University is a private, coeducational, residential university with an annual enrollment of approximately 30,000 undergraduate students, 2,000 graduate students, and 1,200 faculty. The HBLL, a member of the Association of Research Libraries (ARL), is the sole university library for BYU students on the Provo campus, with the exception of the independently operated law school library. All library functions and resources, as well as subject discipline areas, are spread throughout the six floors of the building. One small branch library, located at an off-site continuing education center, serves 1,600–1,800 students and 180 faculty, but was not included in this study. The library administration supports a rigorous assessment program in order to improve library spaces and services.

During 2009, the library administration made a decision to move older print periodicals (which were also available in electronic format), to a remote storage area on the bottom floor of the library. Doing so opened up a large area of the periodicals room to be used for other purposes. The planned move provided an opportunity to ask students how the area should be reconfigured. The Foster-Gibbons¹ study of similar efforts at the University of Rochester was the impetus for seeking a collaboration with an anthropologist. In a recent article, Gilman and Kunkle² recommend that collaborations begin by “identify[ing] logical partners with shared values/missions/goals and interest in meeting those needs.” In this case, an interaction with an anthropology professor at a

library-sponsored new faculty luncheon yielded that logical partner. The assessment librarian and the anthropology faculty met, discussed the project, and agreed to collaborate on a study that led to the first of several collaborative projects. This paper will discuss specific collaboration efforts in our second collaborative project and their benefits to the library, the professor, the anthropology students, and the BYU student body at large.

Literature Review

As early as 1999, Kotter³ compiled a literature review of faculty-librarian collaborations which stressed the need to improve relationships between librarians and faculty. Much of the more recent library literature on faculty-librarian collaborations focuses on several common types of partnerships/collaborations such as composition or research instruction (Kenedy and Monty;⁴ Campbell and Cook;⁵ Bennett and Gilbert⁶), collection development (Shen;⁷ Horava⁸), and course integration (Owens and Bozeman;⁹ Dewald and Harvey;¹⁰ Kobzina;¹¹ Little, et al.;¹² Shepley¹³).

Additionally, the literature addresses strategies for working with faculty. Anthony¹⁴ stresses the need for collaboration with faculty, arguing that, "library outreach. . . may result in higher levels of advocacy, collaboration, and collegiality." Ellison¹⁵ advocates a "non-threatening" and collegial approach "for working with faculty" and according to Harvey and Dewald,¹⁶ librarians wanting to collaborate with faculty should "proactive[ly] and aggressively pursue opportunities to partner with faculty. . . to support new paradigms in active, student-centered, collaborative learning."

Methodology

Given this background and the agreement reached with the Anthropology Department, we now turn to the methods used to facilitate this collaboration, specifically the use of ethnographic research methods.

The Ethnographic Method

Before going into detail regarding the use of this method and the value of collaboration, it is essential that we clarify exactly what the term "ethnographic method" means. For much of the research associated with libraries, there is a great reliance on the collection of data in the form of

statistics usually gained by keeping a count of the number of instances a particular service is used or the number of patrons using the services. In other words, much of the research is empirical or quantitative. The research gives a good idea about numbers and usage, but falls short of explaining the reasons behind the numbers collected.

In contrast, the ethnographic method relies far more on finding explanations or answers to the questions posed by the purely empirical data. To do this a variety of methods such as interviews, focus groups, the keeping of journals or diaries, photographs, mapping, pile sorts, or free-listing are employed, often along with some type of survey. In each of these instances, the aim is to give participants the opportunity to not only tell the researcher how they feel about the focus issue, but to add other comments and explanations which put all the results—qualitative and quantitative—into context. An example of this occurred in one study¹⁷ we conducted which indicated a need to have more electrical outlets for computers as evidenced by various statistical results. To all intents and purposes there seemed to be plenty of outlets. This complaint did not make sense until we were able to talk to the students and find out why there was a problem. It turned out that many of the existing outlets were not functioning and many of those which were working were not positioned where they were actually needed. By understanding this, and the actual needs of the students, the library was able to respond positively and use limited resources in an appropriate manner.

An obvious drawback to the ethnographic method is its demanding nature in terms of time and personnel. While an online survey can be distributed to thousands of students at the click of a button, an in-depth survey will take at least 20 minutes and involve one, maybe two, researchers. So while a survey may produce hundreds (perhaps thousands) of responses, an interview is going to produce a comparatively small number—maybe 100 but probably less. The same is true of other ethnographic methods. Producing a representative outcome can therefore be problematic and would seem to speak against this form of research. However, this is where the phenomenon of "triangulation" comes into play. Above I have listed six different methods of collecting ethnographic data. If each one includes a particular aspect, comment or result, then the fact that we

obtained it from more than one source starts to verify the result. Taking as an example the outlets issue referred to previously, if it were only an issue for those being interviewed then it may not be an issue at all, but rather a reflection of a badly worded question or a bad interviewer. However, if each of the methods indicates that there is a problem with outlets, then the chances are high that there really is a problem. It also means that while 60 interviews might not be statistically relevant, 300 answers (interviews + focus groups + journals + pile sorts + mapping + photographs) may well be very relevant and may even come close to the quantitative results. Indeed, arguably, the working together of the various methods is the first 'collaboration' we find.

Collaboration

As mentioned before, the ethnographic method is labor and time intensive and this can be a major problem for some libraries. However, this is where collaboration really comes to the fore. The collaboration between the anthropology professor and the assessment librarian addressed in this paper was not the first attempted collaboration between the HBLL and university faculty. A prior study completed by marketing students from BYU's business school was requested by the library. The study was carried out entirely by the students, under the guidance of their professor, with no involvement of library students or personnel. The results were presented during a meeting of the HBLL's Public Affairs committee as a PowerPoint presentation with a written report.

Collaboration #1—The Library and the Anthropology Department

The first authentic collaboration of the library with the Anthropology department resulted in a study of undergraduate library use, focusing specifically on a reconfiguration of a large space in the library. Students in the Applied Anthropology course were divided into six groups, each being supervised by either the anthropology professor or the assessment librarian. Each group was assigned a different methodology and was responsible for recruiting subjects, gathering data, and analyzing it. Written reports were submitted to the anthropology professor. Both the anthropology professor and the librarian reviewed the data and conclusions reached and then compiled them into a final report presented to the library's Administrative Council.

Collaboration #2—Identifying Stakeholders

A second collaboration involving a follow-up study of Student Information Seeking Behaviors (SISB) was launched in the fall of 2010. Once the librarian and the professor agreed to collaborate on the SISB study, the next collaboration to develop was the identification and inclusion of stakeholders. The major stakeholders included were the library administration and the anthropology department. The library approved the study, including the approval of the assessment librarian's time to attend class meetings and purchase needed supplies. A small stipend was also approved for the professor. Additionally, the statistical officer's time was donated to speak to the class about surveys and sampling, to help the survey group to construct their instrument, and to analyze the resulting data. The anthropology department agreed to let the professor conduct the study and approved the needed time, including time to assist in the write-up and presentation of the project's findings. A third group of stakeholders were the students in the Applied Anthropology course. The students were invested in the project because it was part of their grade for the course. In order to earn that grade, they studied methodologies and applied them in carrying out their assigned portion of the study. These three stakeholders were crucial to the success of the study and as York, Groves and Black¹⁸ state, "each party had an equal stake in the outcomes of the projects: students were interested in making a good grade and seeing their visions fulfilled, while the library was interested in the results of the projects for internal planning."

Collaboration #3—Anthropology professor and Librarian

The librarian and the anthropology professor met several times before the semester began to plan the approach and to choose the ethnographic methods the students would use. From this initial planning, a series of collaborations developed naturally as the project progressed. As Kenedy and Monty¹⁹ explained, "The collaborative process begins with the faculty member and librarian working together both inside and outside of the classroom and continues in terms of both working with students formally and informally during and after class."

The collaboration on the SISB study met the related needs of two campus units, the library and the anthropology department. The assessment librarian needed candid information from students

and the faculty member wanted an authentic project for the Applied Anthropology class. The project met the librarian's aim to discover what students thought should happen with the space in the Periodicals room. It also met the professor's goal for an authentic project for the Applied Anthropology class because of the needs of the library's assessment unit. Prior to the collaboration anthropology students had planned a project but never had the opportunity to execute it. This project gave them that opportunity and accomplished the professor's intention of engaging students in active learning as defined by Kenedy and Monty:²⁰ "Purposeful learning is activity-based in terms of students applying what they learn through completing assignments or specific tasks related to the assignment. It is a planned and conscious form of learning that emphasizes student learning by connecting transferable skills to course content."

Collaboration #4—Librarian, Statistical Officer, Students

Further collaborations with the library involved the assessment librarian, the library's statistical officer and the anthropology students. During the first class meeting, the librarian was given an opportunity to speak to the students, to introduce the project and explain the library's need for their help. The goals and opportunities inherent in the project were articulated and questions from the students were addressed. During the methods section of the course, the statistical officer was invited to speak to the class to teach basic survey construction and sampling methodology. He also made himself available for consultations with the students as they were building a survey and then performed the statistical analysis of the survey data collected.

Collaboration #5—Library employees and campus faculty

A portion of the SISB project involved interviewing faculty about student research assignments. The objective was to determine if faculty expectations and student expectations were congruent in terms of what was required for a research project. One of the methodologies utilized by the students was to interview their peers about what they thought their professor's expectations were regarding the assignment. In order to ascertain the faculty perspective, library employees were recruited to interview the faculty professors. Both the

anthropologist and the librarian felt that faculty would react more favorably to being interviewed by a peer. This activity initiated collaboration between the librarians and the teaching faculty. In order to procure the cooperation of the faculty, library subject liaisons were asked to e-mail their faculty describing the project, asking if they would be willing to participate in an interview. Those faculty who responded were interviewed by pairs of library personnel. During the course of the interviews, the interviewees provided not only answers to the questions posed, but also contributed information of interest that would help subject liaisons and the library to better meet their needs.

Collaboration #6—Professor and other faculty colleagues

One last collaboration with the professorial faculty developed after the data collection was completed by the students. In the data gathering phase, students were recruited and asked to keep a paper research diary of all activities they participated in and how much time they devoted to each activity in the research assignment. Although the anthropology students faithfully made contact with and sent regularly scheduled reminders to the participants, they were not able to collect enough data to enable the professor and the librarian to interpret or draw conclusions. The professor contacted several colleagues on campus and requested permission to have their class members keep an online research diary during the following semester. The faculty members agreed, and so collaboration was generated with both the professors and the students keeping the diaries.

Discussion

In order to demonstrate the type of results obtained from this study, we are now going to reference a section from our report of the SISB study²¹ and show how the collaborations helped us get these results. What follows is a discussion of issues identified in the study. Results obtained from the various groups participating in this study identified some common issues that surface for all students regardless of gender, class, or methodology employed.

The picture of a typical student research process looks like this: students do as little as possible on the assignment until about three days before

it is due. They panic when they are unable to find what they need for their papers. Normally they speak to at least one other person who they consider knowledgeable. This could be a professor, an upperclassman in the same major, or a library employee, but seldom is it a subject librarian. When it comes to finding sources, rather than trying to find the best sources, they will follow a trail, often acquired from Wikipedia or a Google Scholar article, trying to make the sources "fit." If they are not invested in the paper, meaning it's an assigned topic they are uninterested in, they typically look for the first ten sources and "make it work." Additionally, when looking for resources, students are generally unaware of those that are less convenient to use, i.e., materials that are confusing or require an investment of time to learn how to use. Students did note that one reason for using the resources they do is that they were usually a gateway to other sources. Students exhibit heavy use of online resources, often ignoring those that would require them to consult a paper document, whether it be a book or journal.

A significant discovery is that the total of those who did not know about subject librarians and those who did but had not used them was 80%! Findings from other groups indicate that students are not aware of subject librarians unless someone else tells them, that they were only mentioned as a source of getting help three times in the interviews, and that students do not know where they are located or how to contact them. When we examined the combined results we learn that one of the most valuable resources for research is not even a consideration. Also of interest in these findings is the low use of the Writing and Research Lab, a resource that could be of great benefit to students engaged in research.

Naturally, there are some major frustrations which students experience while carrying out this process, one of which is the process for accessing online articles using the library website. Too many options leading to anxiety about where to start and what to use, along with the "*steep learning curve*," thwarts student desire to use the web page. These findings provide an understanding of why students are more likely to begin their research with a Google or Wikipedia search. The convenience, the simplicity of the interface, and the accessibility of information on Google and Wikipedia, even though these sources are not

always the most scholarly, frequently trumps library-provided sources of information. Students gravitate to retrieval mechanisms that do not require extensive user training, even though they know the library sources will provide more credible information. Comments indicated a reluctance to invest the time necessary to learn these skills. Implications include continued student use of Google and Wikipedia due to the confusion experienced when trying to use the library website or locate journal articles.

Online sources (including e-books, if available) are highly favored by students because they are immediately accessible from any location. We have also seen that for many students the idea of using print copies of books or journals is considered "old-fashioned." This suggests a need to not only encourage the use of e-books but to ensure that these can be easily accessed and resolve any other issues relating to them.

Even though many of them attended instruction sessions during either their English 150 class or in an Advanced Writing course, they had not subsequently used the skills enough to feel comfortable researching a paper. This problem is also exacerbated by the large number of students coming in with AP scores high enough to bypass the library instruction as freshmen. Another dimension of this problem, over which the library has no control, is the lack of a university requirement regarding when students must take both Writing 150 and Advanced Writing courses.

Another frustration for students is that they do not feel like they know how to use the library effectively. Previous comments about the difficulty of using the website, locating physical materials in the library, and the ineffectiveness of the library tour all contribute to this feeling. Students feel that the current efforts to help them learn where things are in the library, specifically the library tour, are totally ineffective. They exhibited strong negative feelings when discussing the tour, indicating that it goes over their head, they don't remember any of it, or they just do it to get it done without really paying any attention to where they are or the information about the area.

Although the library offers many services and resources that could help them, students are

either unaware of them, do not want to embarrass themselves by asking for help with things they “should already know,” or do not have the time to seek them out. Further, students have problems identifying the relevant person to ask. If students ask for help, they have positive feelings about the tenacity of library employees to find what they need. However, there is a perception on the part of the faculty interviewed that librarians need to teach students how to research a topic, find books, and actually locate materials in the library. From the students’ point of view, professors were also major sources of help. Some devote class time or office hours to teaching students how to locate scholarly sources, but others expect them to learn these skills from librarians. Others collaborate with subject librarians to teach students what resources are most helpful, and one professor even loans personal materials to students.

Faculty feel that students do not write well, partly as a result of not knowing how to find and appropriately use scholarly sources in their papers. Heavy use of online sources contributes to this feeling. They believe students should use their subject librarian and attend formal library instruction sessions. Additionally, they expect that students should know or have been taught how to research topics and produce well-written papers prior to their course. Furthermore, they express a need for the library to market its services and resources more effectively so that students will take advantage of them.²²

Findings in this study were duplicated and/or confirmed by all student research groups, so we are confident that the conclusions drawn from them represent valid student input that can be extended to the student body as a whole. The results obtained will assist the library to examine relevant resources and services involved in the research process and understand what students value so that the library can prioritize future improvements or plan approaches to increase student’s knowledge of particular resources. Those findings that are candidates for improvement or need a stronger awareness campaign can also be identified and acted on. Furthermore, this information is invaluable as direction for further informing teaching sessions, service at reference desks, and strategic planning.

The insights gained from this study relied heavily on the collaboration between the library, the professor, and students of the anthropology course. Further contributions were made by the library employees who interviewed campus faculty and the professors who permitted the student study group to recruit students during class time and to explain the research diaries. Being interviewed by one’s peers encouraged frank responses from both students and faculty. Without the peer-to-peer response, the information would not have been as forthcoming or as authentic.

Conclusion

The collaborations initiated and developed during this study have many benefits for the professor, the anthropology students, the teaching faculty and the library. The professor finds it much easier to teach proper research skills when students are required to undertake a real project. The spin-off from this is a much higher degree of involvement and enthusiasm among students and a growing realization that the bounds of Anthropology are very flexible and inclusive.

In our experience, the students learned methodologies and conducted a study before embarking on their fieldwork, which will give them a head start and improve their effectiveness in that experience. They specifically learned about library services and resources of which they were previously unaware. One of the objectives of the Applied Anthropology course²³ is to “introduce students to career options outside academia.” Student researchers learned skills that would be helpful in various professions (not just anthropology) and gained experience that will be helpful in their future careers.

The professors benefitted by having a chance to reevaluate their interactions as well as their students’ interactions with the library. They also received opportunities to think about how they might encourage and promote the use of resources and services that the library provides. They asked questions of the library staff about various library services that were important to them and received useful answers in return.

The library benefitted from the candid responses of study informants as well as the suggestions and recommendations the student researchers made

in their reports. Another benefit, articulated by York, Groves and Black,²⁴ is that “participating in classroom projects with students gives the library a more central role in the academic process on campus. The library staff become active participants, not just suppliers of texts and technologies.” This benefit is a step toward the library becoming more involved in student learning.

The multiple collaborations involved in this study generated future goodwill across campus. Professors were pleased that the library was interested in hearing their perspective. The anthropology professor gained a resource for authentic class projects. Students conducting the study have shared information they learned about the library with their peers and are more aware of and appreciative of the library’s efforts to improve the facility and its services. The library now has credible data about student research processes to inform its strategic planning, and it has gained a better understanding of faculty perspectives regarding the library.

Another result of the SISB study is our ongoing commitments to continue this line of research. Since the original study the library and the anthropology course collaborated on, two additional studies, the SISB and a Library Information and Dissemination study have been completed. Both the library and the anthropology department understand the benefits of this collaboration for learning about and improving the library’s relevance to students as they learn and complete assignments. As we look to the future, another collaborative study will commence in the fall of 2012 and will be part of a year-long space utilization study, the results of which will inform future area redesigns and remodeling in the library. A required General Education (GE) class has requested and received permission to establish an office for their Teaching Assistants (TA) in the library and will be commencing service during fall semester. This is a new collaboration for the library and will undoubtedly generate new ideas about how the library can be more closely aligned with student learning in that course in particular, but also in new collaborations with the Teaching Assistants and the GE Department. An evaluation of that partnership is scheduled for fall of 2013 and will most likely involve the anthropology course. In short, the various collaborations across campus

have resulted in a greater knowledge about, and understanding of, library usage together with strengthened ties between the stakeholders and a desire to work towards a continued improvement in both services and relationships.

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Ithaka S+R's Research Support Services for Scholars: A Disciplinary Approach to Creating Innovative Library Services

Matthew P. Long and Roger C. Schonfeld
Ithaka S+R, USA

Abstract

This paper describes the methodology of Ithaka S+R's Research Support Services for Scholars program, a multi-year study of the information services needs of researchers. The program consists of a series of discipline-specific projects, each of which focuses on the unique needs of scholars who work in a given field. Past studies of researchers' needs have yielded insights into their workflows and publication practices, but they are more often descriptive than strategic; rarely have they led to the identification of new services that libraries can offer or strategic recommendations about how they can prioritize their offerings. Ithaka S+R has designed this research program with an explicit focus on creating a plan for libraries of the future (as well as other support services providers) to offer services to meet the evolving needs of faculty members.

The methodology and specific focus of each project within the Research Support Services program will vary, but the primary research for each will consist of qualitative interviews with service providers and researchers. In addition, some of them will include surveys to confirm the findings of the interviews and test concepts for new services. Ithaka S+R will complete the first two disciplinary projects, which focus on the fields of chemistry and history, by the end of 2012.

Introduction

The Research Support Services for Scholars program provides a framework for a number of discipline-specific projects that Ithaka S+R plans to undertake to study the needs of researchers. These disciplinary projects will explore the information services that scholars receive from a wide variety of sources, including research libraries, campus information technology, scholarly societies, publishers, and others. In each discipline, Ithaka S+R hopes to shed light on the kinds of information services that can be provided to support scholarly

needs at two different levels: at the *campus* level, where the projects will identify future roles for the campus library, and at the *network* level, where they will identify services that can be provided centrally by scholarly societies or other organizations. The goal of this series of projects is to bring a user-centered product development approach to the creation of new information support services for scholars through deep dives into the needs of scholars in individual disciplines.

There are three major hallmarks to the Research Support Services for Scholars program's approach to exploring research support opportunities for the "library of the future:"

- The projects that make up this program take a scholar-centered and holistic approach to assessing researchers' needs; they take into account the research support that scholars receive from a wide range of sources both locally and at the network level, rather than focusing on only those services offered by a particular provider such as their campus library or IT organization.
- The goal of this program is not only to qualitatively assess the value of existing services offered by a range of providers, but also to consider unmet scholarly needs that could suggest new tools and services that might advance scholarly productivity in each discipline and could be offered at either the local or the network level.
- Despite the pull of interdisciplinarity on many scholars, this program is fundamentally structured around field-specific investigations. Based on our own previous research as well as our understanding of research performed by others, we believe that methodology and domain focus, along with disciplinary culture, have a far greater impact on practices and needs than do other factors like age, career stage, or institutional affiliation. This program seeks to learn about the patterns in the needs of

scholars in a given field broadly, divorced from individual or local idiosyncrasies.

Individual disciplinary projects will yield intelligence on specific opportunities for libraries and cross-institutional organizations to better serve scholarly needs in a given field. In the longer term, we plan to synthesize the findings from the different disciplinary research projects in order to offer guidance for libraries and other research support organizations. Although we hope to find some common services or service models that will have value across multiple disciplines, a broader goal of this program is to help libraries and other research support organizations contemplate how they can move away from providing “one size fits all” services and towards a model of offering a more differentiated set of services that reflect the different needs of scholars in different fields.

Ithaka S+R is close to completing work in its first two discipline-based studies, in the areas of history and chemistry. Both projects will be completed by the end of 2012. The history project, which has a special focus on the application of digital humanities research techniques by historians, was funded by a Digital Humanities Start-Up Grant from the National Endowment for the Humanities. The chemistry project, which is being conducted in partnership with the Joint Information Systems Committee, will focus on chemists in academic settings in the UK. Both completed reports will be made publicly available on the Ithaka S+R website.

Understanding Scholars' Needs

Researchers who measure the impact of research libraries have registered broad shifts in the way that scholars use the library and the declining value that they place on many traditional library services. Traditionally, the campus library played a natural role as a nerve center of the university, providing essential support to scholars and students seeking to identify, access, and make effective use of needed scholarly materials. Many faculty members have found significant value in their newfound ability to use network level discovery tools and full-text digital scholarly works (especially journals and reference works, but increasingly often also including scholarly monographs) to discover and access needed materials directly from their desks, seemingly independent of the library.¹ As a result, while faculty members have come to value the

library as a licensor of access to these network level digital resources, the value of the services their own library itself adds to their work has, in their assessment, declined.²

Large-scale surveys of faculty members and other information creators and consumers have been conducted by a number of organizations, including Ithaka S+R. The Andrew W. Mellon Foundation provided funding approximately ten years ago for CLIR/DLF, HighWire, and JSTOR (now a service of ITHAKA) to study faculty members and in some cases students.³ Subsequently, Ithaka S+R elected to continue the Faculty Survey on a triennial basis, providing a valuable tracking franchise for the scholarly community. The Ithaka S+R Faculty Survey has shown the growing support for a format migration in scholarly journals, the changing value proposition of the academic library towards a purchasing agent and away from a gateway/discovery role, the central importance of visibility for one's research in selecting an academic journal in which to publish, and more.⁴ But while surveys can offer significant value in describing current practices and highlighting trends, raising questions and hypotheses about potential future directions, they cannot indulge the open-ended examination of new directions that is necessary to specify how services should be refined is limited.

Other recent studies have taken a more qualitative approach to assessing information services needs and practices in individual scholarly fields. For example, in 2007, JSTOR commissioned Ithaka S+R to create a series of disciplinary studies, including one for history, which were designed to help it understand how faculty needs were developing, especially in terms of the balance of content types and formats for scholarly communications.⁵ At around the same time, Berkeley's Center for Studies in Higher Education launched a massive multi-year project to examine scholarly practices and incentives in archaeology, astrophysics, biology, economics, history, music, and political science, using an interview-based methodology.⁶ For example, the Research Information Network has also taken a close look at several different broad areas of research (life sciences, humanities, and physical sciences) and conducted case studies within each of those areas. The Life Science Case Studies Project, for example, took the source and type of information scholars were creating and

using during the course of doing their research, combined with interviews with scholars, to create flow maps of the discovery and scientific processes. The study concluded that there was a need for increased communication between libraries and researchers generally, and that in the life sciences there is a demand for more data curation services and technologies.⁷ RIN's study of the humanities identified broad changes in the way scholars conduct their research: "A key change in humanities research over the past 10–15 years has been the growth of more formal and systematic collaboration between researchers."⁸ However, the report's authors also found great barriers to the use of new technologies for humanities research, and it identified several barriers to adoption of these techniques. Another recent project, by Carl Lagoze and Theresa Velden, thoroughly reviewed available digital resources in chemistry, including journals, databases, electronic lab notebooks, data repositories, etc. It found gaps in scholarly communication in the field and recommended a more intensive use of online resources to allow chemists to share data and results.⁹ The study demonstrates the value of a disciplinary approach even in the sciences, which have experienced an explosion of interdisciplinary approaches in recent years. But while these rich qualitative explorations provide significant insight into the life cycles of information in a variety of fields, they offer little in the way of concrete advice for how—or if—local information services can best serve these scholars.

In the context of such good research on the changes transpiring in individual fields, several projects are underway to develop models or plan scenarios for the future of the academic library. For example, in 2009, a partnership of UK organizations—including JISC, the British Library, RIN, and RLUK—launched a program on Libraries of the Future, focused on long-term scenario planning for higher education.¹⁰ And in 2010, the US-based Association of Research Libraries (ARL) is launching a similar program on "Transforming Research Libraries," including scenario planning for the future of the research library and a series of reports about the emerging roles of academic libraries, such as digital curation and repository services, documenting successful initiatives such that other libraries can consider implementing similar services.¹¹ Relying heavily on the experiences and perceptions of the library community, these projects may prove to have significant value to library strategic planning

to maintain relevance and position on campus but they are, methodologically, focused on the library's role rather than on users' needs.

Research Methodology

Ithaka S+R is building on the reports mentioned above, with a joint focus on *discipline-specific needs* and *actionable recommendations* that libraries can integrate into their service models. In each project, Ithaka S+R uses a multiphase research approach to identify gaps in research support services and then propose new local- and network-level services that will serve unmet needs. While each project varies slightly in its scope and methodology, most of them are based primarily on interviews with a large number of research support professionals and scholars with diverse research interests at a broad range of institutions. The phased methodology allows for the incremental development and testing of new ideas over the course of the project.

A major component of these projects will be a series of interviews, conducted both over the phone and when feasible face-to-face. Each project includes interviews both with research support professionals and with scholars themselves. The interviews with research support professionals will include librarians, campus-based IT providers, technologists in special research centers (such as digital humanities centers), representatives of publishers and scholarly societies, lab technicians, and providers of innovative technology solutions. These interviews focus on the services that they currently provide to faculty members, and how and when faculty members take advantage of those services. These front-line service providers provide valuable perspective on how the needs of researchers are evolving, and provide context for interviews with scholars, which have a much broader scope and address questions such as:

- How do researchers in the discipline approach research topics when they are searching for information?
- How do they manage their research notes and data?
- How do they collaborate with their students and with other scholars, both in their discipline and across disciplines?
- What library collections and services do they use, and how and when do they use them?
- How do they interact with others in their field, both through informal publication and informal communication?

- What role does their scholarly society play? Does it provide any important services to them?

In some of the projects, Ithaka S+R then uses surveys to test concepts for specific new services that might help scholars increase their scholarly productivity. In the survey phase, scholars respond to specific questions about how valuable each proposed service model would be. The use of multiple methodologies provides a number of key advantages. The qualitative interviews are based on an interview guide, but they allow for more wide-ranging conversation about a range of information services. The researcher can focus attention on his or her area of unique needs; for example, one scholar may struggle with data management while another might have a need for a new platform for open access publishing. Even within a discipline, workflows and methods can be wildly different from person to person, and the interview approach allows for a consideration of this diversity. On the other hand, in the survey Ithaka S+R will be able to quantify the strength of the trends observed in the interviews. In addition, the concept testing methodology will create specific data about the needs for information services that can be acted upon by libraries, technology providers, publishers, and scholarly societies.

Ithaka S+R has made an effort to engage with the research community throughout the course of each project, and it will continue to take this approach with future disciplines. Each project has an advisory board made up of a diverse group of leaders in the field from backgrounds in research and teaching, scholarly societies, funding agencies, and publishing that help to guide the research priorities of the project.

Our experience in the history and chemistry projects has led to a number of changes of emphasis in the research methodology. First, these projects have reiterated the importance of site visits. We have found that observing researchers' workspaces is an important part of understanding how they manage their physical and digital research materials. Second, the scoping of projects to a single discipline has proved somewhat challenging, even in fields like chemistry and history, both of which have a strong professional identity. Scholars' work is increasingly

multidisciplinary and collaborative, and they share research methods across traditional disciplinary boundaries. Ithaka S+R will consult with experts in each discipline and carefully define the scope of future projects, in order to ensure that they take into account the appropriate cross-disciplinary connections.

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Notes

1. In 2009, only about 20% of faculty members surveyed in Ithaka S+R's 2009 Faculty Survey reported starting their research process at either the library building or their library's online catalog; almost 80% of faculty indicated that they start at either a general-purpose search engine or a specific electronic research resource. Roger C. Schonfeld and Ross Housewright, "Faculty Survey 2009: Strategic Insights for Librarians, Publishers, and Societies" (Ithaka S+R, April 7, 2010), <http://www.sr.ithaka.org/research-publications/faculty-survey-2009>.
2. Ibid.
3. Amy Friedlander, *Dimensions and Use of the Scholarly Information Environment* (Washington, D.C.: Digital Library Foundation and the Council on Library and Information Resources, 2002).
4. Roger Schonfeld and Ross Housewright, "US Library Survey 2006," Ithaka's 2006 Studies of Key Stakeholders in the Digital Transformation in Higher Education, August 2008, <http://www.sr.ithaka.org/research-publications/library-survey-2006>. Schonfeld and Housewright, "Faculty Survey 2009: Strategic Insights for Librarians, Publishers, and Societies."
5. See especially Rebecca Griffiths, Michael Dawson, and Matthew Rascoff, "Scholarly Communications in the History Discipline," August 2006, available at <http://www.sr.ithaka.org/research-publications/scholarly-communications-history-discipline>.
6. Diane Harley, Sophia Krzys Acord, Sarah Earl-Novell, Shannon Lawrence, and C. Judson

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7. Research Information Network, *Patterns of Information Use and Exchange: Case Studies of Researchers in the Life Sciences*, November 2009, <http://rinarchive.jisc-collections.ac.uk/our-work/using-and-accessing-information-resources/patterns-information-use-and-exchange-case-studies>.
 8. Research Information Network, *Reinventing Research? Information Practices in the Humanities*, April 2011, <http://rinarchive.jisc-collections.ac.uk/our-work/using-and-accessing-information-resources/information-use-case-studies-humanities>.
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 11. "Transforming Research Libraries," *Association of Research Libraries*, <http://www.arl.org/rtl/index.shtml>.
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Telling the Story: Library Assessment for University Leadership

Martha Sites, Donna Tolson, and Anda Webb
University of Virginia, USA

Introduction

Academic libraries typically have few opportunities to present a comprehensive picture of their operations, successes, and challenges to top University administrators, so it's important to make the most of them when they arise. At the University of Virginia, a new budget submission process for the 2012–13 fiscal year provided this opportunity in the form of an expanded budgetary narrative that framed each university unit's budget request around strategic goals and the resources needed to achieve them. In addition, all deans were offered the opportunity to present their unit's budget overview to the Provost, Executive Vice President and Chief Operating Officer (EVP/COO), and a small group of budgetary VPs.

This opportunity was especially welcomed because the President, Provost, and EVP/CFO were all new to the University of Virginia. Teresa Sullivan took office as the new president in 2010, ending an unusually long period of leadership stability: the 20-year presidency of John Casteen with Leonard Sandridge as EVP/COO. Both men were U.Va. graduates and had worked most of their careers at the University. They had a long and deep acquaintance with the University Library and were strong supporters of its programs. With previous appointments at the University of Texas and the University of Michigan, President Sullivan was well-acquainted with the issues of public research universities but completely new to U.Va. By the fall of 2011, she had hired a new EVP/COO and a new Provost, both from peer institutions in other states. For the first time in a generation, we had completely new leadership with no background or previous connection to U.Va.

Our immediate goal was to welcome these new leaders, and to give them a sense of our current operations, our successes, and our most pressing challenges. Along with the deans of all the schools, the University Librarian reached out to the new leadership personally, inviting each of them to visit our spaces and to speak to our staff. All three made

visits to an all-staff meeting, and the University Librarian met regularly with the Provost, but the opportunities for sharing much about our organization were limited by the many demands of their busy schedules. The best opportunity to share more extensive information about the Library's mission, strategy, and issues came during the budget process.

New Financial Model

Of primary importance to Sullivan's new administrative team was the development of a new internal financial model based on responsibility center management (RCM). Unlike the existing budget, which was based on historical allocations and centralized control, President Sullivan called for a new model that "emphasizes transparent decision making, incentive-based allocations, and prudent stewardship of the University's resources."¹ The goal of the model is to "decentralize authority and accountability for resource planning. . . empowering and increasing the self-reliance of schools and other major units."² As a non-revenue-producing unit, the Library would continue to need financial support from other units, either through direct payment for services or through a central allocation process.

Although the new model was only in the early planning stages and the budget allocation system had not changed for the FY2013 budget, the submission process had changed. Units were asked to submit a narrative on their strategic direction and link their operating expenses to their strategy. Portions of the submission narrative would be posted on a public website; not only did this provide full public access to each unit's submission, it meant that schools and major units of the University would have access to each other's strategic goals and budgets. For the first time, each dean presented her budget request to the Provost, Executive VP/COO, and a small number of administrative staff from the budget office,

offering further opportunity to answer questions and provide context for our story. This process gave us a valuable opportunity to tell the story of the Library, and acquaint our new leadership with our goals and issues.

A further motivation for providing substantive context around the Library budget was the realization that academic deans understood little about how the Library is used by the faculty and students of the University. Most were unaware of major services outside the traditional access to information resources, and some did not understand that the Library provides most of the online resources that scholars use in their offices and labs. As schools began to consider how they might manage the acquisition of services from other units with their revenues, they focused on frugality and perceived need; all centralized services from information technology to human resources to the library were viewed with an eye toward supporting only those services their school “used.” It was crucial that we do a better job of communicating with them about the services needed by their faculty and students.

Key Points to the Story

We hoped to accomplish several objectives in the budget submission and presentation. First, we wanted to paint a good overall picture of library services, and the costs associated with them. For years, school and unit budgets had been itemized simply into costs associated with personnel (salaries, wages, and fringe benefits), costs other than personnel services (OTPS, in U.Va. jargon), and the occasional major facility project. Internally, we separated out the cost of purchasing and leasing collections, but for University purposes collections were folded into OTPS costs. While these breakouts make sense to the human resource and budget offices, they do nothing to illuminate the actual services provided by the Library, or what it costs to provide them. Our first step was to develop a better way to describe the actual cost of services to the University community.

A second objective was to emphasize the different constituencies that use the Library and the corresponding diversity of services required. We expected the new leadership to have a straightforward but somewhat one-dimensional notion of what libraries are for: providing faculty

and students access to the information resources they need for teaching, learning, and research. Ten years of detailed user survey data allowed us to show that faculty care almost exclusively about access to strong collections, that the primary users of library spaces are undergraduates who crowd the libraries on Sundays and evenings, and that graduate students prize expertise with new tools and approaches to scholarship. Within these groups, differences in disciplinary approaches demand further specialization in collections and expertise.

Like many large public universities, Virginia has expanded its disciplinary scope over the last several decades, and its persistent ranking as one of the top public universities in the nation drives a strong commitment to maintain overall academic excellence. Historically, U.Va. has been strongest in the humanities, spawning successful and highly regarded programs in this area. The University of Virginia Library is nationally known for its work in digital humanities scholarship, and related programs such as the Rare Book School and the Institute for Advanced Technology in the Humanities (IATH) are located in Alderman Library. The prominence and success of these efforts demand that the Library continue to invest in exceptional collections of rare and unique materials, purchase physical books, and support technology and expertise for new directions in digital humanities scholarship. At the same time, the Commonwealth of Virginia has called for growth in research and programs in the STEM fields (science, technology, engineering, and math) and for greater relevance in the University’s majors to the job market. These institutional priorities have increased demand for science and business resources, and for data services that serve the lifecycle of research data from acquisition to analysis to long-term preservation.

A final constituency that few outside the Library consider is future scholars. In years past, research libraries have built enormous collections, often of material not immediately relevant to existing faculty, for the “scholars yet unborn.” In the digital age, this approach is not cost-effective or valid; studies of the circulation of materials years after purchase show that the chance of materials being used falls steeply after the first few years of acquisition.³ However, the need for persistent, fail-safe preservation of content is urgent, especially

for digital resources. As a library at the forefront of the creation of born-digital material, we have grave concerns about preserving digital content for future generations.

Describing the varied constituents and service demands of the University provided the context for the strategic directions and priority initiatives of the Library. Thanks to many years of using the Balanced Scorecard,⁴ the Library had a history of thinking about strategic objectives aimed at ensuring success with our customers, our finances, our internal operations, and our preparation for the future. Aligning with strategic priorities of the schools and the University, the Library's strategy map contained 14 objectives, and from these we had identified new initiatives in five priority areas: enriching the student experience, services for the lifecycle of research data, new collaborative models for sustainable collections, digital preservation, and improving engagement with faculty and students on scholarly communication issues. We wanted our new administrators to know what we were aiming to achieve, why we felt these goals were most important, and our ideas for how to resource them.

The last goal of the budget submission was to effectively communicate our biggest financial challenges, as well as realistic plans for meeting them. These included staffing issues (filling critical staffing gaps, offering competitive salaries, retaining specialized experts), strengthening the collections budget, and an urgent need to renovate our flagship building. For most of our operations and strategic priorities, we could identify resources. For many years we have used natural attrition and internal staff movement to develop or acquire personnel with needed skills, often converting positions requiring bibliographic or library technical skills into positions requiring programming or web development skills. The Commonwealth of Virginia has a special equipment fund that we have used to purchase state-of-the-art technology for learning spaces and IT infrastructure. The renovation project is on a list of capital improvement plans for the near future. We have supported many new initiatives with grants, by raising private funds, or by partnering with other institutions to collaborate on a joint project. Using these means, we could map out likely resources to address most of our priorities. However, the major expenditure area for which our current resources are insufficient, and for which we

do not have good alternative funding sources, is collections. Despite participation in an active and effective statewide buying consortium (VIVA) and aggressive negotiations with journal vendors, we are on an unsustainable path of inflationary journal costs that has crippled our ability to purchase important new digital collections required by the scholars. We needed a way to describe this complex problem to administrators, and to engage them in helping us to address the issue.

Illustrating the Story

Both the budget narrative and budget presentation were brief, the narrative could be no longer than three pages, and the presentation and questions were limited to 15 minutes. We edited our text down to the essentials, and used data and graphics to convey complexity in a small amount of space. One illustration was a new table describing, at a high level, how the library's resources were linked to our services: a "cost of services" model. This was especially important as preparation for the new internal financial model, in which the library would be considered a cost center rather than a revenue center, and from which the schools would be "buying" the services of the Library through a centralized tax of some sort, or through a more direct relationship for specific services rendered.

For the purposes of the budget submission, we wanted a comprehensive framework that would encompass the full suite of library services, enumerated in a few broad categories that would make sense to those outside of the Library. We divided our costs into collections, (public) services, and spaces; these three areas along with administration would represent the full spectrum of operations. To assign costs appropriately, the existing budgetary breakouts of personnel and OTPS were disaggregated and reassigned to the new categories. In some cases, staff costs were apportioned to more than one category, for example, most subject librarian salaries were divided between collections (for their work in selecting and locating materials) and services (for their role in consultation, reference, instruction, and other public services). Circulation staff and students were allocated to space costs, because they open and close our buildings and staff the information desks. Non-personnel costs were similarly distributed by major expense areas, e.g., unmediated technology such as computers and classroom displays were allocated to spaces,

specialized technology accompanied with specific expertise such as GIS equipment and visualization technology was allocated to services.

Table 1 shows the breakdown of staff and OTPS costs assigned to each category. While providing only a very high-level overview of the organization, this new way of distributing the cost of providing collections, services, and spaces offered a more realistic sense of what it takes

to provide Library services to the University. Collection spending had previously been framed narrowly as the cost to lease or purchase resources, but using this new methodology, we could see that cost of the full services required for collections account for more than half of the Library's total budget. Spaces accounted for a relatively small amount of expense (given the 11 libraries in our system), because a central facilities department manages the buildings and covers the utilities and maintenance of the spaces.

Table 1. Cost of Services for University of Virginia Library, FY2012–13

	Spending (% of total)
Collections • Purchase/lease of materials • Selection, acquisition, cataloging, shelving, preservation staff • IT infrastructure for digital collections and online catalog • Off-site shelving facilities and conservation lab	\$13,500,000 (51%)
Spaces • Information desk staff and student employees • Technology and equipment • Refurbishing and/or renovation costs • Facility and technology support	\$3,000,000 (12%)
Services • Subject Librarian services (reference, teaching, consultation) • Specialized expertise and technology (Scholars' Lab, Digital Media Lab, data services) • Interlibrary loan/LEO, reserves, etc.	\$7,500,000 (28%)
Administration • Senior leadership • Finance & HR staff • Development	\$2,500,000 (10%)
	Total \$26,500,000

Another point in the budget narrative that needed illustration was the challenge of unbridled growth in journal package costs. Journal inflation has been pushing the total cost of our collections up

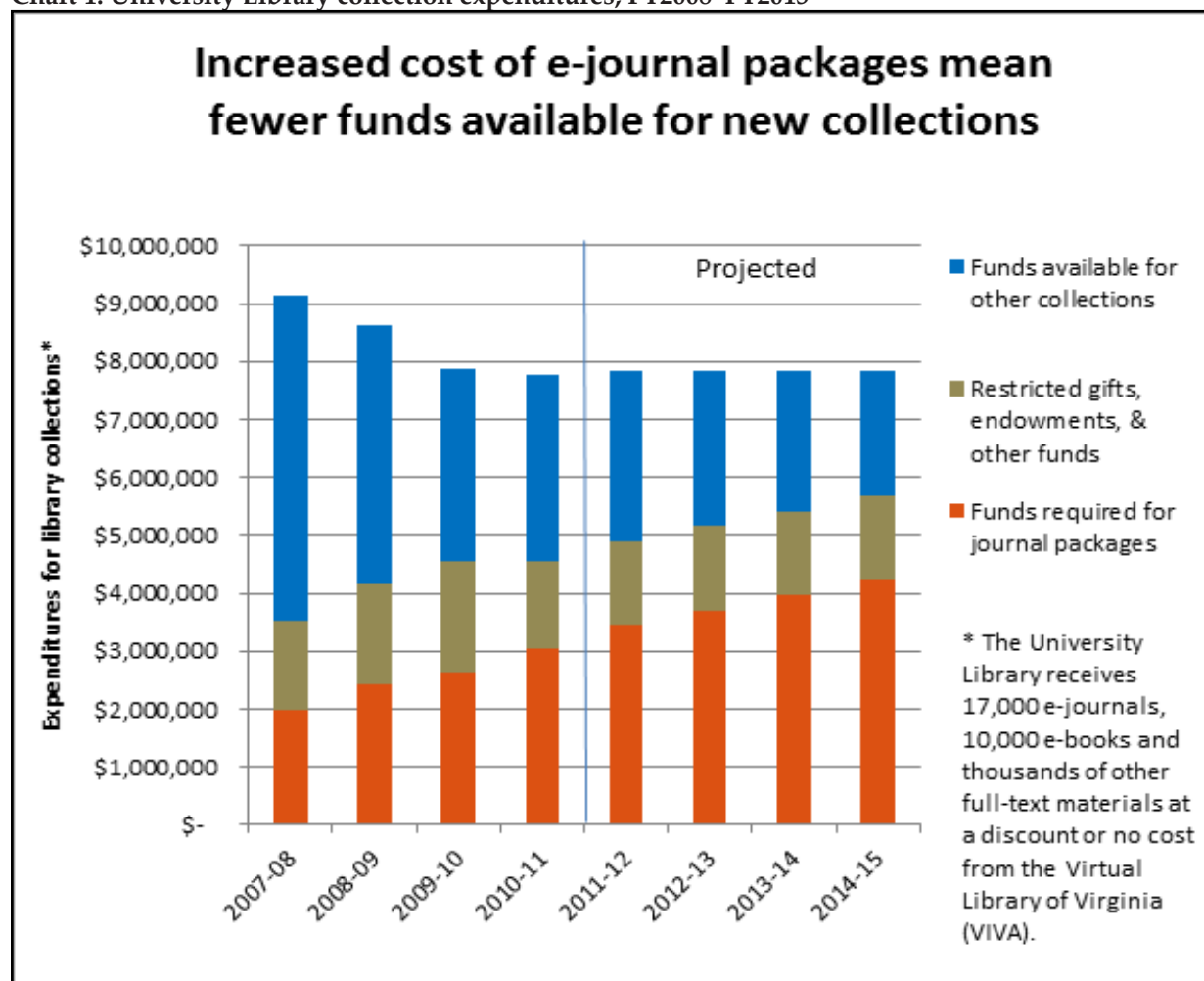
by several hundred thousand dollars each year, resulting in an unsustainable rate of budgetary increase, and leaving almost no resources available for purchasing other major collections. However,

the complexity of the problem is significant and defies easy explanation to those unfamiliar with library acquisitions. Few administrators understand that the majority of online resources are leased rather than purchased, often in large bundled packages, with ongoing annual fees for access. Neither the price of leased and purchased collections nor the expenditures we make for them are straightforward. Many of our journals are received through a statewide purchasing consortium (VIVA—the Virtual Library of Virginia), masking the true cost of the product. In some cases, our consortium dues alone cover the cost, in other cases we receive resources at greatly reduced additional costs as a consortium member. To achieve the best price for research journal packages not provided by VIVA, we had banded with other research universities in Virginia to negotiate multiyear contracts, gaining favorable per-article costs, but locking us into inflationary payments for 3 to 5 years for an unspecified

number of titles. Even on local purchases, the financial picture was opaque—a portion of our collection allocations that are restricted for very specific types of collections remain unspent each year, further complicating the “bottom line” of the collections budget. It was hard to imagine how to explain our need for more resources when we were not spending out our existing allocations, and when annual budgetary increases in the hundreds of thousands simply retained access to existing journal titles.

Drawing on detailed acquisitions data, we were able to show how the total allocations for collections has been declining or stable over the past several years at U.Va., and how the combined effects of rising costs for big journal packages and the relatively stable restricted funding that must be spent on specific content have squeezed available funds of all other collections purchases (see Chart 1).

Chart 1. University Library collection expenditures, FY2008–FY2015



Using Data to Tell the Story—What We Can Do Better

Feedback on the University Library budget narrative and presentation to the Provost and EVP/COO were positive. We used data effectively to provide a concise yet accurate picture of library operations and costs, describe the needs of our user community, and some of our fiscal challenges. By focusing on strategic direction, the budget narrative also forced us to follow the basic principles of strategy management: first, identify your purpose; second, outline your goals; third, form a strategy for achieving them; fourth, use data to measure your outcomes and inform the changes you need to make. Due to many years of active assessment activity, we had ample data to illustrate the points we needed to make. However, we also learned some of the limitations of our assessment

practices, and some ways we can improve.

First, we need to gather and package our assessment data with strategic goals in mind. The Library assessment unit produces an annual report of library statistics, organized by traditional library tasks and providing historical series for most data points. However, the report is full of library jargon, requiring explanations of terms when using the data outside the Library. While great care is taken to maintain historical consistency in series, major changes in library services are not well connected; for instance, circulation data and online downloads of articles and e-books are nowhere combined to provide an overall measure of resource usage. A second annual report contains data from user surveys, focusing on services used by faculty, graduate students, and undergraduates

and posing questions each year about priorities and services. Although more strategically focused than the annual statistics report, the user surveys also are more descriptive than evaluative, telling us more about how we are doing than what we should be doing. Of greatest concern is the missing data—for some of our most important services (e.g. digital humanities support) and collections (e.g. online journal and e-book titles), we have only partial data or no data at all. While librarians know the myriad reasons for why it is hard to collect these kinds of data, it makes little sense to high-level administrators that we cannot answer basic questions such as “what is your impact on the growth of digital humanities scholarship,” or “how many journal titles are available through the University Library?” To answer these questions, we will need to find new methods of capturing data about our activities and ask vendors of online content to provide more details on the resources for which the University pays.

Lastly, we re-learned the importance of simplicity. Librarians work hard to simplify resource access for scholars through wayfinding, improved interfaces, and comprehensive, jargon-free search tools. We need to develop similar approaches when preparing communications for university administrators. They want to understand the big picture, and don’t care much about the details. Like users of scholarly resources, they like to find data themselves, without needing our mediation or interpretation. Good assessment efforts collect accurate, relevant data that answer specific questions, but to make them useful to high-level administrators at your college or university, it is important to present data in language that

nonlibrarians understand and explain what they mean to the larger organization. At U.Va., we are in the process of planning a new web presence for our assessment data that will better fulfill these criteria. We have realized that how we present our data is just as important as the quality of the data we collect.

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Making the Case for Institutional Investment in Libraries: The Value of Evidence-Based Narratives at the University of Washington

Steve Hiller and Betsy Wilson
University of Washington

Introduction

How do libraries prove their value in today's online world and make the case for continuing institutional investment in library services and programs? What is persuasive information to use with University administrators? While academic research libraries have traditionally collected substantial data related to library operations, is this the type of data that university administrators need to make informed funding decisions based on library value? How do we frame and focus our priorities for investment? These are important questions as we move into an era of increased accountability and documented contributions to the success of the university community. They were absolutely critical to address during the "Great Recession."

This case study shows the power of evidence-based narratives based on a robust assessment program and practical planning process, to maintain and increase library funding at the University of Washington during a period of severe cutbacks in state budget support of higher education. Narratives focused on what we thought the Provost and other administrators need to know about the Libraries to make good investment decisions. We used a broad range of data sources

and assessment results to support our case for increased funding and demonstrate the substantial contributions we make to the success of the campus community and the University. This paper reviews the Libraries evidence-based narratives including setting priorities, the use of internal data and measures and Association of Research Libraries (ARL) statistics for peer benchmarking.

The University of Washington

The University of Washington (UW) is a comprehensive research university located in Seattle, Washington with approximately 29,000 undergraduates and 14,000 graduate and professional students. The institution is distinguished for the quality of its research, especially in the health sciences, sciences and social sciences. The UW receives more federal research funding than any other public university, with \$1.5 billion in 2012. The University's total FY13 budget is \$5.9 billion, of which the State of Washington contributes about 4%. If hospitals, patient care and auxiliary funds are removed from the budget, the State contribution is 9%. External research funding and student tuition comprised nearly 80% of the UW operating budget in FY12 as shown in the table below.

Table 1. UW FY12 Operating Budget \$2.35 Billion (Excludes hospital, patient care and auxiliary funds)

Source	% of Total
Externally funded research	59%
Student tuition	20%
Investments and gifts	9%
State funding	9%
Other	4%

The University of Washington adopted a new budget allocation method, activity-based budgeting (ABB), for academic units in FY10, with

full implementation in FY12. ABB is used for those academic programs that generate credit hours and degrees with the majority of the program's funding

derived from those sources. Administrative (or “University”) units, including the UW Libraries, are funded primarily by the Provost. All units are asked to provide a budget narrative that lays out the context and justification for funding and new investments with a specific dollar request for new investment funds. These budget narratives are especially important for administrative units given the internal allocation of much of their funding. During the past three years, budget narrative requests have increasingly asked for evidence-based information that is rich in data, including internal metrics of success and peer benchmarking and display a keen understanding of University mission, priorities and programs.

Budget Reductions and Budget Planning Process FY09 to FY13

The State of Washington made substantial reductions to all operating budgets, including higher education,

beginning in 2009 as revenues fell sharply. Washington State is heavily dependent on sales and other retail tax transactions (there is no state income tax) so when consumer spending, including real estate and other big ticket items, fell sharply in 2009, there was an immediate fall-off in revenues. Higher education took a larger percentage of cuts than most other state agencies, and the University of Washington received nearly 50% less in state funding between 2009 (\$402 million) and 2012 (\$212 million). The state did give the University authorization to set tuition rates, and undergraduate tuition increased by 55% during this period. However, the rise in tuition did not cover the loss of state funds and led to students paying 70% of their education cost in 2011-12 compared to 55% in 2009-10. Annual resident undergraduate tuition and fees rose 55% during this period from \$6,902 in FY10 to \$10,574 in FY12. Coupled with higher graduate and professional school tuition increases, the impact on the University was mitigated somewhat. The table below shows the UW budget planning process during this period.

Table 2. UW Budget Planning Process FY09 to FY13

FY09	1.5% Rescission March 2009
FY10	Business Plan showing impact of 8%, 10%, and 12% reductions submitted Winter 2009. Budget reduced by 12%
FY11	Report on impact of budget reductions and internal efficiencies. Plan for further reductions at 3.5%, 5%, and 7.5%
FY12	Narrative: Key goals, strategic approaches and measuring success. Program evaluation criteria and metrics. ABB fully implemented. Provost reinvestment funds.
FY13	Narrative: Strategic planning and reporting. Progress towards goals; metrics used to measure progress. Core services: Description, measurement, process improvements; benchmarking ABB and Provost Reinvestment

While budgets were cut in all units, most academic teaching programs had a smaller reduction as higher tuition and the ABB method of funding enabled them to keep much of the tuition generated by their students. Administrative units, such as the Libraries received substantial cuts that totaled more than 10% of the previous year’s allocation. To guide the Libraries budgetary process, the Libraries formulated a set of “Budget Planning Principles that could apply during budgetary reductions as well as growth. The core principles were to:

- Stay future oriented and in alignment with the University and our strategic goals
- Retain and enhance our user-centered focus

- Look for opportunities for transformative change, including retraining and realigning staff to meet Libraries’ strategic goals and priorities
- Maintain commitment to openness, consultation and communication with our personnel and our stakeholders

Strategic Approach

As a user-centered organization that closely monitors and assesses organizational performance, institutional priorities and user needs, we took a strategic approach to these reductions as described in the Libraries business plan for the FY10 budget

reductions. This plan called for:

- An evolving service model predicated on documented user priorities; fewer more consolidated library locations; and delivery of information services and resources “any time any place”
- Privileging electronic distribution of information resources where possible and appropriate
- Efficiencies in processing and operational workflow
- Consolidation of administrative services
- Reduction and/or elimination of less critical or essential services
- Leveraging consortial and collaborative approaches across the campuses, region, and country
- Safeguarding the essential elements that ensure that the Libraries continues to be a major asset for a 21st century world class university

The FY09 1.5% rescission and FY10 12% reduction resulted in a \$4 million reduction to the Libraries budget, split primarily between collections and personnel. Staff reductions included 29 FTE staff (all vacant positions) and 14.5 FTE student hourly employees.

Libraries Budget Strategy FY11

The state financial situation continued to worsen, albeit at a slower rate. All University programs received a 5% reduction in FY11, the result of a

6.3% reduction in state funding following a 25% reduction in FY10 (mitigated by an increase in student tuition).

These reductions were in addition to the large cuts in FY10 Libraries which included a 10% reduction in positions and major cuts in collections and operations budgets. The Libraries budget strategy for FY11 was to minimize any further reductions and begin the process of institutional reinvestment in Libraries. The FY11 budget process was the first to use a narrative format. Units were asked to identify key strategies and priorities and identify supportive data. The Libraries also was engaged in transforming its strategic planning process to one that relied on the Balanced Scorecard and Strategy Map. However, the 5% reduction on top of previous cuts, led to 17 FTE staff positions that were eliminated in FY11, including some staff layoffs. The Provost made a special allocation of one million dollars for collections that avoided further cuts in that area.

The impact of the budget reductions on library services and staff were greatest from FY09 to FY11. These included:

- \$2.4 million reduction to collections budget
- 46 positions eliminated and 17.0 FTE reduction in student hours
- 4 branch libraries closed
- Hours and services reduced in other libraries
- No salary increases (state legislation)

Table 3. UW Libraries Budget Changes FY10 to FY1

FY	Action	Funding change in \$mil-lions
FY10	12% reduction	-4.0
FY11	5% reduction Provost reinvestment Actual cut	-1.35 1.0 (collections) -0.35
FY12	Collections funding Restore hours opening Student hourly positions (Capital) Undergraduate library renovation	2.0 (temporary) 0.25 0.25 16.5
FY13	FY12 Collections funding made permanent Libraries exempted from 2.9% campus reduction Libraries hiring plan approved (vacant positions released to fill)	2.0 million (permanent)

University Budget Preparation FY12

The budget narrative process played a critical role in development of the Libraries FY12 submission, especially in the identification of focused themes related to University priorities in research support and student access. The Libraries extensive assessment work, including the development of robust metrics and peer comparisons, were used effectively in the FY13 narrative. University instructions to units for the FY12 Budget Narrative forecast continued reductions as state revenues remained weak:

Units told to prepare for 5% to 10% reduction

- Program Narrative (4 pages)
 - Key Goals, Strategic Approaches, Measuring Success
- Program Evaluation Criteria
 - General data/size, quality, diversity, collaborations, student demand, revenue/sustainability impact, uniqueness, centrality, value to state, strategic relevance, faculty input
- Program Evaluation Metrics (Libraries could choose ours)
- Budget impact FY 11 and potential impact of 5% and 10% reductions in FY12

In providing responses to the above categories we used the opportunity to center our narrative on our:

- Budget planning principles
- Strategic goals and directions, strategy map
- Targeted areas that aligned with University goals and priorities
- Our planning and assessment work, including internal and comparative data

As well as articulating our core services:

- Print, media and electronic collections
- Information and instructional services that save time, and integrate learning technology and information skills within University programs.
- Facilities which are engaging, productive and technology-enabled
- Curation of the University's unique collections and datasets, and preservation of the scholarly record

And reiterating our strategic priorities:

- Multi-institutional approaches
- Facilities upgrades
- Information resources provided any time and any place
- Information services with a focus on emerging areas and support of scholarly communication
- Library and information research competencies
- Staffing and salary flexibility
- A sustainable academic business plan which includes programmatic efficiencies

We noted our long-established library assessment program and how assessment data was used to make evidence-based decisions:

- Large scale user surveys every 3 years since 1992
- In-library use surveys every 3 years beginning 2002
- Focus groups/Interviews
- Observation (guided and non-obtrusive)
- Usability/User-Centered design
- Usage statistics/data mining/peer library statistics
- Performance metrics

Our user surveys and usage statistics played an important role in making our case as an indispensable academic resource. The importance and usefulness of the Libraries' contributions to teaching, learning and research was well documented as well as high satisfaction rates with library collections and services. Usage data confirmed that our resources and services were heavily used and ranked highly among ARL peer libraries.

Rather than provide a laundry list of funding proposals, The Libraries' FY12 budget request and narrative focused on two key areas for Provost Investment funding which would have the greatest positive impact on users and would be aligned with University priorities. These were:

- (1). Support for students during a time when tuition had increased substantially and programs that support students had been reduced. From 2006 to 2011 student enrollment increased by 8% and tuition by 50%, while the Libraries budget had been reduced by more than 10% since 2009. The number of physical library visits had continued to increase while the ability of library space and services to support student work had declined:
 - Library entrance counts up 14%

- 500,000 more visits per year (4.8 million in FY11)
- Library weekly open hours decreased by 23%
- Seating reduced by 3%
- Number instruction sessions down by 30%
- Fewer librarians & graduate assistant instructors
- Library student employee hours reduced by 20%
- Undergraduate student library satisfaction dropped between 2007 and 2010 on our triennial surveys

We requested additional funding to restore some of the cuts in library hours and to fill some of the student assistant positions eliminated in previous budget reductions. We also asked for minor capital funding to do some minor renovation and refurbishment of existing libraries and worked closely with the University to put together a request for state funding for a major renovation of the Odegaard Undergraduate Library.

- (2). Restoration of the reduction in the collections budget to support research, especially to support externally funded sponsored research. The Libraries University funded collections budget was reduced by about two million dollars due to budget reductions in FY09 and FY10. Faculty and graduate student survey results showed library collections/information resources were critical to the success of their research and they provided substantial support for restoration of this cut to support their research.

In addition to data we provided, faculty and students also campaigned for additional library funds. Our FY12 approach was successful and we were exempted from the University budget cut and received the largest amount of new Provost Investment funding. Funding decisions were based on the following priorities:

Table 4. Final FY12 UW Budget Decision Priorities

Priority order	Result	Specific budget instructions
Preserve student access	Academic units with high numbers of students had increase or low cut	Preserve access to high demand classes
Provide learning support	Units with significant learning support had increase or low cut	Preserve library collections and hours
Maintain student support services	Units with significant student support services had increase or low cut	Preserve student jobs Enhance undergraduate support
Maintain security, safety and/or compliance	Low cut	
Maintain faculty support services	Low to medium cut	

Comparisons with Peer Libraries

Comparisons with peer research libraries played a critical part in our narrative. During the FY11 budget submission and discussions we used ARL data to demonstrate that institutional investment in peer research libraries was greater than that of UW, eliminating much of the gap between the UW Libraries expenditures and the average of the top twenty publicly assisted libraries. We also wanted to illustrate that peer library funding since the beginning of the recession exceeded that of

the UW Libraries, especially for collections and staffing. Association of Research Libraries data was crucial in demonstrating the increasing funding and staffing gap between the UW Libraries and peers. We relied mainly on the ARL Statistics, supplemented by a special ARL survey on current year allocations compared to previous year expenditures. Comparisons were made between the University of Washington Seattle library budgets and the average of the ARL “top twenty” publicly assisted U.S. academic research libraries.

**Chart 1. Annual Library Expenditures* in Millions
UWS and Average of ARL Public “Top Twenty”**

(*Includes all funding sources)

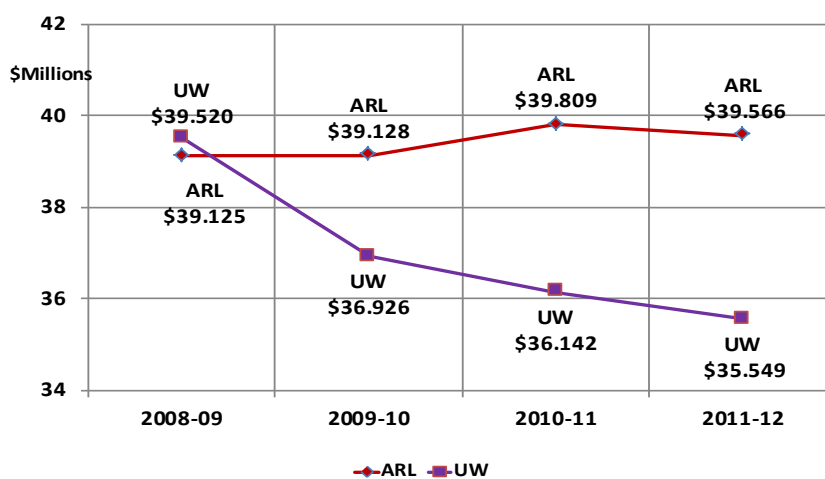


**Chart 2. Collections Expenditures* in Millions
UWS and Average of ARL Public “Top Twenty”**

(*Includes all funding sources)

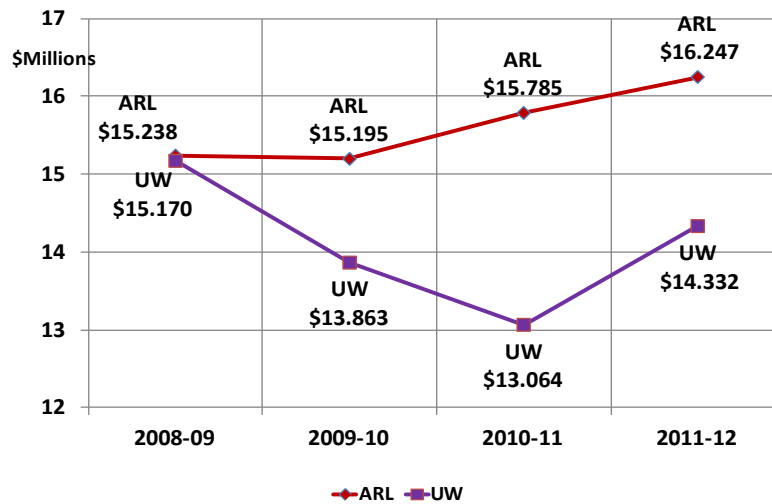


**Chart 2. Collections Expenditures* in Millions
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(*Includes all funding sources)

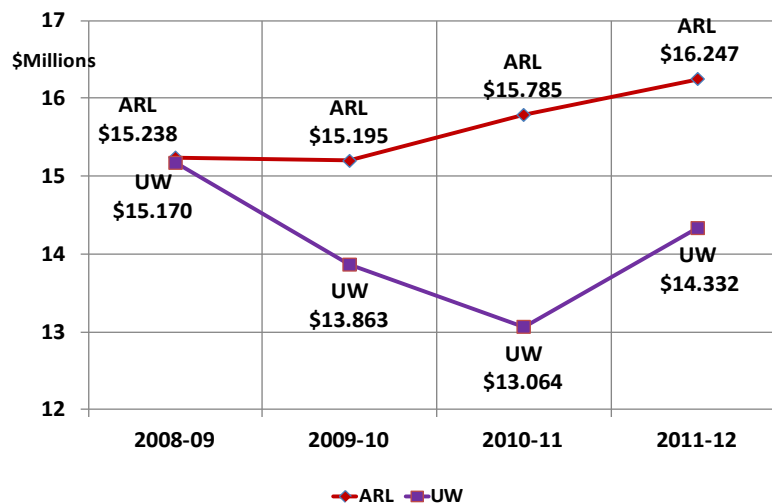
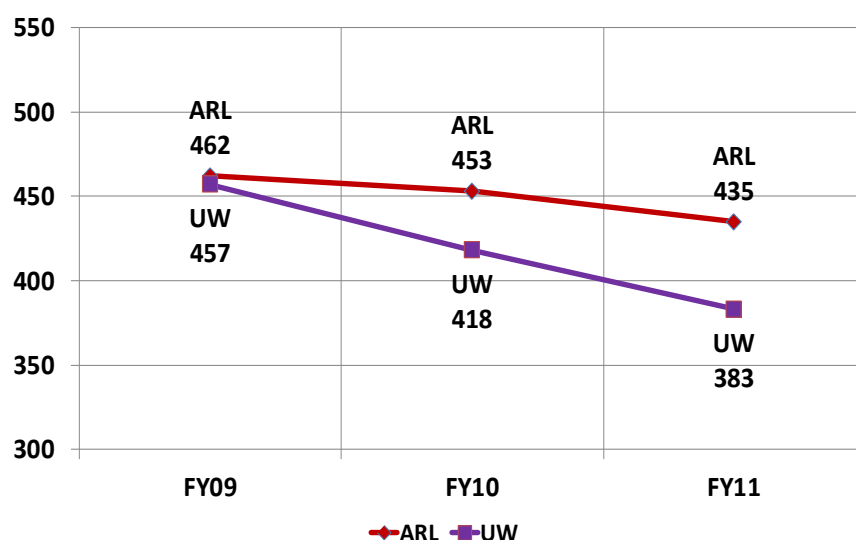


**Chart 3. Total Staff FTE
UW and Average ARL Public Top Twenty**



The University had developed a peer comparator group, the Global Challenge Peer States (selected flagship universities with medical schools), which compared undergraduate tuition and faculty salaries. We used the ARL Annual Salary Survey to

compare our average and weighted average against our peers as well as median and average salaries of ARL academic research libraries in the United States.

Table 5. UW Average and Median Salaries and Ranking among ARL U.S. Libraries

	UW Average Salary	Rank ARL U.S. Libraries (n=100)	UW Median Salary	Rank ARL U.S. Libraries (n=100)
FY09	\$66,517	50	\$60,312	54
FY10	\$66,476	51	\$59,934	56
FY11	\$65,466	54	\$58,752	67
FY12	\$64,992	64	\$58,704	74
FY13	\$64,290	69	\$58,428	79

Conclusion

The Libraries evidence-based narratives have been successful in acquiring critical institutional investment at a time of budget scarcity. The use of the Balanced Scorecard and Strategy Map has made it easier for administrators to grasp the Libraries key objectives. Our selective focus

and strategy are aligned with University goals, and the use of internal and external data sources for internal metrics and external benchmarking have pointedly demonstrated the erosion of library funding in comparison with our research competitors. The Libraries has realized additional funding in each of the past three years. By understanding what's critical for the university, utilizing the power of a focused narrative, and with

the judicious application of meaningful statistics and indicators, other libraries can also boost their chances for new institutional investment.

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The ICOLC Balanced Scorecard Pilot: The Value of Collaborative Parallel Play

Katherine Perry

The Virtual Library of Virginia (VIVA), USA

Jim Self

University of Virginia, USA

“Indeed, the demonstration of value is not about *looking* valuable; it’s about *being* valuable.”

—Value of Academic Libraries, ACRL¹

Abstract

There are an estimated 225 library consortia worldwide and each one is unique—varying in size, staffing, funding, mission, types of members (e.g. nonprofit academic, public, K–12), services, and more. While some consortia have undertaken assessment activities over the years, the authors are not aware of any comprehensive or coordinated assessment programs specifically designed for library consortia. In the interest of creating such a program, several consortia leaders met during the April 2011 International Coalition of Library Consortia (ICOLC) annual meeting and discussed the applicability of the Balanced Scorecard (BSC) to library consortia. Following this meeting, eight prominent U.S. library consortia (FEDLINK, GALILEO, GWLA, Lyrasis, NC LIVE, NELLCO, PALNI, and VIVA), representing a wide range of libraries, began working together on the resulting ICOLC BSC Project in the fall of 2011. This paper addresses the work undertaken to date as part of this project and presents the initial results.

Introduction

Libraries have long been involved in assessing their work, and the success of the Library Assessment Conference is one indicator of that effort. At the same time, although more and more libraries are spending significant proportions of their budgets for materials and services through library consortia, based on the literature there appears to be a limited amount of assessment activity by consortia. In her 2012 article on library consortia, for example, Faye Chadwell clearly stated the need for more and better assessment: “It is advisable for consortia to think more proactively regarding

the importance of improving the demonstration of their value.”²

We can take some comfort in that consortia do seem to be conducting some assessment, even if it is not to the scale or depth that it may need to be. In spring 2012, John Helmer of the Orbis Cascade Alliance conducted a survey of ICOLC members to find out what consortia were doing regarding assessment. Of the thirty responses, twenty-five reported that they had conducted some assessment efforts.³ When asked the purpose of the assessment, the answers were of three types:

- Proving value to the parent organization, funders, or stakeholders;
- Proving value to the membership;
- Linking consortium services to desired outcomes of the parent organization.

The ICOLC Pilot

Much of the inspiration for this project came from attending the 2010 Library Assessment Conference in Baltimore and hearing a paper by Vivian Lewis, et al., which described a scorecard project sponsored by the Association of Research Libraries (ARL).⁴ While the ICOLC BSC project proceeded somewhat differently than the ARL project, this paper is structured in a similar fashion to facilitate comparisons between the two projects.

At the ICOLC annual meeting in Austin, Texas in April 2011, several consortial leaders reported on assessment projects that were underway or under consideration. As part of that panel, the primary

author of this paper presented an introduction to the Balanced Scorecard and suggested that this might be a good way for consortia to collaborate on assessment. A discussion followed, highlighting the advantages of working together to gain and share knowledge. Ultimately, leaders of eight consortia volunteered to work together on the ICOLC Balanced Scorecard Project, beginning in the fall of 2011.

The participating consortia were quite diverse: membership size ranged from two dozen to two thousand; some served a single type of libraries and others served multiple types of libraries; some were statewide and others were international; some had extensive staff and others were one-person operations. The participants were as follows:

- The Federal Library and Information Network (FEDLINK): 29 U.S. Federal libraries⁵
- Georgia Library Learning Online (GALILEO): 2,000 multi-type libraries in Georgia⁶
- Greater Western Library Association (GWLA): 32 research libraries in 16 states⁷
- LYRASIS: 1,700 libraries of all types⁸
- NC LIVE: nearly 200 academic and public libraries in North Carolina⁹
- NELCO: 110+ academic, private nonprofit, and government law libraries in five countries¹⁰
- Private Academic Library Network of Indiana (PALNI): 23 private nonprofit academic libraries in Indiana¹¹
- Virtual Library of Virginia (VIVA): 74 public and private nonprofit academic libraries in Virginia¹²

The group developed several objectives. The first was to develop a framework that recognized each consortium's unique characteristics. As Merryll Penson of GALILEO said: "Consortia are like snowflakes: each one is unique."¹³ The project would allow each consortium to develop its own Strategy Map and appropriate objectives and measures that would meet its own needs and parameters.

The second objective was to work collaboratively to enhance learning for the overall process and for the members of the group. We developed an ambitious schedule that included three in-person meetings, two of which were workshops with Ralph Smith of Orion Development as our consultant and facilitator. The first workshop with the

consultant was held in November 2011. It provided background on the overall concept of the Balanced Scorecard and an introduction to the development of the Strategy Map. The second workshop was held in January 2012. The workshop participants reviewed each other's draft Strategy Maps and were introduced to measures and targets. The third meeting took place in April 2012, and the participants met together to review their revised Strategy Maps and progress developing measures and targets.

The third objective was to keep the costs at a minimum. This was essential, since none of the participating consortia wanted the costs of assessment to interfere with the fulfillment of other basic priorities. We negotiated a very reasonable fee with Ralph Smith for the two one-day training sessions. Travel costs were kept to a minimum by holding BSC meetings in conjunction with previously scheduled meetings—the November Lyrasis Consortia Summit in Charlotte, the January ALA Midwinter Meeting in Dallas, and the April ICOLC annual meeting in Denver. Meeting costs were further minimized by using free or low-cost facilities available at host institutions and printing our own notebook materials. Finally, conference calls were used instead of in-person meetings on several occasions to augment the three in-person meetings.

The fourth objective was to use this work as a pilot for future collaboration with ICOLC members. This aspect will be considered in the future.

Introduction to Balanced Scorecard

The Balanced Scorecard was developed twenty years ago by Robert S. Kaplan and David P. Norton at the Harvard School of Business.¹⁴ It was originally targeted for the business sector and was intended to help that sector look beyond financial measurements. In recent years, many governmental and nonprofit organizations have also adopted the Balanced Scorecard. The nonprofit sector is typically not as focused on financial measurements, but the scorecard compels such organizations to consider financial, as well as other, indicators of their organizational health.

The Balanced Scorecard analyzes performance from four perspectives: customer, financial, internal processes, and learning and growth.

A few well-chosen measures are developed for each perspective. The purpose is to look at the overall performance of an organization rather than focus solely upon the easiest or most obvious perspective.

A key component of a successful Balanced Scorecard approach is the analysis of the relationship of the four perspectives (customer, financial, internal processes, and learning and growth) in fulfilling the organization's mission. This process builds a Strategy Map that fits on one page and clearly shows the relationships. Strategic objectives are written for each of the four perspectives, and measures and targets are developed for each strategic objective. The goal is to have clarity—of vision, objectives, measures, and targets—for each perspective.

Developing Strategy Maps and Strategic Objectives

The first meeting with the consultant provided background on the Balanced Scorecard, including its history and its use in the for-profit and nonprofit sectors. The consultant walked the group through the process of drafting a Strategy Map. While this Strategy Map was not specific to any one organization, the process and the discussions did help all participants think about their own

organizations and to see commonalities. After the project participants returned home, each consortium began work on developing its own Strategy Map.

Progress on developing Strategy Maps for the Balanced Scorecard Project has varied, and each consortium has approached the development of its own Strategy Map in its own way. For example, PALNI and GWLA were able to use their existing strategic plans to develop their Strategy Maps, NC LIVE initially worked with its staff to develop its Strategy Map, and VIVA worked with its Steering Committee to develop its Strategy Map.

Because LyraSis was in the middle of a larger strategic planning effort, they did not prepare a Strategy Map or proceed with the project. Their primary role has been to serve as fiduciary agent for the project, as well as monitoring the project for possible future assessment applications appropriate for libraries and consortia.

The seven other participating consortia each produced a Strategy Map for their own consortium, placing strategic objectives in each of the four perspectives. The number of strategic objectives per consortium ranged from 12 to 26.

Table 1: Number of Strategic Objectives by Consortium and Perspective – as of January 2012

Consortium	Customer	Financial	Internal Processes	Learning & Growth	Total # of Objectives
FEDLINK	6	2	8	6	22
GALILEO	3	3	3	3	12
GWLA	4	6	11	5	26
NC LIVE	4	3	4	3	14
NELCO	3	3	6	4	16
PALNI	3	4	7	4	18
VIVA	3	3	3	3	12
TOTAL	26	24	42	28	120

The ICOLC BSC Project members held a second meeting with the consultant to review the draft Strategy Maps and discuss the development of measures and targets. As the consortium representatives began writing measures and targets

for each objective, the limitations became clear. Some of the objectives were found to be too vague and difficult to measure. As a result, a number of objectives were dropped. For example, GWLA reduced the number of Financial objectives from

six to three, and the number of Internal Process objectives from eleven to seven.

In the initial round, all seven participating consortia worked within the four original perspectives: Customer, Financial, Internal

Processes, and Learning and Growth. In April, however, NC LIVE added one more perspective, Content and Service, and changed the name of the Learning and Growth to “Organizational Readiness.” Table 2 shows the revisions to the Strategy Maps as of August 2012.

Table 2: Number of Strategic Objectives by Consortium and Perspective – as of August 2012

Consortium	Customer	Financial	Internal Processes	Learning & Growth	Total # of Objectives
FEDLINK	6	2	8	6	22
GALILEO	3	3	3	3	12
GWLA	4	6	11	5	26
NC LIVE	4	3	4	3	14
NELLCO	3	3	6	4	16
PALNI	3	4	7	4	18
VIVA	3	3	3	3	12
TOTAL	26	24	42	28	120

Customer Perspective

A key outcome of this process was the realization that all participating consortia put the customer as the topmost perspective. The participating consortia had differing ideas of who their “customer” was—either the member libraries or the students and faculty at the individual institutions—depending upon their mission and the organization of the particular consortium. On the Strategy Maps, most still labeled that perspective “Customer,” but GWLA called it “Member,” GALILEO used “Customer, Library, User,” and PALNI labeled it “PALNI Institutions’ Students & Staff.”

In the Customer perspective, there were a total of 23 objectives for the seven consortia. Six of the objectives related to the concept of Value. Through our discussions, all participating consortia determined that one of the key objectives to serving their customers was not just to Demonstrate Value but to actually Deliver Value. This sentiment shows up in the Customer perspective in six of the seven

Strategy Maps, although the wording varies somewhat, depending upon the consortium’s mission.

- GALILEO
 - Provide valued services
 - Improve perception of value
- NC LIVE
 - Deliver value to member libraries
- NELLCO
 - Provide/demonstrate value
- PALNI
 - Enable libraries to demonstrate relevance and value
- VIVA
 - Deliver Value Equitably

Financial Perspective

There were a total of 20 objectives in the Financial Perspective. There was great overlap in this area in terms of maximizing purchasing power, with five consortia including it in an objective:

- FEDLINK
 - Maximize federal purchasing power through strategic sourcing
- GALILEO
 - Leverage opportunities for efficiencies of scale
- NC LIVE
 - Demonstrate collaborative power
- PALNI
 - Create efficiencies so we can provide more

- services with the money we have
- VIVA
 - o Maximize resources

Four of the consortia, (FEDLINK, NC LIVE, NELLCO, and VIVA) were concerned with diversifying or expanding revenue. Interestingly, all but NC LIVE put Financial in the second spot, just below the Customer Perspective. NC LIVE placed the Financial Perspective below Customer, Content & Service, and Process and above Organizational Readiness.

Internal Process Perspective

There were a total of 37 objectives in the Internal Processes Perspective; FEDLINK led with eight objectives. As with the ARL project,¹⁵ this perspective showed the largest number of items, reflecting diverse consortial missions and services. There was significant agreement on areas suggesting collaboration:

- GALILEO
 - o Maximize strengths and mitigate pitfalls of collaboration
- GWLA
 - o Reduce redundancy (Solve problems together faster)
- NC LIVE
 - o Collaborate for innovation
- NELLCO
 - o Establish symbiotic relationships with other organizations
- PALNI
 - o Cultivate collaboration of all library staff

Learning & Growth Perspective

Two of the participating consortia changed the wording of this perspective. GALILEO labeled it "Organizational Capacity: Learning and Growth," and NC LIVE labeled it "Organizational Readiness," but the focus by all seven consortia remained the same:

- GALILEO
 - o Building staff capacity and capabilities
- GWLA
 - o Provide learning opportunities
- NC LIVE
 - o Optimize staff expertise
- NELLCO
 - o Develop and support staff
- PALNI
 - o Develop library staffs' expertise and

- Understanding of user needs
- VIVA
 - o Build staff capabilities

Developing Measures and Targets

Although there were initial discussions in the second meeting with the consultant about measures and targets, only one consortium, VIVA, has made progress on developing measures for the objectives, and even that work is unfinished. In discussing VIVA's draft Strategy Map, the consultant questioned the objective, "Optimize VIVA Culture." The VIVA team members were adamant that this remain as an objective, but efforts to create an appropriate and specific measure for the objective have not been successful. In concept, the objective speaks to the VIVA membership's collegiality and group spirit, as well as the need to keep fostering that spirit even through leadership changes. Other VIVA objectives where progress remains elusive are ones that are rather vague and difficult to quantify, such as "Strengthen Communication" and "Nurture Engagement."

Lack of progress in developing measures and targets may reveal a flaw in the project's design, in that in attempting to keep the budget low, we met with the consultant only twice. Additional meetings with the consultant, particularly to work on measures and targets together, might have significantly increased the progress in these areas. It is also this area that might provide the most success in terms of sharing lessons learned. Successful and completed work on measures used and deemed appropriate by different consortia could hold great value to other library consortia.

Conclusions

Although the participating consortia were very diverse in all areas, including size, membership types, services offered, staffing levels, funding sources, and more, they were all interested in improving services to their members. There was wide agreement that the Balanced Scorecard provided an effective framework for all of the participants to approach their strategic planning and assessment.

The ICOLC BSC Project is still a work in progress, but it is clear that it has accomplished its first three objectives. Each participating consortium was

able to develop its own Strategy Map and its own objectives, and the aspect of collaborative work and parallel play did succeed. The participants all valued the face-to-face meetings and training sessions and the chance to review their work together. This initial phase of the project was also extremely cost-effective. The work on measures and targets is continuing and holds the most promise for collaboration.

While there has been interest expressed by at least one other consortium in participating in a new round of a Balanced Scorecard Project, it is too early to state whether this pilot project will lead to future collaboration with more ICOLC members. It can be said, however, that this work has developed a community of consortia leaders seeking to continue discussions on assessment issues for ICOLC members.

In summary, the participants profited from the shared learning process and the rigor of the shared schedule and timeline. While the work is not complete, it has been successful in promoting the thoughtful discussion of assessment and establishing a learning environment for the participants. Joni Blake of GWLA summed it up well for the group: "This is the least worst strategic planning process I've ever been through!"¹⁶

—Copyright 2013 Katherine Perry and Jim Self

Notes

1. Association of College and Research Libraries, *Value of Academic Libraries: A Comprehensive Research Review and Report*, res. Megan Oakleaf (Chicago: Association of College and Research Libraries, 2010), 140.
2. Fay A. Chadwell, "Assessing the Value of Academic Library Consortia," *Journal of Library Administration* 51 (2011): 657.
3. John Helmer, "ICOLC Assessment Survey" (presented at the annual meeting for ICOLC, Denver, Colorado, April 23, 2012).
4. Vivian Lewis, Steve Hiller, Elizabeth Mengel, and Donna Tolson, "Building Scorecards in Academic Research Libraries: Organizational Issues and Measuring Performance," in

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6. Georgia Library LEarning Online (GALILEO), <http://about.galileo.usg.edu/>.
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15. Ibid., 350.
16. Joni Blake, Statement made at the ICOLC BSC meeting, Denver, Colorado, April 22, 2012.

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Consortia Value: The Orbis Cascade Alliance

Nancy Slight-Gibney
University of Oregon, USA

Faye A. Chadwell
Oregon State University, USA

Donna Reed
Portland Community College, USA

Steve Hiller
University of Washington, USA

Introduction

The Orbis Cascade Alliance is a consortium of 37 academic libraries in Oregon, Washington, and Idaho serving the equivalent of more than 258,000 full-time students. Members include both public and private institutions as well as community colleges. Alliance member libraries work together to provide outstanding services to students and faculty, share information resources and expertise, develop library staff, and help members allocate financial and human resources to serve the unique needs of each member. To this end, the Alliance considers the combined collections of member institutions as one collection. The Alliance supports a number of services that support this vision, including Summit, a system that allows students, faculty and staff to easily search and request library materials owned by member libraries; courier service offering delivery of library materials in Oregon, Washington and Idaho; the Northwest Digital Archives, offering enhanced access to primary sources in the northwest United States; and cooperative licensing of databases, e-books and e-journals, and other digital library services.

The 10-member Alliance Board of Directors appointed an Assessment Task Force in October 2011 and charged the task force to "Consider and provide recommendations concerning the implementation of a consortial approach to assessing and communicating the value, outcomes, and impact of the Alliance." The task

force consisted of nine members plus the Alliance Executive Director as ex-officio:

- Steve Borrelli (Washington State University)
- Faye Chadwell (Chair, Oregon State University)
- John Helmer (Orbis Cascade Alliance)
- Steve Hiller (University of Washington)
- Sue Kopp (Warner Pacific College)
- Donna Reed (Portland Community College)
- Lori Ricigliano (University of Puget Sound)
- Nancy Slight-Gibney (University of Oregon)
- Diane Sotak (University of Portland)
- Barbara Valentine (Linfield College)
- Laura Zeigen (Oregon Health and Sciences University)

From the outset, the task force recognized that *it was not doing assessment but was instead focused on recommending a consortial approach to assessment*. The task force employed multiple methods to examine how Alliance data and information were being used in assessment, the assessment needs of Alliance members, as well as the state of assessment across the larger academic library consortial environment. The direct input received from Alliance members demonstrated that many were engaged in some form of assessment activity and Alliance data was of use in these efforts. As would be expected given the diversity of member institutions, there was a wide range of assessment expertise, practice and needs among Alliance

members.¹

submit a final report to the Alliance Board and Council of Library Directors by the end of June 2012. This required an aggressive time line as noted below.

Time Line

The task force needed to complete its work and

Figure 1.

October 2011	January 2012	February 2012	March 2012	Apr 2012	May 2012	June 2012	July 2012	August 2012	September 2012
Literature review									
	Alliance member survey								
	Staff data assessment								
	ICOLC member survey								
			Interviews with Alliance members						
					Final report and recommendations				
								Council approves	
									Board appoints Assessment Team

Methodology

Literature Review

Faye Chadwell, chair of the task force, provided a thorough literature review in her 2011 article, "Assessing the Value of Academic Library Consortia."² (The task force reviewed a selection of articles included as references at the end of this paper.) The preponderance of articles talk about the benefit of consortia in terms of cost-avoidance and expanded buying power through resource sharing and shared purchasing of electronic resources and networked systems. There are few examples demonstrating the value and impact of consortia on the users of their services. Ms. Chadwell notes, "While the literature about consortia and consortia websites provides more than adequate information describing the benefits of academic library consortia, the literature of marketing and sales argues that benefits and features alone do not represent value." It is a challenge for individual libraries to clearly identify value and outcomes. Identifying, collecting, and analyzing the requisite data can be further complicated in the consortial environment by the need to develop agreements across multiple institutions serving separate communities. However there is also an opportunity to join forces and leverage expertise.

Member Survey

In its initial meeting, task force members agreed that identifying the assessment needs and activities of Alliance members would aid the development of recommendations for an Alliance-wide approach to assessment. The Alliance scan was accomplished via a survey that had a 95% participation rate. This survey focused on members' activities and FTE related to assessment, intended audience of assessment data, and members' use and perceived importance of available Alliance data closely related to the Alliance mission, strategic agenda, and vision for collection development. Appendix A presents the results of the survey.

Inventory of Alliance Assessment Data

The Orbis Cascade Alliance Assessment Task Force members worked with Alliance staff to inventory the types of data already being collected centrally. The intended purpose was to determine what Alliance metrics were readily available and what was possible to collect. This effort resulted in a good snapshot from the Alliance staff perspective of data already being gathered. Much of the current assessment activity related to electronic resources and collections, as well as to consortial borrowing and lending. The survey also asked Alliance staff to indicate the ease with which

data might be gathered. Appendix B provides the detailed results.

ICOLC Member Survey—The State of Assessment among Library Consortia

John Helmer, Alliance executive director and staff liaison to the task force, collaborated with Kathy Perry, director of Virtual Library of Virginia, to survey International Coalition of Library Consortia (ICOLC) members to determine what other library consortia are doing to assess themselves and for guidance on what issues they might focus on behalf of their members. ICOLC is an informal, self-organized group representing about 200 international consortia. The survey yielded responses from 30 academic library consortia. During the task force discussion of the survey results, John Helmer, Orbis Cascade Alliance executive director, mentioned that many ICOLC activities revolve around the licensing and acquisition of electronic resources. As a result, it was not surprising that many assessment activities were oriented toward electronic resources. The data from the survey was readily quantifiable

and indicated that many ICOLC members rely on “telling their story” by reporting on cost avoidance, ROI, and/or cost per use.

Follow-up Interviews with Alliance Members

Following the analysis of the member survey’s results, the task force conducted follow-up interviews with representatives from Alliance member institutions. These are presented in Appendix C. Through these interviews, the task force sought to clarify questions or issues raised as a result of the initial survey. The follow-up conversations allowed us to delve more deeply into members’ opinions about their needs, resources, and interest in consortial assessment. In preparing the interview questions, we paired the data gathered from the Alliance Inventory with the member survey results to identify the Alliance programs and initiatives, according to member feedback, that are most desirable to assess with those that would be the easiest to assess according to Alliance staff input. Table 1 provides a summary of these findings.

Table 1.

Alliance Program	Member Rated	Alliance Staff Rated
	as Primary Data Need	Ease of Data Gathering
Approval Plan	80%	EASY
Databases	97%	MEDIUM
Ebooks	97%	MEDIUM
Ejournals	97%	EASY
Courier	97%	NEED MORE INFORMATION
Discovery	89%	NEED MORE INFORMATION
Shared ILS	100%	DIFFICULT AT PRESENT
Resource Sharing	100%	MOST METRICS EASY, SOME MEDIUM, AND A COUPLE DIFFICULT
Collaborative Technical Services	83%	DIFFICULT AT PRESENT

Task force members spoke to representatives from approximately two-thirds of Alliance libraries and these conversations confirmed the findings of the initial survey. Across the board, members were involved in assessment activities, but there was a wide range in the type of activity and the amount of local resources available for this work. There was a collective demand for analyzed data in the form of reports as well as raw data that could be customized locally. Members were thinking creatively about the types of data that would be

valuable to their institutions. They indicated that they used data for publicity/marketing, internal communication, and assessment. There was a strong desire for ROI (value) data as well as for comparison reports to be used for benchmarking. Members indicated an interest in working collaboratively to support some form of continuing education related to assessment, but they did not see this as a primary role for Alliance staff. Appendix C presents the complete results.

Task Force Recommendations to the Orbis Cascade Alliance Board and Council of Library Directors

1. The Orbis Cascade Alliance Board should consider formation of an ongoing assessment group that can work with the Alliance Council members and Alliance staff in the implementation of the recommendations below.

Rationale: The task force recommendation is based on the findings that a member-focused group working with Alliance staff could best address the need for data demonstrating Alliance value as well as assisting member institutions in developing good assessment practices appropriate for their libraries and institutions.

2. The Orbis Cascade Alliance Board should embed assessment/metrics into all future strategic planning efforts and into the charges given to all new initiatives. Ongoing activities should have a schedule for regular assessment reports.

Rationale: The task force makes this recommendation with the expectation that the committees or working groups implementing new charges would communicate with the Board early in the process about the indicators for success. This would encourage those developing a charge to take ownership of the indicators and would support those carrying out the work to further develop and refine the measures. The schedule would ensure that ongoing activities were assessed regularly and in a sustainable fashion.

3. Alliance staff and members should work collaboratively to develop and agree upon a common dataset to support consortial and local assessment efforts, especially as this data contributes to members' ability to articulate their contribution to the success of institutional outcomes.

Rationale: This would ensure that where possible, the Alliance is collecting usable data that members could use for various reporting, accreditation, and assessment activities. It would support the requests for comparative reports and raw data and would help members collectively identify gaps in local data needs. It would also help members to clarify reports and data points needed from the upcoming

shared integrated library system.

4. Develop an online Assessment Toolkit that could be used by members to support assessment activities. This recommendation would imply some support from Alliance staff.

Rationale: This would provide a way for member libraries to collectively support learning in this area. Content in the Toolkit could include:

- Examples of locally created reports
- Institutional data gathered by the Alliance
- Best practices for linking Alliance data to institutional learning outcomes or other assessment indicators
- Links to all of the places in the accreditation standards where there could be a natural connection to library services
- A link to the common dataset provided by the Alliance
- Examples of reports using qualitative, mixed, and quantitative methods
- A list of assessment resources
- Lists of national surveys/tools that member institutions use (ARL, ACRL, LibQUAL+®, Balanced Scorecard)
- A list of Alliance personnel who are willing to share assessment-related expertise
- A link and connection with the Alliance Research Interest group
- A resource list of software that could potentially support local and consortial assessment efforts. The Alliance could consider a consortial purchase with discounts if there is a product that would be useful.

5. Work with the Alliance executive director to create a set of "elevator speeches," testimonials, or annual impact reports to help members communicate locally about the value of the Alliance. The Alliance could reference what other consortia have done. A couple of examples to glean from include OhioLink's annual report (<http://www.ohiolink.edu/about/snapshot2010.pdf>) or the brochure that the Partnership Among South Carolina Academic Libraries (PASCAL) created to demonstrate its value in the face of possible reductions in funding (http://pascalsc.org/component/option.com_docman/task.doc_download/gid,663/).

Rationale: These communication tools would

enable members to make use of collaboratively created high-level talking points and “wow” statements when communicating locally. It would embed systematic communication into the charge of the Alliance.

6. Work with members to further discuss their professional development needs in the area of assessment.

Rationale: Members do not see professional development as a core role for Alliance staff. This discussion would help members to collectively hone and plan for formal and informal learning around assessment.

Conclusion

In submitting our final report, the Orbis Cascade Alliance Assessment Task Force completed the charge to “Consider and provide recommendations concerning the implementation of a consortial approach to assessing and communicating the value, outcomes, and impact of the Alliance.” The task force reviewed existing literature and examined websites of individual libraries and consortia. Current Alliance data collection activities were charted. The Alliance executive director shared preliminary results from a survey of ICOLC members. We surveyed all Alliance members and then, after the data analysis, probed deeper into some questions with one-on-one interviews.

Our first and primary recommendation was for the Alliance Board to create a permanent assessment group to assist members in establishing a robust culture of assessment within the Alliance that will benefit individual members as well as the Alliance itself. In September 2012, this Assessment Team was appointed. Led by Rick Stoddart of Oregon State University and comprised of some former members of the Assessment Task Force plus some new appointees, the 10-member team will work with Alliance staff to implement the task force recommendations and produce an annual report of team activities and recommendations for future action.

—Copyright 2013 Nancy Slight-Gibney, Donna Reed, Steve Hiller and Faye A. Chadwell

Notes

1. This paper is largely based on the unpublished final report of the Orbis Cascade Alliance Assessment Task Force, “Report: Assessment Task Force, June 11, 2012.”
2. Chadwell, Faye A., “Assessing the Value of Academic Library Consortia,” *Journal of Library Administration* 51 (2011): 645–661.

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Appendix A

ORBIS CASCADE ALLIANCE ASSESSMENT SURVEY RESULTS BY LIBRARY TYPE

1. Library Type

Comm. Coll. (5)	Private (16)	Regional (8)	Research (6)	Total (35)
14%	46%	23%	17%	

2. Contact information *[Results omitted]*

3. Do you have employees or positions that are responsible for library assessment activities?

	Comm. Coll. (5)	Private (16)	Regional (8)	Research (6)	Total
Yes	80%	63%	75%	100%	74%

[A range of positions responsible for assessment activities include: Dean; AUL; Director, Coordinator, or Leader of Assessment Team; Department Head, with various responsibilities and with or without "assessment" in the title; line librarians, with formal or informal responsibility.]

4. Estimate of annual library FTE devoted to assessment

[Results unreliable and omitted]

5. Do you have a publicly available website that provides assessment data?

	Comm. Coll. (5)	Private (16)	Regional (8)	Research (6)	Total
Yes	20%	19%	63%	67%	37%

[Of the "yes" responses, few have a comprehensive public assessment website. Common elements include selected quantitative information and survey results.]

6. Which library surveys does your library participate in on a regular basis?

	Comm. Coll. (5)	Private (16)	Regional (8)	Research (6)	Total
NCES	100%	100%	100%	83%	97%
LibQUAL	0	31%	50%	67%	37%
ARL	0	0	0	50%	9%
ACRL	80%	75%	100%	83%	83%
HEDS	0	19%	0	0	9%
NAPCU	0	100%	0	0	46%
CCCU	0	13%	0	0	6%

7. Are you using Alliance data in assessment plans and activities at your institution?

	Comm. Coll. (5)	Private (16)	Regional (8)	Research (6)	Total
Yes	40%	56%	50%	83%	57%

[Of the "yes" responses, common responses include statistics on consortial borrowing/resource sharing, usage data for e-books, e-journals, and Northwest Digital Archives; cost savings/cost avoidance calculations; peer comparisons]

for institutional demographics.]

8. In the past five years, which tools and techniques has your library used for assessment?

	Comm. Coll. (5)	Private (16)	Regional (8)	Research (6)	Total
Quantitative	80%	100%	100%	100%	97%
Focus groups	20%	50%	75%	83%	57%
Observation	80%	69%	50%	67%	66%
Bal. Scorecard	0	6%	13%	17%	9%
Interviews	20%	6%	38%	67%	26%

**9. Based on your institution's assessment needs, rate the importance of having data/metrics on various Alliance services [SHOWN ARE COMBINED VERY IMPORTANT/IMPORTANT FOR EACH CATEGORY]
Those categories with 80% or higher are bolded.**

a.–d. Collection Development

	Comm. Coll. (5)	Private (16)	Regional (8)	Research (6)	Total
Distributed print repository	40%	69%	75%	83%	69%
Duplication threshold	40%	76%	63%	100%	71%
WEST	40%	69%	63%	67%	63%
YBP	60%	75%	100%	83%	80%

f. Conferences—Professional Development, Code4Lib

	Comm. Coll. (5)	Private (16)	Regional (8)	Research (6)	Total
Conferences—Code4Lib	80%	13%	25%	0	23%
Conferences—Summer Meeting	60%	50%	50%	17%	38%
Professional Development	80%	38%	13%	33%	43%

n.–p. Electronic Resources

	Comm. Coll. (5)	Private (16)	Regional (8)	Research (6)	Total
Databases	100%	100%	100%	83%	97%
E-books	100%	100%	100%	83%	97%
E-journals	100%	100%	100%	83%	97%

h., m., t.–u. Discovery and Delivery

	Comm. Coll. (5)	Private (16)	Regional (8)	Research (6)	Total
Courier	100%	94%	100%	100%	97%
Discovery	100%	88%	75%	100%	89%
Shared ILS	100%	100%	100%	100%	100%
Summit	100%	100%	100%	100%	100%

i.–k. Digital

	Comm. Coll. (5)	Private (16)	Regional (8)	Research (6)	Total
Fedora IR	40%	44%	50%	67%	49%
Offline Storage	20%	19%	38%	33%	26%
Preservation	20%	38%	50%	50%	40%

e., l., q.–r. Other

	Comm. Coll. (5)	Private (16)	Regional (8)	Research (6)	Total
Collaborative Technical Services	80%	88%	100%	50%	83%
Alliance as R&D Operation	100%	51%	25%	17%	46%
NWDA Archivists Toolkit	20%	38%	88%	67%	51%
NWDA Database	0	62%	75%	100%	63%

10. Are there other Alliance services or activities you think are important to assess?

Five total comments were received:

- It would be useful to have title-level data about materials requested and lent;
- Continue supporting collection assessment;
- It would be valuable to have some comparison data about the Alliance vis-à-vis other library consortia;
- Each committee or project should have an outcome statement and an annual evaluation of progress;
- It would be useful to have help with information literacy assessment.

11. In your opinion, who is the intended audience for Alliance assessment data?**a. Board of Directors and Council**

	Comm. Coll. (5)	Private (16)	Regional (8)	Research (6)	Total
Primary	100%	100%	50%	83%	86%
Secondary	0	0	50%	17%	14%
Not part of	0	0	0	0	0

b. Alliance Staff

	Comm. Coll. (5)	Private (16)	Regional (8)	Research (6)	Total
Primary	60%	75%	25%	67%	60%
Secondary	40%	25%	63%	33%	37%
Not part of	0	0	13%	0	3%

c. Member institutions

	Comm. Coll. (5)	Private (16)	Regional (8)	Research (6)	Total
Primary	40%	63%	63%	83%	63%
Secondary	60%	37%	38%	17%	37%
Not part of	0	0	0	0	0

d. Administrators of Member institutions

	Comm. Coll. (5)	Private (16)	Regional (8)	Research (6)	Total
Primary	20%	75%	88%	67%	69%
Secondary	80%	25%	13%	3%	31%
Not part of	0	0	0	0	0

e. Students of member institutions

	Comm. Coll. (5)	Private (16)	Regional (8)	Research (6)	Total
Primary	0	0	0	0	0
Secondary	40%	75%	63%	67%	66%
Not part of	60%	25%	38%	33%	34%

f. Accrediting Agencies

	Comm. Coll. (5)	Private (16)	Regional (8)	Research (6)	Total
Primary	60%	44%	50%	17%	43%
Secondary	40%	56%	50%	83%	57%
Not part of	0	0	0	0	0

g. Granting agencies

	Comm. Coll. (5)	Private (16)	Regional (8)	Research (6)	Total
Primary	20%	25%	13%	0	17%
Secondary	80%	69%	63%	100%	74%
Not part of	0	6%	25%	0	9%

Appendix B

Orbis Cascade Alliance

List of Activities and Metrics

What are the services, products, and activities of the Orbis Cascade Alliance and how is their impact/value to be measured? For each metric, indicate how hard it is to produce and maintain (easy, medium, hard) and whether we are already collecting such data (available, inconsistent, possible)?

Service, Product, or Activity	Metric(s) For each measure:	How hard to produce to the metric? easy, medium, difficult	Are we gathering this metric now? available, inconsistent, possible
CD— Dist. Print Repository	How much shelf space, measured in linear feet, are freed up?	easy	survey last done in 2009
CD— Duplication Threshold	How many fewer dups are purchased?	medium	YBP data for purchases made in 2011 will be compared to 2010
CD—WEST			
CD—YBP	Purchasing activity as reflected in GOBI	easy	YBP provides annual summary of Alliance purchasing
Collaborative TS	Eventually: time freed up for local priorities, improved patron service, improved flexibility, improved ability to innovate	hard	?
Collaborative TS— cataloging pilots	Eventually: time freed up for local priorities, improved patron service, improved flexibility, improved ability to innovate	difficult	# items cataloged
Conferences— Code4Lib			
Conferences— Summer mtg	Sharing local Information to create efficiencies in the whole;	difficult	
Courier			
Digital—Cloud Computing	Number of institutions participating, number of servers created, amount of revenue generated	easy	available
Digital—IR	Number of institutions participating, number of collections and objects stored. Use by staff/patrons	medium	possible
Digital—offline storage	Number of institutions participating	easy	available
Digital—Preservation	Number of institutions participating	medium	inconsistent

Service, Product, or Activity	Metric(s) For each measure:	How hard to produce to the metric? easy, medium, difficult	Are we gathering this metric now? available, inconsistent, possible
Digital—R&D	Number of efforts that result in new or modified Alliance services. Cost impact. Service impact based on subjective evaluation	difficult	?
Discovery			
ER—databases	Tracking library database subscriptions and amounts saved with discounts	medium	Time consuming, but done regularly to report out to libraries
ER—e-books	Small amount of ebooks purchased through ER program can be documented and discounts documented. DDA Project tracks use, spend and savings from list price, but doesn't address if the libraries would have purchased the content on their own.	medium	Same as with databases
ER—e-journals	Show value of added content vs. marginal costs to obtain it.	easy, if publisher can provide each libraries regular costs, additional charges and the value of the package.	Done consistently
NWDA—Archivists' Toolkit	Number of institutions participating, number of user accounts, usage, data stored	easy	possible
NWDA—EAD database	Number of institutions participating, number of finding aids/institution, retrievals by month, retrievals over time, ratio of finding aids to retrievals, top content, geographic distribution of users, top keywords used	easy	available
NWDA—EAD training	Numbers of webinar series per year, number of participants, participant feedback	easy	available
NWDA—grants	Each grant has metrics set by project; reporting on these is part of grant reporting activities	easy	available
Professional development	# people serving on committees, attendance at conferences	medium	available
Professional development	publications, speaking engagements	medium	possible

Service, Product, or Activity	Metric(s) For each measure:	How hard to produce to the metric? easy, medium, difficult	Are we gathering this metric now? available, inconsistent, possible
Shared ILS	Eventually: \$ savings, time freed up for local priorities, improved patron service, improved flexibility, improved ability to innovate	difficult	?
Resource Sharing—Summit	Numbers: Items requested per time	easy	available
Resource Sharing—Summit	Numbers: Items filled per time	easy	available
Resource Sharing—Summit	Numbers: Unfilled	easy	available
Resource Sharing—Summit	Wants: Top titles requested	easy	inconsistent,
Resource Sharing—Summit	Ratio: requested vs. supplied	easy	available
Resource Sharing—Summit	Time: from supply to ship	easy	available
Resource Sharing—Summit	Time: from request to patron notice	easy	available
Resource Sharing—Summit	Support: how many support questions come in from a giving member in a given time frame	medium	inconsistent
Resource Sharing—Summit	Support: how many support questions come in from the membership in a given time frame	medium	inconsistent
Resource Sharing—Summit	Support/Time: how long does it take to get a resolution to the problem report	difficult	possible
Resource Sharing—Summit	Wants: Call number	difficult	inconsistent,
Resource Sharing—Summit	Numbers: Peak Requesting	easy	available
Resource Sharing—Summit	Ratio: fill rate	easy	available
Resource Sharing—Summit	Numbers: requests canceled	easy	available
Resource Sharing—Summit	Numbers: Non supply auto vs manual	easy	available

Service, Product, or Activity	Metric(s) For each measure:	How hard to produce to the metric? easy, medium, difficult	Are we gathering this metric now? available, inconsistent, possible
Resource Sharing—Summit	Numbers: Messages in NRE	easy	available
Resource Sharing—Summit	Numbers: Any edition fill rate and unfilled rate	easy	available
Resource Sharing—Summit	Wants: Clicks “request Summit item” button	?	?
Resource Sharing—Summit	Wants: Clicks Email messages to patron asking if they still want an item if unfillable in SUMMIT	?	difficult
Resource Sharing—Summit	Wants: Patron type requesting items through summit	?	difficult
Resource Sharing—R&D	?	difficult	?

Appendix C

Analysis of Follow-up Questions

The Assessment Task Force interviewed members to learn more about opinions gathered in the survey. Representatives from approximately two-thirds of the member libraries participated in the interviews. Below are the interview questions and a summary of the responses.

1) What assessment expertise or services are available in your library or on your campus (e.g., statistical analysis, survey design, and qualitative methodology)? Have you used expertise outside of your library? If expertise resides in the library, would you be willing to offer that person/service to other Alliance members?

Although all respondents reported that their libraries were involved in assessment and data analysis efforts, there was no predominant staffing structure. While a few of the larger institutions had dedicated in-house staff, at smaller institutions data analysis often fell to the director and was more likely to be informal. Most commonly, library-related assessment was done by multiple librarians and personnel, and a number of institutions reported having some form of library assessment team. Almost all libraries reported relying on their institutional research departments for services such as data retrieval and survey design.

Institutions with in-house resources reported a willingness to share expertise with other members and to participate in Alliance-sponsored initiatives. Some members with fewer in-house resources indicated a willingness to participate in assessment-related endeavors. A number of institutions indicated that they were unable to contribute to Alliance-sponsored efforts due to a lack of available resources. No respondent indicated that their institutional research department would be able to participate in Alliance assessment efforts. Three institutions reported having some expertise in qualitative analysis, and the topic of accreditation expertise was mentioned once.

2) What do you see as the role of the Alliance, and especially Alliance staff, in providing assessment data and services? Would they provide the data or would they also provide some data analysis? How would you like to receive assessment data from the Alliance? Would this be format driven (reports, raw data, charts) that members access themselves?

Respondents indicated that it would be valuable for a group to identify a set of common data to be gathered and analyzed by the Alliance in order to enhance the ways that members communicate the value of the Alliance to local constituents (e.g., administrators, faculty, departments, and staff). There was interest in learning about other ways to use Alliance and other related data in assessing institutional priorities, such as learning outcomes, retention, and career acquisition. Members were interested in learning how to best incorporate information about Alliance activities into accreditation planning and reporting and sought advice on which annual surveys were most worthwhile. Members recommended that information about Alliance expertise and data be made available on the Alliance website.

Respondents were interested in reports as well as raw data that could be manipulated locally for customized reporting. They mentioned charts, talking points, and analyzed data including narrative reports as valuable formats for regular reports. Some requested that raw data be available in or exportable to Excel format, but others did not have a format preference for raw data. A number of respondents mentioned looking forward to the statistics reporting capacity in the new shared ILS. The table below describes the types of data that were collectively requested by participants.

Types of data requested by respondents

- ROI/cost savings
 - Benchmarks (i.e. comparative data)
 - Data currently provided via the Alliance website
 - Summit turnaround time, delivery, loans
 - Comparative data by institution across Alliance
 - Student enrollment data to make it easier to run local ratios and per capita reports
 - Ways to describe student learning outcomes
 - Analysis of usage statistics
 - Shared ILS
 - Demand Driven Acquisitions (DDA) statistics and analysis
-

3) What do you see as the role of the Alliance in providing a framework for continuing education and development about assessment?

Members expressed a collective desire for professional development and assessment-related continuing education but indicated that it would not be effective for Alliance members to create continuing educational opportunities from scratch. There was a strong will to leverage and share Alliance members' expertise and a number of members indicated that the Alliance could possibly have a role in coordinating these efforts. Several members stated strongly that providing continuing education for this was not the Alliance's role. These sentiments possibly reflected members' desire to have this work performed by members rather than by paid Alliance staff. This was consistent with comments about budgetary constraints that appeared throughout the interviews.

Several topics for continued learning and education emerged as being of interest to members. There was a desire to learn about how to effectively utilize Alliance data for faculty and other institutional reports and for accreditation. Members were interested in learning about how to link library work to learning outcomes; this was also expressed as demonstrating ROI. Members also suggested that it would be valuable to have demonstrations from other Alliance libraries about how they are using data for assessment.

4) What methods do you use to communicate assessment data/results with stakeholders? How can the Alliance assist your library with these communication efforts?

Respondents indicated that they used data for a wide variety of reports. A few institutions used data strictly for internal administrative communication, typically with a provost, but more commonly, data was being used to support communication to a broad array of stakeholders. Categories of data use included: *publicity/marketing*—newsletters, presentations, outreach, press releases, talking points; *internal*—faculty governance, administrative, advisory boards; and *assessment*—program review, information literacy, learning assessment, capstone projects.

Members indicated that reports containing comparative data across Alliance libraries were useful for benchmarking and advocacy. They also mentioned embedding data into annual reports, to illustrate ROI and to support national survey efforts. Several members reported using their library websites to share assessment information. There was a suggestion that the Alliance or Alliance members provide reports that aligned with ACRL standards.

5) Multiple institutional outcomes are listed below. What OTHER areas are critical for your library and your parent institution to assess and why?

This question sought to elicit common elements that might be used to facilitate the construction of a customizable tool for programmatic assessment. Interviewees were provided with a list of possible common institutional outcomes and were asked to provide others. The table below provides the initial list and a summary of respondents' comments. Several respondents mentioned that the provided list resonated with them. Job placement and use of facilities emerged as unexpected themes from multiple library types. It was evident that respondents were focusing on the use of library space for learning as an outcome worthy of assessment. Although this might not be tied to Alliance-provided data, it might be a topic to be supported through continuing education efforts.

Provided to respondents	Respondents' suggestions
STUDENTS learning (outcomes) enrollment retention graduation rate experience (engagement) success (careers and graduate schools) achievement (GPA and tests)	STUDENTS service impact on students information literacy job placement lifelong learning capstone projects
FACULTY/STAFF research output grant funding teaching clinical care	FACULTY/STAFF collaboration faculty use
LIBRARY/INSTITUTION organizational effectiveness economics/financial aims (costs, etc.) staff expertise	LIBRARY/INSTITUTION facilities cost/benefit strategic planning/alignment customer behavior campus mission diversity

Summary

Alliance member libraries are actively involved in assessment activities, and there is a wide range in the amount of local resources available for this work. There was a collective demand for analyzed data in the form of reports as well as raw data that could be customized locally. Members were thinking creatively about the types of data that would be valuable to their institutions and indicated that they used data for publicity/marketing, internal communication, and assessment. There was a strong desire for ROI data as well as for comparison reports that could be used for benchmarking. Members suggested a number of collaborative ways in which the Alliance could support continuing education around assessment, but there was a general sentiment that this was not a primary role for Alliance staff. The interview results support the findings of the initial survey and provide evidence that members are interested in working collaboratively on assessment-related initiatives.

[Laura Zeigen, Barbara Valentine, Donna Reed—5/9/2012]

Data-Driven Decision Making: A Holistic Approach to Assessment in Special Collections Repositories

Melanie Griffin, Barbara Lewis, and Mark I. Greenberg
University of South Florida, USA

Abstract

Faced with shrinking budgets and reduced staffing, the University of South Florida Libraries Special & Digital Collections Department (SDC) implemented a comprehensive, integrated assessment program to better focus its diminished resources within clear strategic goals. Department faculty sought to answer the following inter-related questions: 1) What are the Department's staffing needs? 2) What staff skill sets and training are required to meet researchers' expectations, and what personnel skills and functions are most needed by the Department in the future? 3) Where should the Department target its outreach efforts? 4) How can the Department streamline and prioritize technical services to support patron needs? 5) How can collection development and intellectual access activities best align with strategic goals and patron needs?

This paper presents the results of integrated qualitative and quantitative assessment activities, which, when taken as a whole, provided SDC with a comprehensive view of patron and Department needs. The assessment strategies utilized in SDC allowed for a wide variety of improvements and changes in staffing practices, all driven by data rather than anecdotal evidence.

Introduction

Like many academic libraries, the University of South Florida Tampa Library reports all manner of statistics but has not come effortlessly to assessment.¹ Over the last decade, it has participated several times in LibQUAL+®. Librarians involved in instruction use a variety of assessment tools, such as pre- and post-tests, but as of yet there is no Library-wide assessment program such as Standardized Assessment of Information Literacy Skills (Project SAILS).² A greater emphasis on accountability in higher education, sobering fiscal realities at USF, and considerable attention over the last decade paid to library assessment

activities have driven the USF Tampa Library to action.

In late 2009, the USF provost convened a campus-wide Student Success Task Force to recommend a fundamental transformation to the student experience. In its 160-page report, the task force made three recommendations: institutionalize student success as a permanent USF priority, integrate student success into USF's institutional culture, and build the research capacity to support student success initiatives.³ In 2010, the university formed the Office of Student Success (OSS). For the last three years, OSS has engaged nearly every unit at USF in order to enhance academic progress and student satisfaction, improve graduation and graduate school admission rates, and increase student competitiveness in the marketplace. The Library quickly became central to OSS goals. Library administrators extended hours of operation to 24/5 and welcomed Tutoring and Learning Services, a student employment center, and the Office of Undergraduate Research into the Library.⁴

The emphasis on accountability for improved student success coincided with deep cuts to higher education in Florida. USF's appropriation from the state legislature fell from nearly \$371.91 million in 2007–2008 to \$305.25 million in 2011–2012.⁵ In the Tampa Library, the number of professional and non-professional staff declined from 94.1 FTE in 2007–2008 to 73.5 FTE in 2010–2011, and in May 2011 the Graduate Assistant program in cooperation with the School for Library and Information Science was discontinued. The loss of six part-time graduate students placed a particular strain on public services activities throughout the Tampa Library, including the Special Collections reading room. Compounding loss of staff between 2007 and 2011, total Library expenditures decreased from \$11.86 million to \$10.91 million while print and electronic resources costs at USF

increased an average 4.2 percent annually.⁶

The rising importance of assessment within the library profession, as evidenced by attention to the topic in professional literature, also motivated the USF Tampa Library to take assessment more seriously. A brief survey of publications on assessment revealed 236 peer-reviewed articles between 1990 and 1999 and 676 peer-reviewed articles the following decade. From January 2010 to August 2012 alone, 376 articles appeared in publication.⁷

Within an environment of rising expectations, decreasing resources, and the profession's growing interest in assessment, the Tampa Library formally revisited strategic goals set in 2008 in order to adapt them to the dramatically shifting terrain. Following a lengthy process that involved the entire staff, a written report in May 2011 "reset" the strategic direction begun three years earlier. The report confirmed Special & Digital Collections' (SDC) significant role in cultivating a research culture within the Library. Specifically, SDC was asked to redouble its efforts to build several collections of national distinction (albeit with fewer resources), develop and refine research tools and services to support these collections, and expand its outreach. Library investment of staff time and financial resources prioritized strategic projects.⁸

SDC staff quickly realized it could not meet its obligations under the Library's strategic plan nor continue to improve public services and collections in an environment of diminishing human and financial resources without greater attention paid to assessment. Department librarians and staff also understood that the questions it sought to answer, though focused primarily on public services, were interrelated and thus required an approach that addressed a variety of activities in a comprehensive and integrated manner. Specifically, SDC's assessment plan asked the following: 1) What are the Department's staffing needs? 2) What staff skill sets and training are required to meet researchers' expectations, and what personnel skills and functions are most needed by the Department in the future? 3) Where should the Department target its outreach efforts? 4) How can the Department streamline and prioritize technical services to support patron needs? 5) How can collection development and intellectual access activities best

align with strategic goals and patron needs?

The professional literature includes a rapidly growing number of publications on assessment for academic libraries in general, but discussions of assessment methodologies for special collections and archives tend to be sparse and to focus on answering specific questions, usually related to technical services.⁹ Common types of assessment studies in special collections literature include methodologies for computing the time¹⁰ or money¹¹ required to process archival materials, reducing the backlog of hidden collections,¹² measuring the impact of special collections cataloging,¹³ and performing condition assessments.¹⁴ While many of these studies, particularly those discussing minimal standards processing, consider access and user implications,¹⁵ very few as yet focus specifically on establishing metrics for defining "good" public services in special collections or archives. The Archival Metrics toolkit is an outlier, providing toolkits for assessing various parts of a special collections or archives department, including public services web tools.¹⁶ More recent literature, particularly the fall 2012 special RBM issue on assessment, focuses on a more varied array of assessment strategies for special collections and archives. The article "Data-driven Management and Interoperable Metrics for Special Collections and Archives User Services," for example, establishes the framework for an evidence-based practice approach to assessment.¹⁷

Assessment Tools

As SDC was unable to find an existing assessment methodology that considers the entire special collections environment, SDC librarians and staff created a holistic assessment model that takes into account the needs, requirements, and standards of public services, technical services, and administration. This paper presents the results of qualitative and quantitative assessment activities, which, when taken as a whole, provided SDC with a comprehensive view of patron and Department needs. Beginning in May 2010, staff began collecting quantitative data on collection use, reading room activity, and website traffic using circulation and reading room statistics, reader registration profiles, and web analytics. To accomplish the necessary quantitative data collection, the Department utilized a variety of systems, including Aeon, Desk Tracker, Google Analytics, LibGuides, and Fedora Commons

Repository Software, which provide staff with statistical information. Patron surveys and usability testing,¹⁸ conducted over academic year 2010–2011, provided qualitative information on the patron experience in the reading room and using the Department's web tools.

Aeon

Aeon, a product of Atlas Systems, Inc., is a material request and workflow management software specifically designed for special collections libraries and archives. The data collected in Aeon provides staff with detailed patron information as well as reading room and material usage statistics. Patron data includes status (undergraduate, graduate, faculty, staff, community user, visiting scholar, etc.), discipline (humanities, social sciences, etc.), research interests (optional), and the day, time, and duration of each visit. Material request data includes the type of material (e.g., monograph, archival material, etc.), collection name, day and time a user received and returned materials, the patron's user ID, and standard bibliographic information.

SDC implemented Aeon in May 2010. Through August 2012, 6,313 material transactions and 1,732 reading room visits have been recorded. At the end of each semester, staff generate and analyze a standard set of reports (see Appendix 1). The combination of data collected and reported enables SDC staff to identify when the reading room is most active, what type of patrons use the reading room and when, and what collections are used and by whom. Aeon also tracks which staff members are involved in each step of each transaction. Analysis of this data provides insight into staff members' proficiency in their use of Aeon and identifies potential training needs.

Desk Tracker

Aeon offers valuable data on reading room and collections use, but the software is not designed to record all patron contact. SDC librarian and staff interaction with patrons takes many forms, including face-to-face communication, e-mail, letter, fax, and telephone calls, and serves a variety of purposes, including research consultations, program planning, collection development, and donor relations. In order to better assess the use of librarian time and the knowledge required by reading room staff, SDC needed a system to

capture data on all types of patron interactions.

Desk Tracker is a web-based library statistics system offered by Compendium Library Services LLC. The program enables library staff to record general patron transaction activities, generate reports via a standardized reporting process, and customize Desk Tracker windows to capture both individual and public service point information. The customization features make it possible for staff at each service location to collect unique data, but also to standardize across service points how patron transaction information is recorded and tracked and the type and level of data that is collected.

SDC began using Desk Tracker in September 2010. As with Aeon, staff members record user type. In addition, they also note the purpose of the visit, the specific request(s) made and/or question(s) asked, and the outcome of the interaction (see Appendix 2). In the case of material requests, the interaction is noted in Desk Tracker, but all details of the request appear in Aeon.

Reading Room Patron Survey

Rather than developing an independent instrument to measure patron satisfaction in the reading room, during the spring 2011 semester SDC adapted existing instruments created by the Archival Metrics project. SDC modified its instrument to be as short, simple, and as meaningful to the institutional context as possible. All patrons who request materials in the reading room are asked to fill out a paper survey, which is provided to them with their requested materials. A staff member then enters survey data into a SurveyMonkey form to facilitate data analysis. While ideal circumstances would require each patron to complete the questionnaire in a web-based form during each visit, some patrons decline to receive or complete the survey, and the physical layout and limited computer availability in USF's reading room preclude a web-based option.

The one page, one minute survey (see Appendix 3) asks users to rate their satisfaction in the reading room in six concrete, easily measured areas: the helpfulness of staff, time spent waiting for materials, hours of operation, noise levels, website functionality, and photocopying /duplication services. Two additional questions ask patrons to

rate their overall experience and their progress towards meeting research goals for the visit. The survey collects limited demographic information about the patron: status (undergraduate student, graduate student, faculty member, visiting scholar, community user) and the purpose of his/her visit to Special Collections (class assignment, dissertation or thesis, publication, family history, etc.). The survey ends with an open-ended comment field, asking for ways in which the reading room experience could be improved.

Website and Digital Collections Usability Study

Based on lackluster response rates to web-based usability testing at the USF Library, during the spring 2011 semester SDC opted to conduct face-to-face website usability testing with a small sampling (n=10) of representative user types: undergraduate students, graduate students, and faculty members. Unfortunately, no community users were available or willing to participate, resulting in a small but significant gap in the population sampled. This usability testing focused on two of SDC's web tools: its main website and its digital collections user interface (CORAL).

The only demographics captured during usability testing were user status and preferred browser. During the test, SDC staff asked participants to find information on the Department's website and to perform a series of tasks using CORAL (see Appendix 4). A staff member observed the user during the test, created screen captures, recorded any verbal questions or comments, but did not provide help. After completing the series of tasks, staff asked each user a series of open-ended questions.

Web Analytics

SDC uses a variety of content management systems to organize its web presence, including WordPress, LibGuides, and Omeka. The Department utilizes Google Analytics to track total and unique page views, bounce rates, exit rates, average time on pages for all WordPress and Omeka web pages, as well as the browser and operating systems used to access these websites (see Appendix 5). In addition to its main website content, SDC also maintains a number of LibGuide-based subject pages, and the Department uses the software's built-in statistics tools to track individual page and guide views, device type, browser, and operating system (see

Appendix 6).

Fedora Commons

SDC currently utilizes an internally developed digital asset management system built using the Fedora Commons Repository Software to store and access its own text, image, and audio/video digital content. Searches, hits, views, and downloads are recorded in the database so that regular and ad hoc reports can be generated to identify digital collection and item usage. Reports also detail the number of items in each collection and the size in MBs for each item and collection.

Assessment Outcomes

After implementing all of the tools outlined above and initiating data collection, SDC librarians and staff analyzed the results of each process separately and as part of a long-term assessment strategy to inform changes in departmental practices. Staff focused particularly on analyzing intersecting data points from multiple tools and devoted its time to improving services, rather than highlighting a list of problems that, for a variety of institutional or budgetary reasons, could not be fixed. With eighteen months of ongoing, integrated data collection complete, the assessment outcomes described below have offered an excellent starting point for data-driven decision making. Over time, the Department plans to refine its continuous assessment strategies, learn more from data collected, and improve its operations accordingly.

Staffing Needs

Prior to 2009, two Department employees, often at least one librarian, staffed the public services desk in the reading room during all hours of operation (Monday–Friday, 9 am–6 pm). The Department's "just in case" model ensured that someone capable of answering any type of reference question would always be available, just in case they were needed. Crippling budget and staffing cuts necessitated changes. A single staff member, often a temporary student employee, began working solo shifts at the public service desk during reduced hours (Monday–Friday, 10 am–5 pm), paging materials, answering basic reference questions when possible, and providing a librarian's phone number or email address when greater knowledge or a reference consultation was needed.

Librarians and administration worried about the

implications of the new reading room model on quality service. Department staff used several of the tools described above to assess the impact of these service changes on patron satisfaction and, most importantly, prioritized data rather than anecdotal evidence in its discussions.

First, the reading room survey provided simple quantitative data on factors such as patrons' satisfaction with hours of operation and wait time, as well as qualitative information on their experience in the reading room. Staff discovered that their perceptions of inadequate staffing levels and excessive wait times were exaggerated. During the first eighteen months of data collection, only one of the 178 respondents expressed dissatisfaction with the service provided in the reading room. Patrons were not shy in expressing concerns about other matters, particularly SDC's inadequate photo duplication services, limited hours of operation, and sometimes confusing website. Staff worried about collections expertise and research consultations "on demand" in the reading room, but patrons' survey responses revealed that they did not mind receiving a librarian's e-mail address or phone number in lieu of an immediate answer. In fact, instead of the anticipated complaints, users routinely offered compliments about staff knowledge, availability, and helpfulness. Sample responses to the question "what can we do to make improve your experience in the Special Collections reading room" include: "Nothing! :)" and "Nothing; clone your staff & send them downstairs to first floor reference desk. Attitudes are SO helpful up here!" Constructive criticism comments included "Extended evening hours," "At work & class from 9 am to 5 pm daily. I have trouble getting to S.C. during the open hours," and "Make copier accessible to reader[s]." Based on the collected data, staff decided that major changes to the service model were not needed, but that operational modifications would be beneficial.

Two significant changes occurred due to results from the reading room survey. First, patrons confirmed the inadequacy of photo duplication services. The Department relied on a single flat-bed photocopier, inaccessible to patrons, and staff denied many copy orders either on account of materials' size or fragility. Staff offered use of an inexpensive digital camera, but it was not a popular solution, as lighting levels and limited

camera functionality frequently resulted in blurry images, especially of textual materials. Staff believed that an overhead scanner with a book cradle provided a better solution, but the cost seemed prohibitive given the Library's declining operating budget. Using the qualitative and quantitative data generated by the patron survey, SDC partnered with the Academic Services unit at the Tampa Library to write a successful student technology fee grant to install three overhead scanners in the building, including one in the reading room. With the scanner installed, patron complaints about reproduction services have drastically decreased.

Second, in response to the dissatisfaction expressed by users over reading room hours, staff looked for simple ways to modify hours of operation without encumbering additional costs. Using data exported from Aeon, staff analyzed traffic patterns in the reading room. They isolated high demand during lunch and early afternoon and more limited use late in the day. They noted the frequency with which the Department opened to waiting patrons, which ultimately led staff to open the reading room an hour earlier. Current staffing levels preclude evening and weekend hours, despite repeated requests for "different" hours on the reading room survey and in phone calls to the Department, documented in Desk Tracker. The data also confirmed that a second staff member at the public service desk is generally not needed before lunch and at the end of the day, but additional support is required for three hours in the afternoon Monday through Thursday. Today, the Department's reading room manager, with additional help readily available, covers these hours.

Data derived from Desk Tracker provide granular information on patrons' needs in the reading room. Early afternoon hours tend to be the busiest, but undergraduates with known item retrieval requests constitute a disproportionate number of users during these hours. Visiting researchers, graduate students, and USF faculty, for whom more time consuming transactions usually occur, tend to arrive much earlier in the day, and they often have communicated with a librarian liaison before their visit. For patrons who have called ahead or already completed a research consultation, item retrieval requests tend to be more predictable and thus less time consuming for desk staff.

Training and Supervision

Prior to Aeon's adoption by USF in Spring 2010, Special Collections staff did not uniformly adhere to written procedures regarding information expected on reader registration forms and call slips or the order in which tasks were to be completed at the reading room public service desk. As a result, the Department knew little about some of its patrons for purposes of outreach and security, could not accurately count collection use from illegible or incomplete call slips, and faced unacceptably high numbers of misplaced materials with no way but memory to trace the last staff member to touch an item.

With multiple librarians overseeing the reading room but no single person in charge, effective training and supervision proved difficult. New students or staff working the public service desk struggled to remember and follow policies and procedures, and a few recalcitrant longtime employees remained wedded to old ways of doing things. Juggling multiple responsibilities, the Department's director and librarians did the best they could to address issues as they occurred, but the collaborative approach to training and supervision proved increasingly ineffective. Amidst other changes underway in public services, Department members decided to fill a line vacated by an administrative assistant with an operations manager to oversee staff and student training and supervision, revise and implement new reading room procedures, coordinate security, collect and analyze statistics, and maintain public services software management systems.

Aeon offers uniform, required workflows that limit the ability to provide or accept incomplete patron registration or materials request information or skip steps in the request, retrieval, and re-shelving of items. Aeon reports provide information on transaction types and about individual staff members' performance with the product, thereby identifying areas in need of additional training. For example, analysis of the data on users signed into and out of the reading room revealed that some staff members were not always diligent about signing patrons out. Remediation and enhanced supervision ensured that staff more accurately recorded reading room traffic data.

Outreach

SDC's website is often the first point of contact between patrons and the Department, and it serves as an essential outreach tool. Phone calls and in-person questions from puzzled or frustrated patrons suggested that SDC's website navigation structure was not always intuitive and its content occasionally incomplete. Early results from the reading room patron survey, which asks users how easily they navigated the Department's website, confirmed this suspicion. Usability testing with patrons and bounce rates derived from Google Analytics provided concrete information on specific and suspected navigation difficulties, confusing terminology, and technical barriers to accessing information.

When SDC first conducted usability testing on its web pages, the Library used LibGuides as its content management system. This CMS necessitated a tabbed structure, but staff built pages without consistent, hierarchical navigation accessible from every page of the site. Not surprisingly, patrons most often experienced difficulty with basic navigation. Undergraduates, in particular, struggled to find the Special & Digital Collections portion of the Library's main landing page. Once they arrived, however, most users understood the site's terminology and successfully located basic information such as Department hours and a librarian to help with a project on a specific topic.

To make the website a more effective outreach tool, two SDC librarians collaborated with the newly hired Webmaster to improve navigation. In addition, one librarian participated in the Library's website redesign team to ensure that the group considered SDC needs. The technical limitations experienced with LibGuides proved insurmountable, so staff moved considerable amounts of content to WordPress to accommodate a more uniform design and built-in, standardized navigation. As users more often experienced problems with navigation, not content or vocabulary, the Department asked the Webmaster to provide only structural and design support, and it retained control over its content management.

Further usability testing, in conjunction with statistics from Google Analytics, highlighted a known issue in SDC's digital collections user

interface (CORAL): 36 percent of the site's users accessed the collections in Internet Explorer, and those users experienced greater difficulty in performing simple and complex searches. In addition, users requested several enhancements, including Boolean operators, the ability to limit searches by format (text, audio, and/or video), and access to higher resolution downloadable images. They identified visual changes to the interface to make it more intuitive, reduce click-throughs, and permit reproduction of metadata. SDC librarians, administration, and the CORAL developer documented, discussed, and prioritized all user concerns. As with assessment of the reading room, staff focused on issues that could be changed rather than those without a practicable solution. During spring and summer 2012, the developer made programmatic modifications and enhancements to CORAL in order to address these issues.

Data derived from page hits, combined with collection use patterns from CORAL and Aeon, provided insights into additional avenues for outreach. Some of the Department's most heavily used collections correlate with its most frequently used web pages, but some collection pages have extremely high hit rates despite sporadic collection use. Low bounce rates suggest that page visits do not result from false hits, but staff have not been able to discover why, in some instances, webpage usage coincides with collection usage and other times it does not. Librarians are currently experimenting to see if high web hits for collections with lower usage statistics offers an opportunity for targeted outreach and instruction efforts to translate interest into use.

Technical Services and Collection Development

The same budget cuts that necessitated changes to SDC's public services staffing policies also resulted in slower rates for cataloging monographs and serials, processing archival collections, and acquiring or creating collections. The reading room patron survey, Aeon, Desk Tracker, and CORAL statistics assisted the Department in resetting some of its technical services priorities, making targeted acquisitions, and establishing more strategic digitization priorities.

In terms of stacks maintenance, SDC has thirty-six distinct location codes in USF's catalog for monographic collections and an additional two

codes for archival and manuscript collections. Locations are further delineated in a separately maintained stacks guide, which indicates the range and shelf number for each collection. As in many repositories, space is at a premium, and in recent years staff members have spent considerable time shifting collections to accommodate new acquisitions. Now, with data on which collections patrons most heavily use, stacks management decisions are more thoughtful. Infrequently used collections, for example, now reside in quasi-remote storage, freeing space near the reading room for heavily used materials.

Collection use data has also driven decisions about whether to pursue or accept specific donations and to make particular purchases. For example, materials related to the cigar industry and its ethnic communities in Ybor City and West Tampa comprise one of SDC's most heavily used collection areas. As a result, one SDC librarian has devoted additional effort to working with potential donors to assess and, where appropriate, accept donations of manuscripts and monographs. With the Holocaust & Genocide Studies Center's collections receiving growing use by faculty and students, SDC librarians have expanded relationships with targeted rare book and manuscript vendors in the U.S. and abroad to purchase published and unpublished materials. Given increased demand for the subject area by users, these items receive priority cataloging and processing.

Reading room patron surveys, Google Analytics, and Aeon and Desk Tracker statistics now play a greater role in determining digitization priorities. SDC librarians track disproportionate hits to subject pages on the Department web site, the high use of specific collections, and individual digitization requests. Patrons' needs have joined a parallel production track within the digitization lab. Longer-term, internally directed projects designed to grow USF's reputation as a research library occur alongside externally driven, more immediate, smaller scale digital collection building.

Conclusion

During the last eighteen months, Special & Digital Collections has focused considerable energy on developing and implementing a systematic, holistic assessment strategy to improve a range of services in the Department. With data derived from several

assessment tools, staff has better aligned reading room hours and staff skill sets with patron needs, utilized limited financial and human resources to build the physical and digital collections demanded by its patrons, and more thoughtfully targeted its outreach efforts.

Despite significant improvements to Department operations, SDC's assessment efforts are not complete. Currently, there are no national standards for assessing special collections, and thus SDC's methodologies were highly customized to its institutional environment. USF's work may be extensible to other special collections units, but without standardized metrics it is too early to tell. Further, SDC can track self-improvement from year to year but has no way of comparing itself to peer and aspirant institutions. Once the work of the RBMS Metrics and Assessment Task Force is complete, SDC plans to ensure that its assessment activities conform to the new standards.

Most SDC assessment activities are continuous, but not all. The Department needs to conduct more frequent usability studies of its several content management systems. Since mid-2012, SDC's digital collections have resided in USF's institutional repository as well as in CORAL. As yet, SDC has not gauged patrons' satisfaction with the repository or determined their preferences between systems. By late 2012, the Department plans to implement new photo duplication processes, and those too will require careful analysis and patron feedback.

SDC's assessment methodology may require future realignment. Its web assessment activities must occur at regular intervals, but despite these areas for improvement, something transformative has occurred over the last eighteen months at USF. Where once SDC librarians and staff aspired to assessment, today the Department has adopted a systemic, holistic strategy that has become part of its working culture. The greatest hurdle to continuous improvement has been overcome.

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Notes

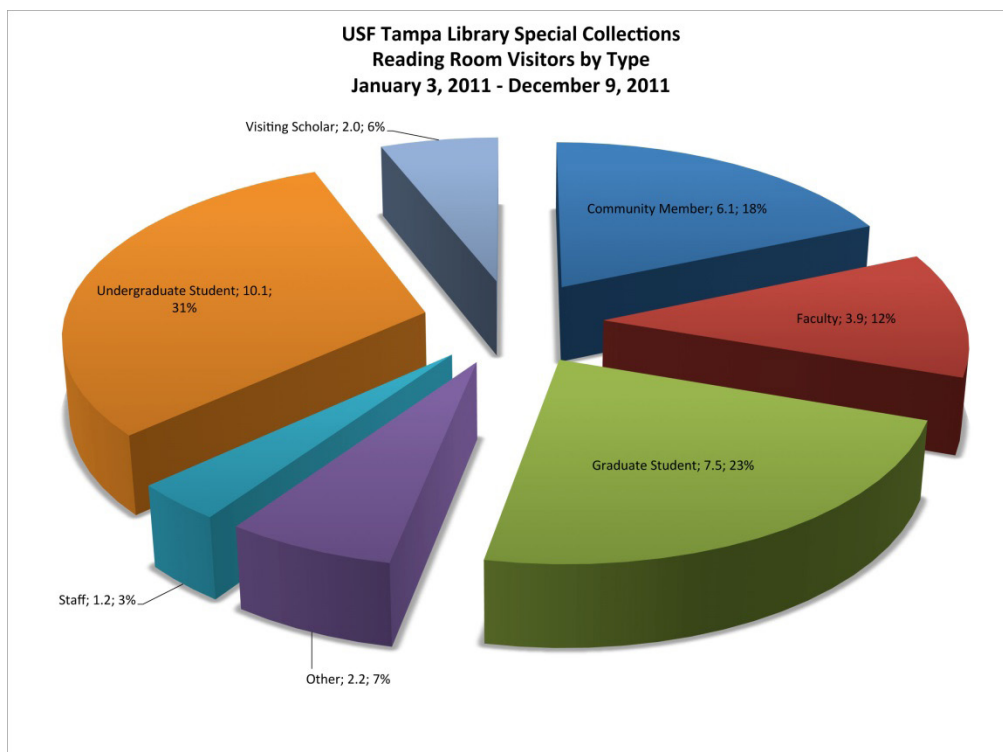
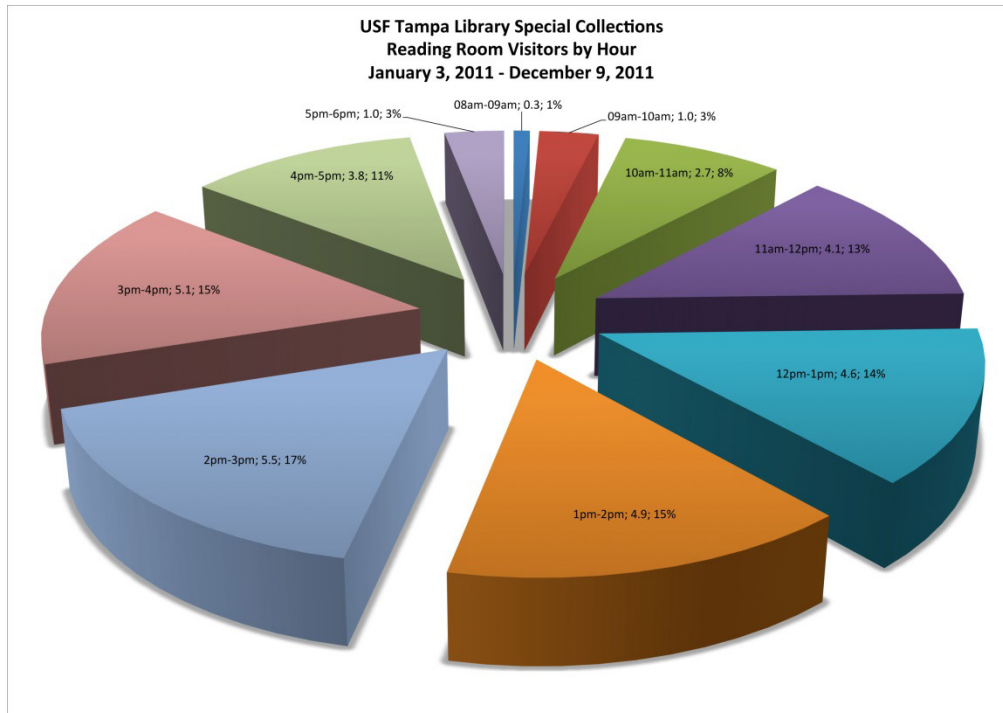
1. For examples of USF Tampa Library statistics

reported to the National Center for Education Statistics (IPEDS), Association of Southeastern Research Libraries, and Association of College and Research Libraries, see <http://www.lib.usf.edu/academic-services/public-services-statistics/>.

2. For more information about Project SAILS, see <https://www.projectsails.org> and <http://www.trails-9.org>. On SAILS's development and utility, see Juliet Rumble and Nancy Noe, "Project SAILS: Launching Information Literacy Assessment Across University Waters," *Technical Services Quarterly* 26, no. 4 (2009): 287–298; Yvonne Mery, Jill Newby, and Ke Peng, "Why One-shot Information Literacy Sessions Are Not the Future of Instruction: A Case for Online Credit Courses," *College & Research Libraries* 73 (July 2012): 366–377; and Kerry Sutherland, "Librarians as Literacy Sponsors: A Critique of Information Literacy Assessment Tools," *Progressive Librarian* 33 (Summer/Fall 2009): 18–25.
3. See <http://usfweb3.usf.edu/studentsuccess/about/Student-Success-Task-Force-Final-Report.pdf>.
4. For more information on the USF Office of Student Success and its task force report, see <http://usfweb3.usf.edu/studentsuccess/index.htm> and <http://usfweb3.usf.edu/studentsuccess/about/Student-Success-Task-Force-Final-Report.pdf>.
5. The total state appropriation includes general revenue and lottery funds. See *Operating Budget, 2011–2012*, Budget and Policy Analysis, University of South Florida, http://usfweb2.usf.edu/bpa/OB/11-12/1112_Operating_Budget_Web.pdf, 1–5.
6. The USF fiscal year runs July 1–June 30. See *Library Statistical Summary, 2007–08* and *Library Statistical Summary, 2010–11* at <http://guides.lib.usf.edu/academicresources>.
7. Search conducted August 19, 2012 in Library Literature & Information Science Full Text, Boolean/Phrase: Library AND Assessment, Limiters: Scholarly (Peer Reviewed) Journals, Document Type: Article, Publication Date: 1990–1999, 2000–2009, 2010–2012.

8. *Resetting Strategic Direction: Final Report*, May 2011, Office of the Dean, University of South Florida Libraries, <http://guides.lib.usf.edu/dean-usf-libraries>.
9. See "The Bancroft Library Manuscripts Survey Project," accessed August 20, 2012, http://bancroft.berkeley.edu/info/mss_survey/index.html and "PACSCL Hidden Collections Processing Project," accessed August 20, 2012, <http://clir.pacscl.org/> for examples of well-known special collections assessment toolkits.
10. Terry Abraham, Stephen Balzarini, and Anne Frantilla, "What Is Backlog Is Prologue: A Measurement of Archival Processing," *American Archivist* 48, no. 1 (1985): 31–44.
11. Paul Ericksen and Robert Shuster, "Beneficial Shocks: The Place of Processing—Cost Analysis in Archival Administration," *American Archivist* 58, no. 1 (1995): 32–52.
12. Barbara Jones, "Hidden Collections, Scholarly Barriers: Creating Access to Unprocessed Special Collections Materials in America's Research Libraries," *RBM: A Journal of Rare Books, Manuscripts, & Cultural Heritage* 5 (2004): 88–105.
13. M. Winslow Lundy, "Provenance Evidence in Bibliographic Records: Demonstrating the Value of Best Practices in Special Collections Cataloging," *Library Resources & Technical Services* 52, no. 3 (2008): 164–172.
14. Paul Green, "A Method for Undertaking a Full Conservation Audit of Special Collections of Books and Manuscripts," *Collection Management* 28, no. 4 (2004): 23–42.
15. Mark Greene and Dennis Meissner, "More Product, Less Process: Revamping Traditional Archival Processing," *American Archivist* 68 (2005): 208–263.
16. "Archival Metrics: Promoting a Culture of Assessment in Archives and Special Collections," accessed August 20, 2012, <http://archivalmetrics.org/>.
17. Joyce Chapman and Elizabeth Yakel, "Data-driven Management and Interoperable Metrics for Special Collections and Archives User Services," forthcoming, *RBM* 13, no. 2 (2012).
18. USF's Institutional Review Board granted an exemption for all of the surveys and usability testing tools discussed below.

Appendix 1: Selected Aeon Reports



Appendix 2: Desk Tracker Reading Room Form

Activity **Reports** **Manage**

Batch Mode | **Multiple Entries** | **Custom Timestamp**

Contact Type required [ticksheet]

☐ Face to Face
☐ Phone
☐ Email (other than Ask a Librarian)
☐ Chat (other than Ask a Librarian)
☐ Letter/Fax

Patron Type required [ticksheet]

☐ USF Undergraduate Student
☐ USF Graduate Student
☐ USF Faculty/Staff
☐ Community User
☐ Project Partner
☐ Visiting Scholar
☐ Donor
☐ Other or Unknown

Purpose of Reading Room Contact required [ticksheet]

☐ Material Retrieval
☐ Basic Reference Assistance
☐ Using CORAL
☐ Viewing an Exhibit
☐ Technical
☐ Directional/General Information (library)
☐ Directional/General Information (campus/other)
☐ Other:

Question/Comment/Notes

Outcome (Answer/Sources/Referral/Etc)

☐ **Escalate to Knowledge Tracker**

Appendix 3: Reading Room Patron Survey

1-Minute Special Collections Reading Room Survey

1. Please respond to the following statements regarding Reading Room staff and facilities:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
A staff member provided helpful service.	☐	☐	☐	☐	☐
A staff member retrieved my materials in a timely manner.	☐	☐	☐	☐	☐
Reading Room hours of service met my needs.	☐	☐	☐	☐	☐
The Reading Room offered a quiet place to work.	☐	☐	☐	☐	☐
The Special & Digital Collections website was easy to use.	☐	☐	☐	☐	☐
Photocopying / duplication services met my needs.	☐	☐	☐	☐	☐
I met my research goals during this visit.	☐	☐	☐	☐	☐
I had a positive overall experience.	☐	☐	☐	☐	☐

2. Which best characterizes the project that motivated your visit to Special Collections?

- ☐ Class assignment
- ☐ Dissertation or thesis
- ☐ Publication (e.g. article, book)
- ☐ Curriculum development / teaching preparation
- ☐ Family history / genealogy project
- ☐ Administrative or work-related assignment
- ☐ Other (please specify):

3. Which best describes you?

- ☐ Undergraduate student
- ☐ Master's student
- ☐ Doctoral student
- ☐ Faculty member or post-doc
- ☐ University staff
- ☐ Community user

4. What can we do to improve your experience in the Special Collections Reading Room?

Appendix 4: Website and CORAL Usability Testing Questions

Demographic information:	Collections website.
Preferred browser:	Find a photograph of a cigar factory.
Status (circle one):	Find a photograph taken by the Burgert Brothers.
undergraduate student graduate student not a student	Download and save a photograph taken by the Burgert Brothers at 150 dpi.
Special Collections website:	How many digital photograph collections are there?
From Library homepage, navigate to Special Collections website.	Find a way to search only the Florida Map Collection.
What are the department hours on Saturday?	Find a Florida slave narrative from 1936.
Where is the reading room located?	Without performing a search, can you determine if you should be able to find an oral history interview in CORAL?
How do you request an item for use in the reading room?	Are there old issues of the Tampa Tribune in CORAL?
Does Special Collections have a science fiction collection?	In the Library catalog, find a record for a photograph of a cigar factory taken by the Burgert Brothers. Can you get from the record in the catalog to the photograph?
Does Special Collections have a Lebanese antiquities collection?	Post-test questions:
Does Special Collections have an Italian studies collection?	How easy was it for you to navigate from the main Library website to the Special Collections and the Digital Collections websites?
You need more information about Ybor City. Who would you contact? How would you contact him/her/them?	How easy was it for you to navigate through the Special Collections and the Digital collections websites? What would have made it easier?
Are you allowed to make photocopies in the reading room?	Was there too much text on the websites? Too little text?
Are you allowed to bring a digital camera into the reading room?	What is your #1 recommendation for making CORAL easier to use?
CORAL and the Digital Collections website:	
From the library home page, navigate to Digital	

Of the tasks you were asked to do, which ones were the hardest? What would have made them easier?

What information is not on the websites that you would like to see there?

Appendix 5: Google Analytics Report for SDC WordPress Pages



USF Libraries Website MAIN Profile ...
Filtered USF Libraries Main [DE...]

Content Drilldown

Jun 1, 2012 - Jun 30, 2012

ALL » PAGE PATH LEVEL 1: /special-collections/

% of pageviews : 1.38%

Explorer

Site Usage

Pageviews



Pageviews

1,885

% of Total: 1.38% (136,930)

Unique Pageviews

1,306

% of Total: 1.27% (102,482)

Avg. Time on Page

00:01:37

Site Avg: 00:02:49 (-42.47%)

Bounce Rate

58.09%

Site Avg: 63.28% (-8.21%)

% Exit

36.23%

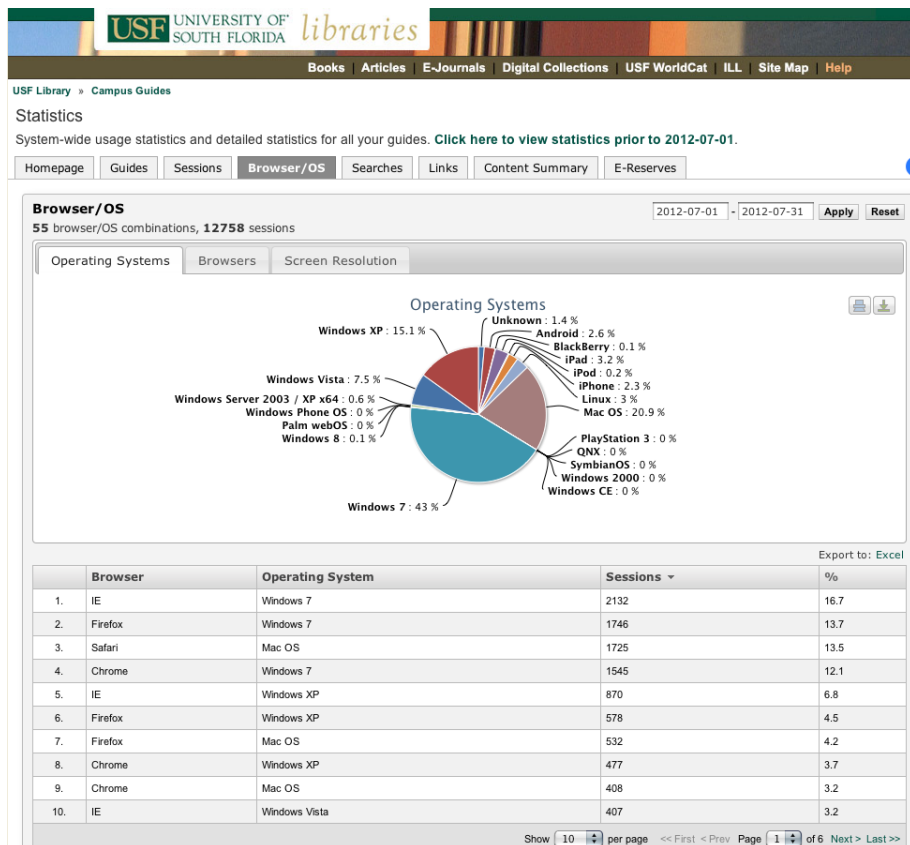
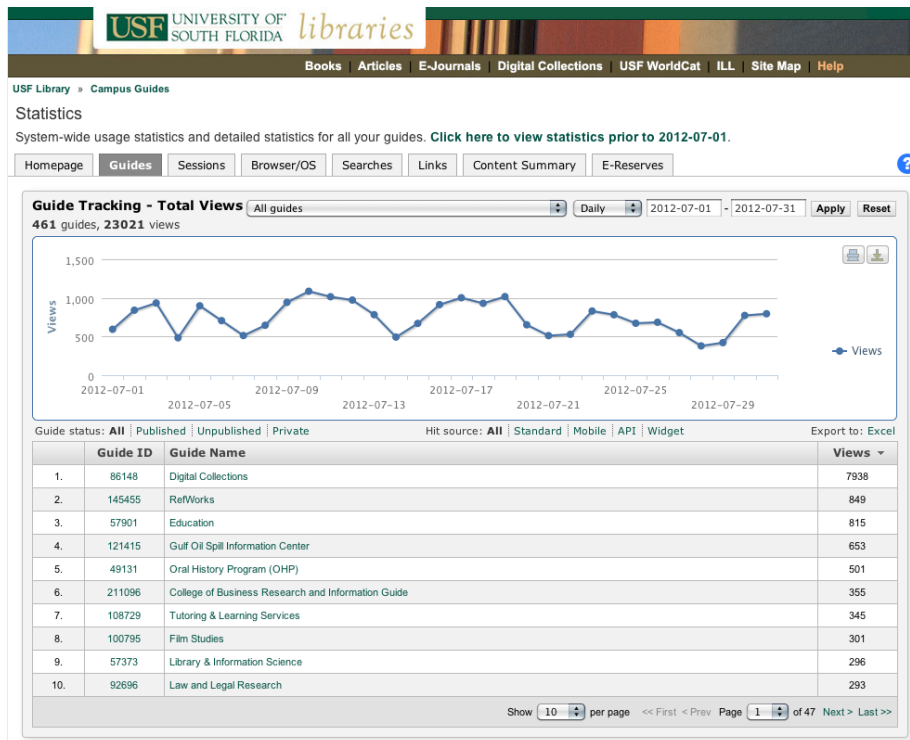
Site Avg: 54.05% (-32.96%)

Page path level 2	Pageviews	Unique Pageviews	Avg. Time on Page	Bounce Rate	% Exit
1. /	555	370	00:01:51	43.03%	27.93%
2. /florida-studies/	506	321	00:01:32	59.63%	28.06%
3. /childrens-young-adult-literature/	230	176	00:01:09	65.62%	56.52%
4. /arts/	119	96	00:00:45	75.00%	51.26%
5. /using-our-materials/	112	74	00:02:41	66.67%	47.32%
6. /science-fiction-fantasy/	110	71	00:01:53	50.00%	32.73%
7. /contact-us/	89	74	00:02:17	77.78%	51.69%
8. /literature-book-arts/	54	38	00:00:54	36.36%	31.48%
9. /university-archives/	49	38	00:00:39	57.14%	36.73%
10. /holocaust-genocide-studies/	19	15	00:00:46	40.00%	10.53%
11. /schedule-a-class/	16	15	00:00:12	90.00%	75.00%
12. /anglo-irish-collection/	12	6	00:00:08	40.00%	50.00%
13. /research-help/	10	8	00:04:22	0.00%	40.00%
14. /reading-room-procedures/	4	4	00:00:13	100.00%	25.00%

Rows 1 - 14 of 14

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Appendix 6: LibGuides Statistics Reports



Understanding the User's Mental Model: An Evolving Design and Assessment Strategy for Archival Collection Description

Rachael Hu and Brian Tingle
California Digital Library, USA

Abstract

The purpose of this paper is to trace the evolution of a design strategy for recent iterations of the Online Archive of California (OAC), a service developed to provide access to an aggregation of archival finding aids from institutions across California. This evolution dates from a 2008–2009 user-centered redesign effort through a program of small incremental design and assessment activities that have culminated in a newly proposed 2012 design strategy for the display of archival collection description.

Introduction

With the development of the Encoded Archival Description (EAD) standard in the 1990s, special collections and archives were able to make their finding aids and archival description available to an online audience of users for the first time. As noted by Anne Gilliland-Swetland in 2001, finding aids are an important discovery and retrieval tool for primary source collections—especially in its online form.¹ She notes that archival description in its paper form “has been severely constrained by the ‘fixity’ of how the finding aid is presented on paper.”² In their online form, the discovery aspect of the finding aid becomes a unique challenge due to the complex interplay between the hierarchical elements within a finding aid and the web environment in which it must be displayed. The user’s ability to navigate and interact with these intricate collection descriptions can oftentimes be less than successful. As described by Elizabeth Yakel and Deborah Torres, expert archival users must develop an understanding of archives’ use of language and terminology as well as “internalizing. . . [the] specific and distinctive rules for access and use.”³ In addition, as on-demand digital content becomes ubiquitous in user’s daily media consumption, these same users expect immediate access to primary source material. This added layer of expectation colors their experience when interacting with collection description.

Formulating a design strategy for online collection description can be a complicated and tricky proposition. The design challenge for user experience and program staff lies not only in understanding what the user’s needs are but how to reconcile those needs with the detailed content available to them in the online finding aid. Building a comprehensive design strategy that will meet these challenges is a multi-pronged process that involves iterative assessment activities to comprehend the changing nature of the user’s motivation and thought processes or “mental model.”

Furthermore, another aspect to consider when devising a design strategy is the uniformity of the collection description available on a particular website. A collection description page that has to adapt to different forms of collection description, such as EAD as well as MARC, will add another element that needs to be accounted for in the design.

Background of OAC Design and Assessment

The Online Archive of California has been a long-standing resource for online finding aids and archival descriptive records. Recognizing the importance of the EAD standard, librarians and archivists in California came together to form the UC-EAD Consortium out of which a prototype union database of encoded archival finding aids was created. This union database was re-named the Online Archive of California (OAC) in 1997.⁴

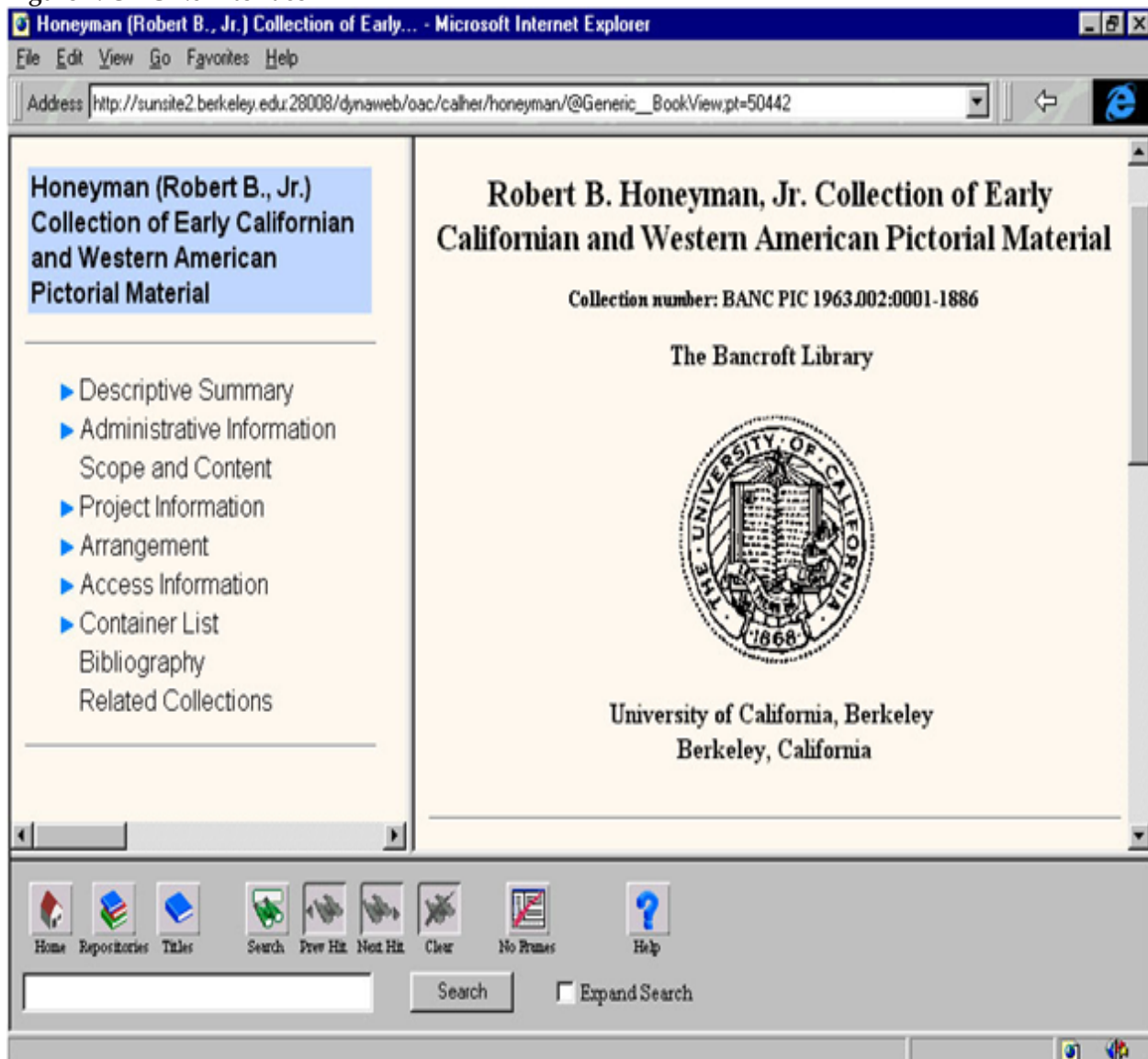
OAC 1.0 through 3.0

To watch the evolution of the OAC interface is to get a series of historical snapshots of web display technologies through the late 1990s and 2000s. The initial user interface for OAC finding aids was constructed with a hierarchical table of contents

listing the major sections of a finding aid was displayed in a left hand frame, while the right

hand frame displayed the content for these sections (Figure 1).

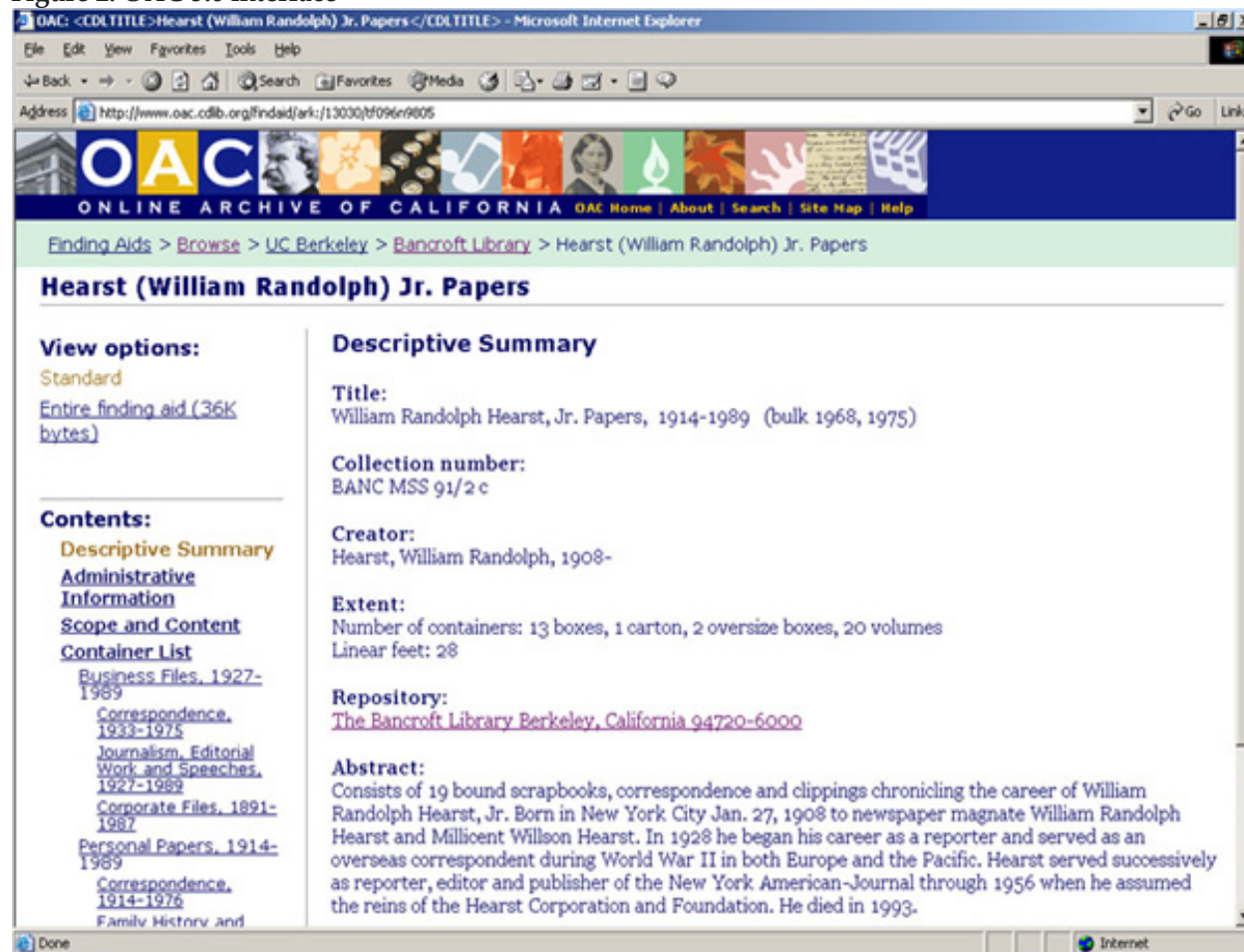
Figure 1: OAC 1.0 interface



In the early 2000s, an OAC Evaluation Studies Team was formed to plan and execute a series of user studies to understand how users interacted with the finding aids.⁵ A subsequent major redesign of the interface in 2001 resulted in a more integrated web display for the finding aid with

integration of elements that had been divided into frames in OAC 1.0. The addition of a site-wide search functionality as well as integration of digital object views also furthered the development of the entire OAC web presence (Figure 2).

Figure 2: OAC 3.0 interface



OAC 4.0

Between 2007 and 2009, CDL embarked on another major redesign effort for the OAC website. Since the previous redesign effort in 2001, CDL staff had learned a great deal of users' positive and negative experiences with the interface. Project goals were formulated with these experiences in mind. The desire was to create an easy to navigate site with display features that were more commonly found on the web in order to update the site to meet user expectations.⁶ Requirements and interface design specifications were developed from individual and group interview findings. Personas were created as a result of the interviews. The three major user groups that the design process targeted were reference archivists, expert archival researchers, and novice archival researchers. Reference archivists preferred to utilize complete scrollable views of finding aids. Since they were familiar with the structure of a finding aid, the

long scrolling views of the finding aid allowed them to quickly scan the description and also to use the Control + F key to find relevant keywords. Expert researchers were defined by their familiarity with finding aids and archival practices as well as their willingness to travel to the archives if their desired primary source objects were not available online. In contrast, novice researchers were defined by their unfamiliarity with finding aids and the need to have a mediated research experience with guidance from library or archival staff. These detailed personas informed the overall site design. The redesign of the finding aid page was intended to better showcase the finding aid itself as well as provide elements, such as complete collection guide views and indication of online or no online objects that supported user interactive preferences. Two rounds of usability tests were conducted prior to release of the new site in July, 2009 (Figure 3)

Figure 3: Current OAC collection guide page

The screenshot shows the OAC website interface. At the top is the OAC logo and a search bar. Below the logo is a navigation menu with links: Home, Browse Institutions, Browse Collections, Browse Map, About OAC, and Help. A 'What is OAC?' link is also present. The breadcrumb trail indicates the current location: Home > Claremont Colleges - Libraries > Denison (Ella Strong) Library. The main heading is 'Collection Guide' with a URL: http://www.oac.cdlib.org/findaid/ark:/13030/t9w1037h0. The collection details are as follows:

Collection Title:	Guide to the Alexander (Hartley Burr) Collection of American Indian Artwork
Collection Number:	41943
Get Items:	☒ No online items Request items
	Contact Claremont Colleges - Libraries: Denison (Ella Strong) Library

On the right side, there are links to 'View entire collection guide' (PDF 12.76 Kb, HTML) and a 'Search this collection' box with the search term 'alexander%20american%20indian%20artwo' and a 'go' button. Below these are links for 'Entire Collection Guide' and 'Online Items'. Further down is a 'Table of contents' section with links: Search hits, Clear search hits, Collection Overview, Collection Details, Descriptive Summary, Administrative Information, Biographies of the Artists, Scope and Contents of the Collection, Arrangement, and Indexing Terms. A 'Detailed Description of the Collection' link is also present.

The 'Collection Overview' section contains the following details:

Description	The collection contains original works of art, primarily watercolors, from the early twentieth century. These are attributed to Awa Tsireh (San Ildefonso), "San Juanito Garcia" (unknown), Fred Kabotie (Hopi), Kills Two (Oglala Sioux), Julian Martinez (San Ildefonso), Oqwa Pi (San Ildefonso), Tonita Peña (San Ildefonso), Otis Polelonema (Hopi), Romando Vigil (San Ildefonso), and Thomas Vigil (Tesuque). The works in boxes 1-3 present a number of very fine examples of the broad aesthetic of Native American Modern painting for both Pueblo and Plains artists: they are representational, depicting flat figures with clear outlines and unadorned backgrounds, and are generally lacking in references to modern life. While primarily produced for outside audiences, the works are distinctly 'Native' in terms of their function as historical records of Indian life in the early twentieth century. The collection contains photographs of nineteenth- and early twentieth-century Plains hide paintings. The works are attributed to Plains artists Katsikodi, Amos Bad Heart Buffalo, Silver Horn, and Kills Two.
Background	The following brief biographies refer to artists whose original works are deposited in this collection. In an attempt at consistency, names are listed and spelled as found in J.J. Brody, Pueblo Indian Painting: Tradition and Modernism in New Mexico, 1900-1930 (Santa Fe, NM: School of American Research, 1997). Researchers should be advised that artists' names (Native and/or European) and spellings may differ slightly from publication to publication.
Extent	4 oversized boxes.
Restrictions	All requests for permission to reproduce or to publish must be submitted in writing to Ella Strong Denison Library.

Ongoing additions of features and assessment activities

Since the 2009 release, regular small interface refinements, assessment and new features have taken place on the OAC website. With the addition of MARC records into the OAC shortly before the 2009 release, the initial 4.0 design had

to be adjusted to allow for a shorter collection description page. The MARC records were displayed in a truncated collection guide view that had elements of the right hand table of contents navigation area blank with a label of "brief record only" to signify the difference in this record view (Figure 4).

Figure 4: OAC brief record view with no information in right hand “Table of Contents” area

OAC
Online Archive of California

Search OAC

Home Browse Institutions Browse Collections Browse Map About OAC Help **What is OAC?**

> Home > UC Berkeley > Bancroft Library

Collection Guide Brief record only

Collection Title: Adams, John Quincy Letter to Thomas Boylston Adams : Quincy, Mass. : ALS, 1804 Jan. 14.

Collection Number: BANC MSS Z-Z 100:185

Get Items: No online items
 Offline. Contact UC Berkeley: Bancroft Library

Collection Overview

Title:
Letter to Thomas Boylston Adams: Quincy, Mass. : ALS, 1804 Jan. 14

Creator/Contributor:
Adams, John Quincy, 1767-1848, creator

Abstract:
Discusses Louisiana Revenue Bill, and outlines his objections to the bill as it then stood.

Date:
1804 (issuec)

Subject:
Adams, Thomas Boylston -- Correspondent
Louisiana -- History -- 1803-1865

Note:
Transcript also included.

Physical Description:
[3] p. ; 25 cm.

Language:
English

Identifier:
BANC MSS Z-Z 100:185

Origin:
Massachusetts

In 2011, CDL initiated an assessment to gather data to affirm the user demographics for their special collection services, OAC and Calisphere. Calisphere is a CDL service that focuses on the display of digital objects outside of their finding aid context. Staff members created a pop-up survey that was deployed on the OAC site as well as the Calisphere site. The results from the survey revealed the following OAC user segments.⁷

- 6% K–12 educators and students
- 25% college or graduate students
- 14% faculty or academic researcher
- 17% archivist or librarian
- 11% genealogist
- 27% other (“Other” users filled in self-identifying terms, such as amateur, artist, author, historian, hobbyist, researcher, writer.)

The survey was also accompanied by an analysis of web analytics for the OAC website. One significant finding from this analysis was that 75% of OAC visits “enter at the repository content (finding aid, digital object, or search result set).”⁸ This finding revealed for CDL staff that for OAC the design of the finding aid page would be a crucial part of the user’s overall experience on the OAC site. However, the survey and analytics assessment did not reveal the user’s level of satisfaction with the finding aid page.

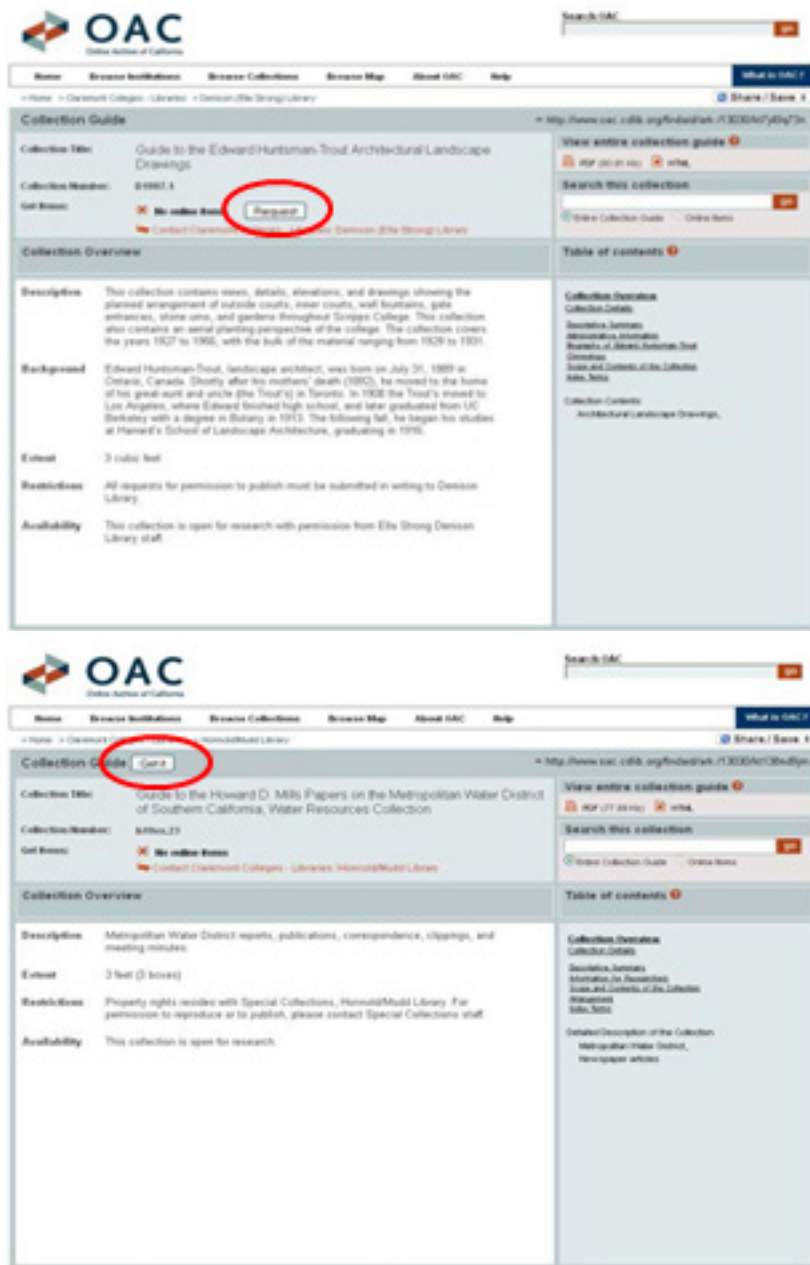
2012 Request Button Testing

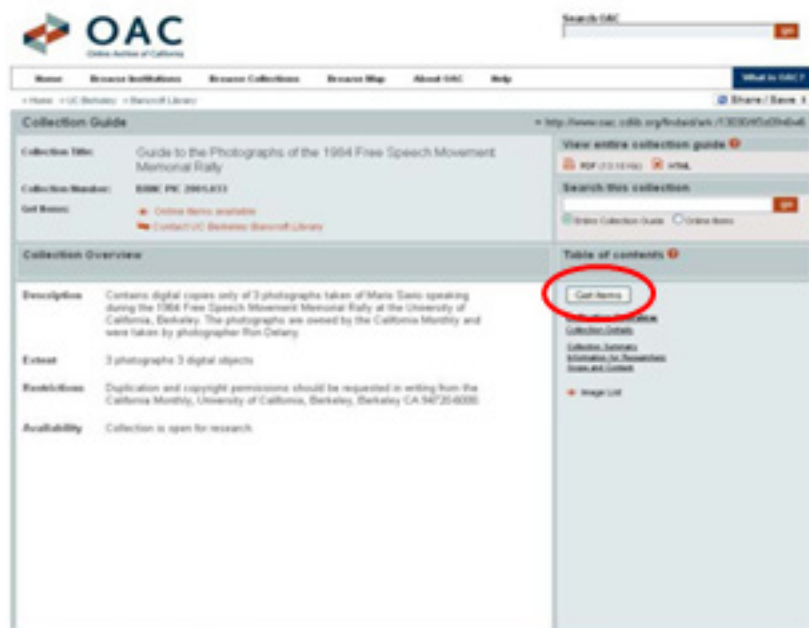
A round of user interviews conducted in early 2012 was instigated by the desire to add a “Request” button to the finding aid page for the OAC. Some

of OAC contributing institutions were beginning to adopt the Aeon request system for their collections.⁹ The new feature would allow users to link directly to an institution's website from the OAC finding aid page. Once the user arrives at the institution's website, they can log in and request materials from the institution's collections. Since no other element was being adjusted on the collection

guide page, CDL staff decided on a small scale A/B/N testing method to support decision-making on button placement.¹⁰ Remote testing via a survey tool was conducted with four archivists from institutions that were participating in the request system. Three different placements for the button were integrated into three static versions of the OAC collection guide page (Figure 5).

Figure 5: Three "Request" button placement testing options





Buttons were placed next to the “Get Items” area on the page, at the top of the Collection Guide page, and at the top of the right hand “Table of Contents” area for the finding aid. Archivists were then invited to take the survey and vote for their favorite placement. The survey included a heat map analysis page that showed where archivists had attempted to click on the page while they were given the task of locating the “Request” button.

In addition to the testing the new button placement with archivists, CDL wanted to test the three mock up options via real-time interviews with undergraduate, graduate, and faculty researchers to learn if the researcher’s understanding of the “Request” button was aligned with what OAC could provide for them. Since the archivists were fully aware of the workflow behind the “Request” functionality, project staff did not feel the need to engage in a background interview with them to capture their motivations and perceptions of the proposed service.

Methodology

In spring of 2012, ten interviews were conducted remotely via the Readytalk conferencing system with the user and a CDL staff member simultaneously viewing the screen from the CDL staff member’s desktop.¹¹ The conversations and screen activity was captured via the Readytalk system. The breakdown of the users interviewed

was as follows.

- one faculty member in history
- six graduate students in history
- three undergraduate students who had participated in undergraduate level history classes

All user interviews commenced with a series of questions, aimed at establishing the user’s academic interests, discovery channels, area of study, and primary source preferences. The interview then moved into a usability testing segment where CDL staff observed the user interacting with the collection guide page. Through the conferencing system, the user was granted control of the CDL staff member’s desktop where they could navigate and interact with the prototype at will. Upon arriving at the collection guide page, users were asked what the next step would be for them in their research process. Finally, users were asked what they would do to get an item. As had been tested by the archivists, three versions of the finding aid page were created with the “Request” button placed in various locations of the existing page design.

Interim Findings

The combination of archivist survey feedback and researcher interviews provided enough practical user-centered data for CDL staff to place the “Request” button on the page. Four out of

four archivists saw the button placement in all areas but felt that it made most sense in the “Get Items” area with one archivist indicating that she also liked the placement on top of the “Table of Contents” area. However, the findings from the researcher interviews proved to be less conclusive. While all ten interviewees saw the “Request” button placement in the “Get Items” area, only the three undergraduate students were motivated to click on the “Request” button. The six graduate students and one faculty member resisted using the “Request” button even though they were able to locate it on the page. The results inadvertently revealed that the faculty and graduate student users had very similar models of behavior and thought patterns when they came to the finding aid page. Furthermore, the interviews revealed that the arrangement of the content on this page was not aligned with OAC researcher’s priorities and needs when they arrived at a finding page in the course of their research workflow. This held true as well for the undergraduate researchers who were able to locate and click on the “Request” button.

During the 2008 redesign effort CDL had worked towards providing solutions for specific user pain points for the entire site but particularly on the collection guide page. Usability testing showed that the redesign was successful in these point by point fixes. However, findings from the “Request” button interview and testing gradually coalesced into a more focused understanding of users’ wants and needs. These findings revealed that a deeper analysis of the recent interviews could help CDL staff refine their design strategy for a critical page on their site.

Benefits of mental modeling

One qualitative method that user experience professionals employ to get a sense of a user’s mental thought processes is known as mental modeling. The method provides a window into how they think and how they make decisions in a given situation. This analysis process allows staff to map out users’ essential tasks and needs for a particular broad activity category. Once the user’s perspective is laid out, project teams can map out solutions that directly address these needs. This assessment method is a good qualitative approach that can help generate information architecture and interaction design.¹²

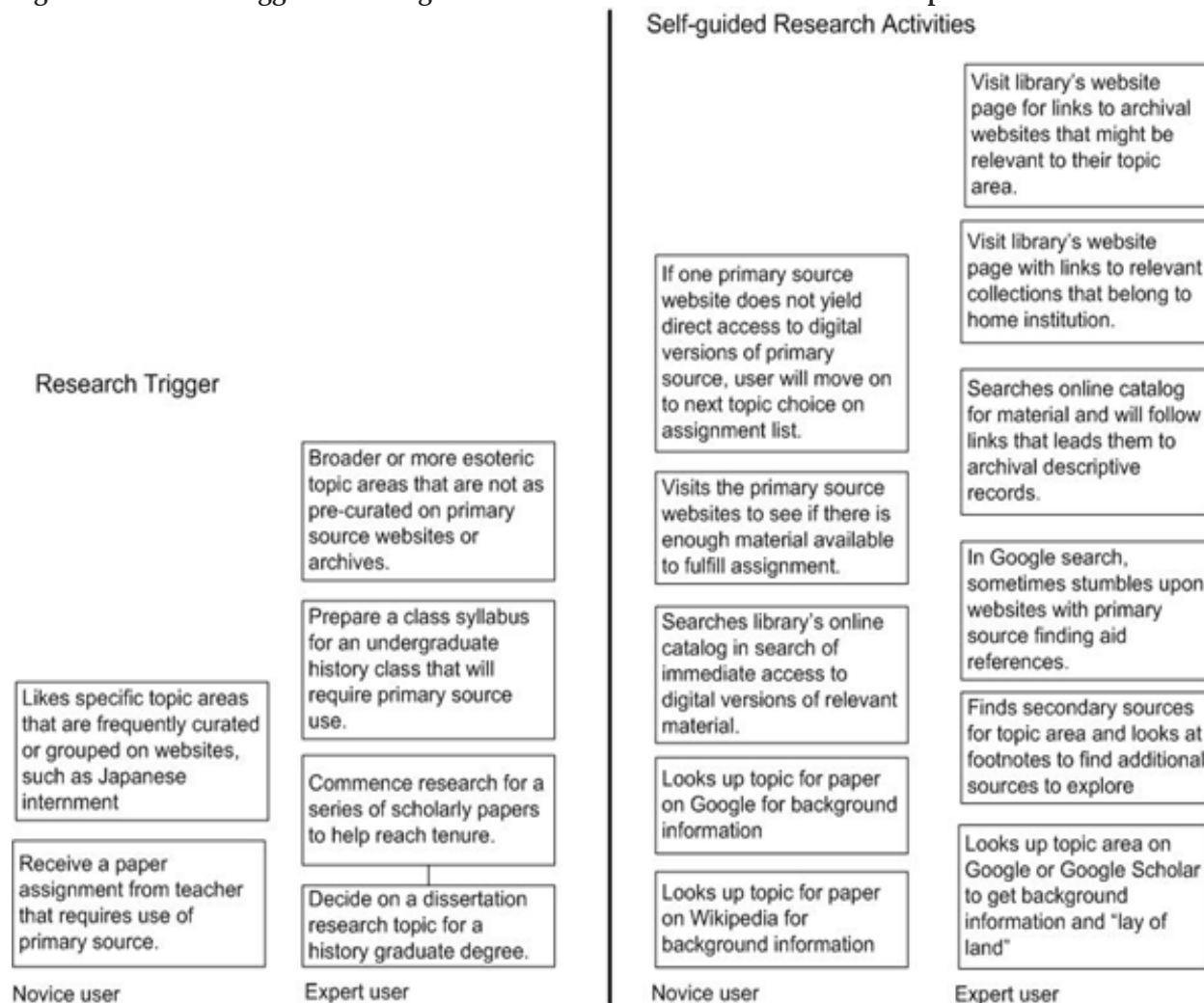
Building a Mental Map of Their Research Tasks

The interview recordings were reviewed with special attention to the each step users took during their research process using primary source material. While reanalyzing the interview recordings, these questions came to mind.

- What was the user motivation that led them to OAC in the first place?
- Once they arrived at a finding aid page, what were they looking for?
- Could they then find the material that was relevant to their information need?

Individual behaviors and user quotes were then noted down on individual post-it notes that were then grouped into related task areas. The content from the post-it notes were then transcribed into digital form via the Visio software (Figure 6).

Figure 6: Research trigger and self-guided research activities mental model map



General Findings from Mental Model Exercise

While conducting the mental model exercise, two distinct user groups emerged. The graduate researchers and the faculty researcher tended to have similar motivations and experiences that generally aligned them with OAC's previously defined **expert researcher** persona. The undergraduate students also had behaviors and considerations that connected them well with OAC's **novice researcher** persona. Even with different underlying priorities, the overall behavior areas captured in the interviews generally fell into the following groupings for all users.

- Research trigger
- Background preparation
- Self-guided research activities
- Mediated research activities

- Collection relevancy
- Material availability and location

Mental Model Findings

As previously noted, even though the broad areas of behavior were the same, the underlying motivations for novice and expert users were very different.

Novice users

As Figure 6 displays, novice users had very concrete short term research triggers. The undergraduate interviewees were typically enrolled in a history class to fulfill a requirement and were given a choice of paper assignments from a selection of topic areas. Their research activities were something that was instigated by a teacher. To further support the student's research

experience, this teacher would give them a list of web resources where the students could find applicable primary source material that would support their assignments. Sometimes the teacher would bring in a librarian to instruct the class on special collection research methods. After the highly mediated research trigger event, the novice users acted independently when it came time to retrieve primary source materials to use for their paper. They conducted quick Wikipedia or Google searches to gather background context for a topic then they would move directly to the list of resources given to them by their teacher.

They had an expectation that items should be online and available to them for immediate access. When testing these users on the OAC finding aid page, they looked at the "collection overview" section first. They found this section, which contains a brief background and description, very useful in informing them on what might be inside this collection. One person stated that "this is more information than I would find in a normal library catalog." They used this information to determine how likely a collection would provide them with material to fulfill their assignment. Shortly after determining the relevancy of the content for their research needs, they started to look for an entry into online objects for the collection. All three undergraduates quickly located the "Get Items" area and after seeing that there were no online items available for a collection determined that it would be difficult for them to continue. All three undergraduate interviewees saw the "Request" button and connected this feature with the interlibrary loan functionality that was available to them through their library catalog. They posited that they could request a copy of the material. At this point, many of the undergraduate students decided that they would exit the collection guide page and either search OAC for a different topic

or try another online resource that could get them directly to an online item. One student indicated the following.

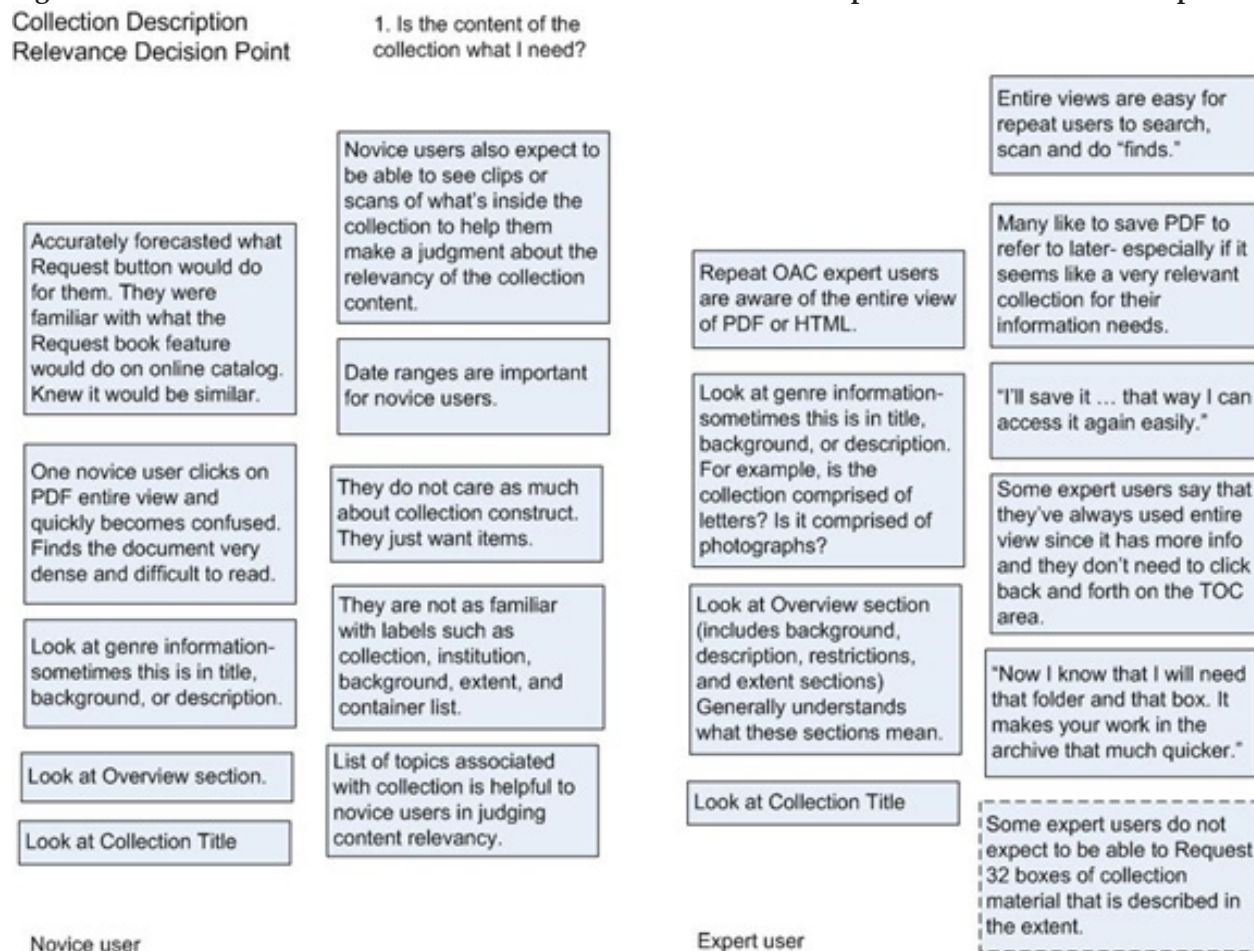
"... Kind of assume going in that everything is going to be available online. Someone coming in who's used to this kind of research might find that it's fine that things are only records of collections but I don't. It takes more work and I don't have time. I've never used physical items from the library before."

Expert users

The graduate students and faculty member were defined as expert users due to their familiarity with finding aids and their prior experiences discovering and retrieving primary source material from archives. They were familiar with archival terminology and access protocol. They were also used to developing relationships with library and archival reference staff for assistance in their research workflow. Their triggers tended to be long term research endeavors, such as a dissertation or research publication. They also would travel far afield to access their research material. One interviewee spoke to CDL staff from the Philippines where they were researching primary source material that could only be accessed on location.

While expert users were dissimilar from novice users in the range and variety of efforts they would make to attain primary source materials, some behavior patterns between the two user types were similar, such as independent background research. Expert users performed self-mediated research using Google and Google Scholar to compile bibliographies and to help them expand their understanding of their research area. In fact many of them stumbled upon OAC themselves through a Google search on their topic area.

Figure 7: "Is the content of the collection what I need?" novice and expert user mental model map



When they arrived at the OAC finding aid page, the similarity in their behavior to the novice researcher did not end there. Expert researchers instantly gravitated to the title, description and background information in the "collection overview" section. Some of the expert users were returning OAC users and were drawn toward the downloadable PDF of the entire finding aid. One user mentioned, "I'll save it. . . that way I can access it again easily." Similar to the novice user, the second item of interest for the expert user was the availability of online items (Figure 8). This desire was foremost in their minds even though they knew from experience that archival material are not always available online and researchers have to go to the institution to access them. That past experience still did not decrease their expectation for immediate access to digital content. Another interviewee expressed this sentiment.

"I don't know if you need any more information [collection description] if what you

need is the online item. . . All the info in the world [detailed background] won't be of great value without the item."

Those expert users not familiar with OAC had a hard time understanding if OAC had digital items or if it was just an aggregation of finding aids.

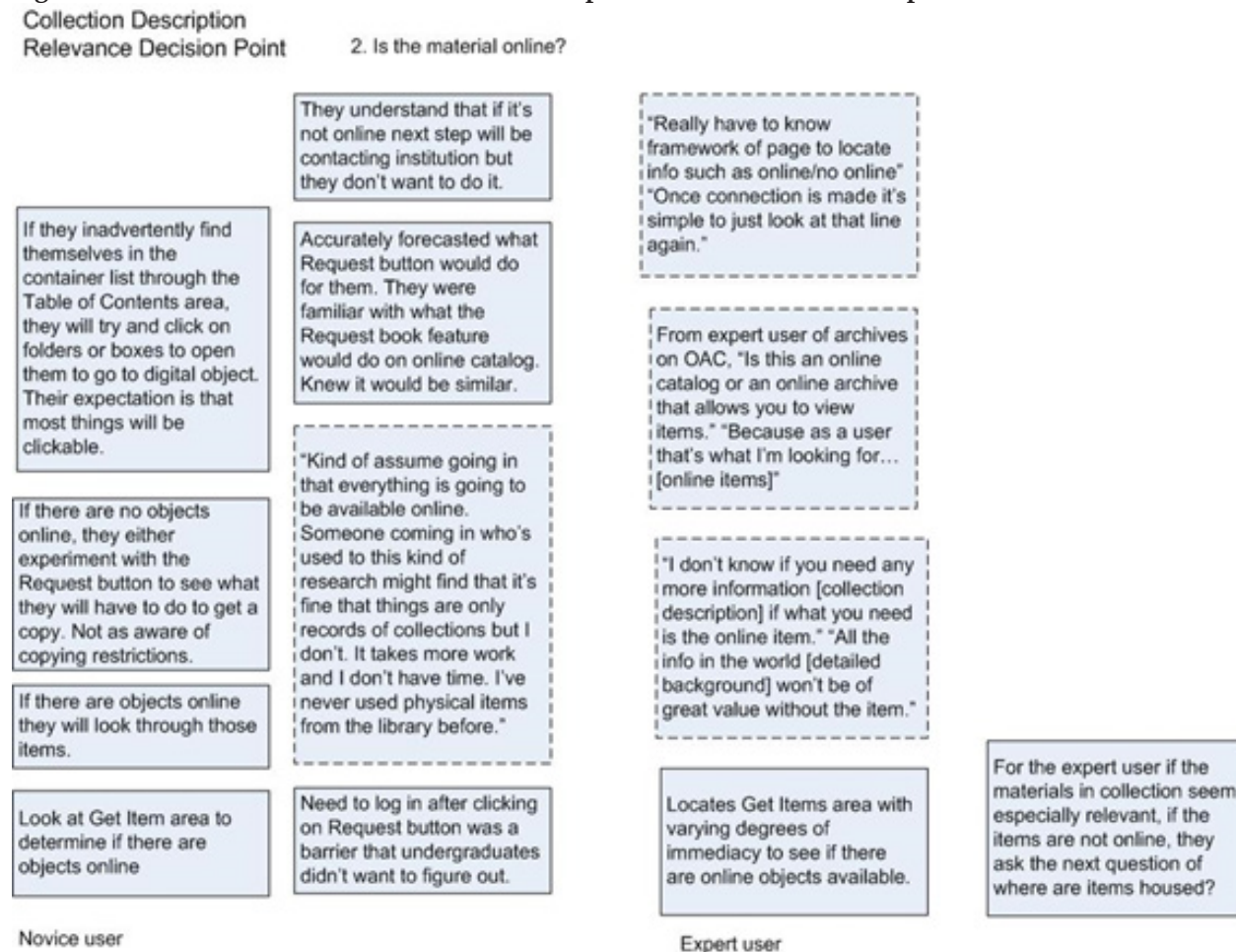
"Is this an online catalog or an online archive that allows you to view items? Because as a user that's what I'm looking for. . . [online items]"

As previously noted, the expert users were all suspicious of the "Request" feature. They were able to locate the button and understood in theory what it would do but they could not immediately reconcile the Request feature with what they knew of archival access protocol. Their mental understanding of "Request" was that it was a circulation activity where library books were

delivered directly to you. Many of them had used interlibrary loan service before. One interviewee commented that they could not imagine archives circulating any of their material. Though upon

reflection, they reasoned that perhaps the archives would send users a high resolution scan of the item. They decided that they would have to contact the institution to confirm this new service idea.

Figure 8: "Is the material online?" novice and expert user mental model map



Finally, when users could not find an online version of the material they sought, their next step was to contact the institution. They preferred to visit a contributing institution's website directly so they could gather information about the archives' hours, access protocol and general operational information. Even though there was an institutional page on the OAC site where they could have accessed basic contact information they still preferred to go directly to the institution's website. Three out of the seven expert users interviewed even went as far as opening up a separate window to execute a Google search for the institution's name even though they saw a link on the OAC site that would direct them to the institution's web page. This shows how much a

user's mentality informed their research behaviors. One interviewee articulated this in terms of where to find the online not online indication on the collection guide page.

"Really have to know framework of page to locate info such as online/no online. . . Once connection is made it's simple to just look at that line again."

The mental model for these researchers revealed that quick decisions were made with very minimal information. The details of the finding aid while still useful was not of primary consideration when users first arrived at the collection level page. It was not clear until after this the mental model

analysis was conducted that only certain areas of the finding aid content mapped directly to a user's decision points.

Overall, even though the motivations behind each distinct user group's behavior were different, the informational elements they looked at in order to make a decision about a collection's relevancy to their research effort were generally the same.

Comparative Analysis

After arriving at the conclusion that we needed to reprioritize the elements on the collection guide page, CDL staff wanted to take a look at the current finding aid display environment to understand how other institutions were facing the unique design challenge of this unique descriptive format. We looked in particular at three archival descriptive displays from Princeton University Finding Aid website,¹³ the Brigham Young University (BYU) Harold B Lee's Manuscript Collection Descriptions website,¹⁴ and the ICA-AtoM demo for their archival description application.¹⁵

These finding aid pages were all designed with great economical use of space, clarity of elements and layout, as well as robust functionality to support various views into the archival description as well as user interactivity with the display elements. However, first and foremost the priority of elements displayed did not meet the needs expressed in the mental model exercise. The ICA-AtoM demo used language and labeling that involved archival terminology that might not make sense to some of our novice or even expert users. One caveat to the review of this display is that since it was a demo it was unclear at the time of review how many labeling elements could be customized by different institutional users as needed. The immediacy of the digital object in the left hand menu when objects were available was something that did fit the user's mental model of a top information need.

BYU's manuscript descriptions was also laid out in a clear easy to scan layout with certain overview elements pulled out on top while the more complex information is displayed in tabs below the main overview area. The straight archival labeling (i.e. extent) might be challenging for some of our novice users but overall this was a strong display that compartmentalized complex information well.

Finally, the Princeton Library Finding Aid website was also reviewed and showed a great deal of elegance in its design with a left hand navigation menu that adapted to various collection description sizes with some finding aids displaying full container lists and others with only minimal overview title, call number, storage, and location information. Overall, this comparative exercise allowed CDL staff to review possible design options and see which ones aligned well with our users' needs and our descriptive record variability. The most successful elements from these websites that would meet our user needs had minimal traditional archival labeling and prominent cues on how to get to the physical items location or if available an online object view. Other websites selected for comparative analysis had item or product level pages that were similar to collection guide pages in that information on the page was designed to help users at a point of decision whether or not to pursue checking out or buying an item.

- Online Catalogs (Melvyl UC's instance of WorldCat¹⁶ or Oakland Public Library¹⁷)
- Retail product pages (Amazon¹⁸ and Zappos¹⁹)

The takeaway from these websites was that while visual design was very different across these sites one commonality that served end users well was how clear and highly prioritized the major information sections were with visible labeling and distinctive demarcations between each section of information even on long and scrolling pages, such as those found on Amazon or Melvyl.

Proposed Design Solution

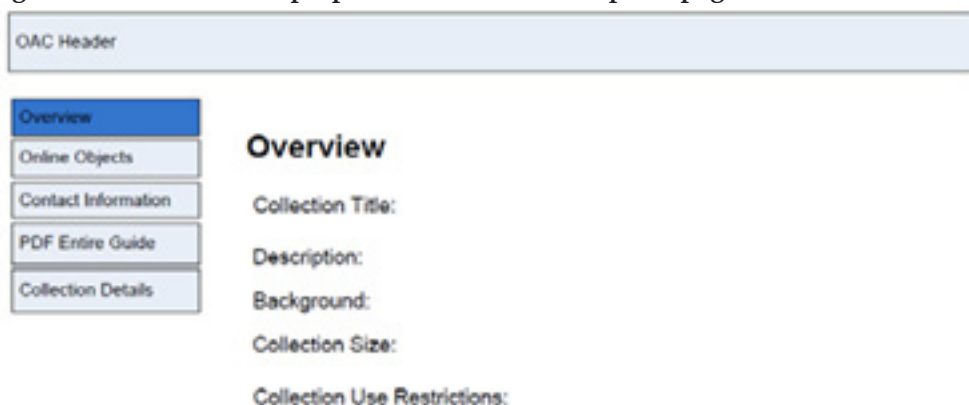
After the comparative analysis work, CDL staff created wireframes, line drawings of a proposed webpage design that does not incorporate color or finished display elements. This technique is useful when staff are still developing design ideas and do not want to commit resources to coding prototypes. An initial iteration displayed a simple and short top left hand navigation menu that would focus the information needs of users in one area instead of spreading it throughout the page as we had in the current display view. This reflected the more successful design solutions that had been encountered in the comparative analysis review. Information from the general overview and online objects areas were pulled out and prioritized in this menu since these elements had been the highest in priority for both expert and novice users.

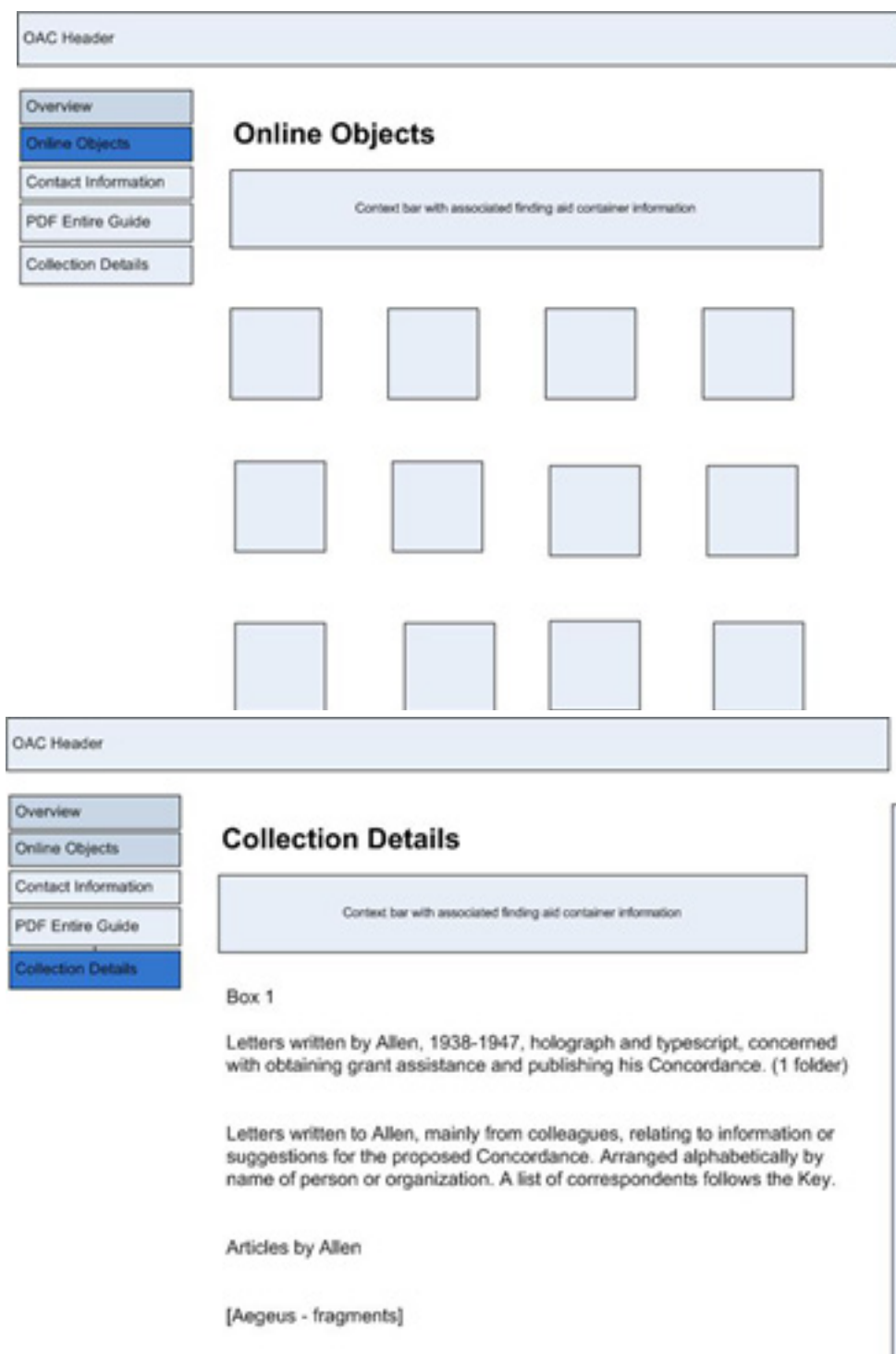
Within that overview area, elements such as extent and restrictions were relabeled and clarified to help the user understand the information that was being conveyed in the field. For example, “extent” was renamed “collection size” and the term “restrictions” was clarified to add “Collection use restrictions.” If there were no online objects available the right hand page would read that no online objects were available and to contact the institution for more information regarding access. Having the entire run of the right hand page space would allow for page real estate to convey the concept that the physical objects were only available at the physical location of the institution, an explanation that was only hinted at in the previous design.

Next on the left navigation menu were elements

that were more appealing to the expert user, the contact institution information and the PDF entire view. In earlier testing from 2009 some users had expressed preference to use the chunked up finding aid view with table of contents because it helped them to see where search hits were occurring inside the table of content areas. So we were loathe to lose this element all together until further testing could provide broader evidence that this view was not needed. Figure 8 depicts an initial wireframe that shows the proposed left hand navigation menu as it relates to the rest of the page. The idea is that users can toggle back and forth between the items in this short menu to see all of the relevant elements that were most important to users in this mental model exercise without losing the full display of the finding aid that other users who have not been modeled yet might need.

Figure 9: Wireframes for proposed collection description page





This simplified and streamlined view can also accommodate the display for both EAD and MARC records without compromising the design of the page. If there is no data provided for an entire PDF or collection details those menu items would not appear in the left hand menu.

Next Steps

To represent and verify the mental model for all OAC users, interviews should be conducted for archivists. The model should also be verified with interviews from some of the smaller user groups revealed in the 2011 pop-up survey, such

as K–12 educators and students or other users such as writers or genealogists. The wireframes also need to be evaluated and tested with all user groups to provide further validation of design. As well, technical feasibility of the display ideas and examination of the overall strategic roadmap for the OAC service needs to be reviewed with internal stakeholders to see if design direction meets organizational goals.

In addition to meeting the nexus of a number of different users' needs, this design approach is particularly adaptable for aggregate records from many different institutions. It accounts for many varying descriptive record formats, such as detailed finding aids for highly processed collections, shorter finding aids for more minimally processed collections, and MARC records. This design approach to directly connect user's priorities to page design would answer the most immediate needs uncovered by this mental model exercise. Thus, streamlining the page elements can address more directly the user's mental model and decision-making process during primary source research.

Practical Implications of OAC Assessment Activities

Assessment and design cannot be a one-time undertaking for production-level library and archival web resources. Iterative small-scale assessment through a continuum of activities serves to build a more comprehensive mental model that forms the basis for user-centered design strategy for any successful library web resource. This gradual pattern of activity can more easily stay abreast of users' evolving expectations for faster and more immediate gratification of information needs.

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Notes

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3. Elizabeth Yakel and Deborah A. Torres, "AI: Archival Intelligence and User Expertise," *The American Archivist* 66, no. 1 (2003): 51–78.
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10. Wikipedia, "A/B Testing," http://en.wikipedia.org/wiki/A/B_testing.
11. In the spring of 2012, ten interviews were conducted with undergraduate, graduate, and faculty researchers from a variety of California institutions (Claremont Colleges, UC Berkeley, and USC). The quotes included from the interviews are not cited or associated to particular interviewee names to preserve the user's anonymity.

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14. Brigham Young University Harold B Lee Library Manuscript Collection Descriptions, <http://findingaid.lib.byu.edu/>.

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15. ICA-AtoM Demo of Archival Description Application, <http://demo.ica-atom.org/informationobject/browse>.
 16. Melvyl WorldCat, <http://melvyl.worldcat.org/>.
 17. Oakland Public Library, <http://www.oaklandlibrary.org>.
 18. Amazon, <http://www.amazon.com/>.
 19. Zappos, <http://www.zappos.com/>.

Assessing Special Collections: From Where We Are, to Where We Need to Be

Merrilee Proffitt
OCLC Research, USA

Abstract

For the last several years, professional discourse on the future of research libraries has emphasized the increased importance and status of special collections relative to general collections. If indeed the focus of research libraries is more oriented to collecting and exposing the rare and unique, then institutions will want to tackle tough issues and maximize opportunities for special collections. With so many collections, and an almost limitless list of challenges and potential, institutions need a way to act strategically and prioritize the most appropriate collections. This is where archival collections assessment comes into play.

Archival collections assessment is defined as “the systematic, purposeful gathering of information about archival collections.” This activity may “include collection surveys of all kinds, including those undertaken for purposes of appraisal, setting processing and other priorities, conservation decision making, and collection management.” Collections assessment allows institutions to act strategically; gathering consistent quantitative and qualitative data about collections can inform a range of basic collection management practices, including processing and selection. This paper will address the history of collections assessment, look at current use, and suggest additional applications.

The Network Changes Everything: The Centrality of Special Collections in a Digital Age?

For the last several years, professional discourse on the future of research libraries has emphasized the increased importance and status of special collections relative to general collections. Reasons include the rise of the “network” and a mass migration of information seekers to large, commercial information hubs which supply large quantities of good enough information that is easy to find and use; decline in use of ubiquitous and redundant collections will lead to consolidation

and centralization of these collections; and the primary focus of collecting in most research libraries will centralize around rare and unique materials as well as those resources that are “distinctive to local mission and milieu.”¹

Within general print collections, we see a quite a bit of activity, as libraries organize themselves around retrospective print alignment, primarily reflected in collaborative shared print efforts (CIC and WEST in the United States, UKRR in the United Kingdom, and the CARM Shared Collection administered by CAVAL in Australia are but a few of the prominent examples). These realignment activities are mostly focused around reducing redundancy in general print collections and establishing service level agreements for provision of collections.

Despite the relative importance of special collections as compared to general collections, special collections face a range of challenges. Both the 1998 ARL report, *Special Collections in ARL Libraries*, and the “Taking our Pulse” report from the 2010 OCLC Research survey of special collections in the US and Canada document significant issues with backlogs in special collections, particularly archival collections.² The OCLC Research report also shows that institutions have a high level of concern with managing digitization of collections and dealing with an onslaught of “born digital” materials. Special collections also face issues in collection management, particularly in an era of decreased or flat lined funding for acquisitions and/or processing of collections. Special collections need the ability to identify collection gaps and realign collections with campus strengths and priorities, to identify collections (unprocessed or otherwise) that are out of scope, to find collections that will be most likely to intersect with high priority teaching and research priorities at an institution and engage faculty, to locate materials that will be most worthy

of digitization.

It's not just about challenges, however; there are also a range of prospects that special collections should be equipped to respond to accordingly. For example, grant funds may be available for digitization, processing and description. Similarly, a partner institution may make special funds available for high priority projects. Data from a collections assessment exercise may prove invaluable in engaging with key stakeholders (faculty, administration, staff, donors) in order to capitalize on opportunities. When new collections are available for acquisition, institutions will want to have a means of measuring the value of new collections, relative to existing holdings.

If libraries are successful in realigning general print collections and if indeed the focus of research libraries is more oriented to collecting and exposing the rare and unique, and focusing on collections of "local" importance, then institutions will want to tackle tough issues, and maximize opportunities for special collections. With so many collections, and an almost limitless list of challenges and potential, institutions need a way to act strategically and prioritize the most appropriate collections. This is where collections assessment comes into play.

Collections Assessment to the Rescue! Your Swiss Army Knife

The 2011 Report "Taking Stock and Making Hay: Archival Collections Assessment" defines archival collections assessment as "the systematic, purposeful gathering of information about archival collections." This activity may "include collection surveys of all kinds, including those undertaken for purposes of appraisal, setting processing and other priorities, conservation decision making, and collection management."³ Collections assessment allows institutions to act strategically; gathering consistent quantitative and qualitative data about collections can inform a range of basic collection management practices, including processing and selection.

History and Background

Collections assessment as we know it now was first implemented by David Moltke-Hansen at the South Carolina Historical Society, and

was subsequently refined during his tenure as director of the Southern Historical Collection, at the University of North Carolina at Chapel Hill and at the Historical Society of Pennsylvania. Moltke-Hansen was influenced by preservation assessment, which involved assigning a rating scale and sampling collections. What Moltke-Hansen brought to the table was the "research value rating." He felt that there had to be something beyond the assessing the physical needs of a collection—at the time he began surveying collections at the South Carolina Historical Society (as was typical at other institutions) all collections were assumed to be the intellectual equal to one another, and collections that were fragile and disarranged would get priority. However, Moltke-Hansen realized that in making a case to a funder, such as NEH, one would need to make a case with a degree of reliable information about the collection size relative to the date of creation, range and depth of documentation for the collection, range of potential constituents (not only local importance but also national or international importance), and range of potential use of a collection. In other words, what was in the collection mattered just as much as (if not more than) the physical state of the collection. If this was the case for funders, why shouldn't it be the case for the institution when prioritizing work to be done? While he was at the Historical Society of Pennsylvania, Don Waters of the Mellon Foundation pointed out that he was using a risk assessment methodology and applying it in intellectual terms.⁴ It is the qualitative aspects of evaluating collections for their "research value" (a rating that is the typically the combination of two separate scores for "documentation interest" and "documentation quality") that can set archival collections assessment apart from other types of assessment that more often focus on the physical needs of the collection.

Current Use and an Emerging Community of Practice

Although a range of institutions (e.g. the Smithsonian Institution Archives, UC Berkeley, University of Michigan, and the Ohio State University) and special collections consortia (e.g. the Philadelphia Area Consortia of Special Collections Libraries and the Black Metropolis Research Consortium) have conducted assessments of their archival holdings in order to gather data to justify and plan activities, the practice of collections assessment is not widespread. With the publication

of *Taking Stock*, the community now has pointers to several relevant methodologies that can be used as-is or serve as models to meet institutional needs. And I can report that interest in adopting collections assessment is growing.

Many of the initial collections assessment projects were grant funded, including those at PACSCL, BMRC, and UC Berkeley (all of which were funded by the Andrew W. Mellon Foundation). However, we are seeing more institutions take on collections assessment as a self-funded activity. Institutions that have headed out on their own include University of Michigan Rare Books and Special collections (which assessed collections using graduate students fulfilling requirements for a practicum), the Ohio State University Libraries which allocated internal funding to conduct an assessment exercise in order to bootstrap planning for processing and digitization, to help align with the library and campus strategic plan, and to identify collections that would engage faculty.

Professional dialog about collections assessment is increasing, along with a growing number of practitioners. In 2012, the two major conferences attended by special collections professionals, the Society of American Archivists Annual Meeting and the Rare Books and Manuscripts Preconference both featured panel sessions on archival collections assessment and sessions were well attended by attentive and engaged professionals. Acceptances of this paper by the 2012 ARL Assessment Conference program committee is further evidence of a growing interest in the topic.

Finally, in recognition of the importance and role of archival collections assessment, the National Endowment of the Humanities NEH Humanities Collections and Reference Resources program will grant up to \$40,000 for up to two years for projects that support collections assessment.⁵

What's Missing from This Picture?

Despite a growing cadre of professionals engaged in the collections assessment there are some significant challenges that may inhibit broad adoption. For example, institutions who conduct collections assessment are largely on their own when it comes to tools that will support recording

data collected about collections. Many institutions download or replicate the PACSCL database and data collection forms, which they then adapt for their own needs, but this leaves data collected during the assessment process orphaned from other systems that may be used to manage or record information about collections. The Archivists' Toolkit, an open source archival data management system, has a module for recording collections assessment data, based on the PASCL model; however, the design specifications for the "next generation" version of the Archivists' Toolkit, ArchivesSpace do not support collections assessment.

Formalized Training in Collections Assessment *Communities Around Born Digital, Rights And Risk Status*

Quite apart from the use of collections assessment in order to strategically reduce backlogs in special collections and expose priority collections, planning and executing on collaborative collection assessment is desirable in the context of shared print activities and in recasting research library collections. When our institutions and organizations are forging service level agreements for provision of collections, what will the impact be on special collections?

What can special collections offer to parent institutions in these deals? How can special collections be involved with/ have input into the process? Is there an opportunity to build special collections collaboratively? What does it mean for special collections to be shared? Will collections be truly built collaboratively on a regional basis? If so, what will the impact be on collections of "local" importance? So, for all these reasons and more, we must know our collections, and be particularly sensitive to institutional priorities including collaborative collection building. How can our practices, our collecting goals and our policies line up with those priorities? Do our collections?

What about using collections assessment for data?

Hope on the Horizon

Slow moving but gaining momentum

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Thank you

To my colleague and collaborator Martha O'Hara Connoway, who has helped me (led me really) in writing about collections assessment, in our paper "Taking Stock and Making Hay," and also "The Practice, Power, and Promise of Archival Collections Assessment."⁶

To Don Waters and the Mellon Foundation for having the foresight to fund so many of the early collections assessment projects. Putting in place scaffolding for a platform we can all stand on.

Notes

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Methods for Measuring Return on Investment in Online Digital Collections

Ken Wise and Gayle Baker
University of Tennessee, USA

Abstract

Research into methods for measuring the return on investment of digitized special collections is a component of the LibValue project sponsored by IMLS. LibValue is a collaborative effort between the University of Tennessee, the University of Illinois, and Syracuse University.

The purpose of the special collection component of the project is to develop a methodology for assessing the various returns (economic, environment, efficiency, prestige, goodwill) that accrue from the financial and human resources invested in making unique special collection material available to a wider population of users through digital technology. The hypothesis preceding this project proposes that electronic access to digital material generates measurable economic benefits in terms of time and money to the population of users.

Our approach to measuring the return on investment of digitized special collections involves the use of (1) contingent valuation methods and (2) the parsing techniques of Google Analytics. Contingent valuation is a method for determining the value of public goods where public goods are characterized by the conditions of nonexcludability of and nonrivalry congestion between individuals who wish to use the goods and where it is difficult to assign a dollar value to the goods. We will apply the contingent valuation method by using survey questions to elicit user's preferences for the digital collections by finding out their willingness to pay in dollar amounts for access to the collections.

Through the analysis of Google Analytics reports, we will generate demographic and usage data that hopefully will corroborate our findings from the contingent valuation survey/interviews. Data from web server logs and preliminary testing of the contingent valuation survey indicates that users value certain digital collections at the University of

Tennessee Library.

Introduction

With the rapid pace of digitization where all but the most obscure items will be universally available to all of us anywhere anytime, some observers of the academic scene have suggested that the academic research library is increasingly becoming an anachronism, kept alive by nostalgic sentiments and the prominence of big buildings in the middle of campus.¹ This sense of increasing irrelevance has generated a demand for libraries to show proof of worth. Research by Stephen Town appears to demonstrate that the academic library's measure of its contribution to the academic community is demonstrated in only two "bottom line" measures of worth:

- Financial or related measures of value
- Impact on research (and ultimately on research reputation) and, to a lesser extent, teaching and learning²

These dimensions reflect two lines that have been developing recently in library assessment: the quest for impact and value measures.³

In 2009 a consortium of the University of Tennessee, the University of Illinois, and Syracuse University received a grant from the Institute of Museum and Library Services to determine possible impact and value measures by investigating return on investment in academic libraries. LibValue, as the grant project is known, entails seven separate research projects assessing the return on investment of various functions within the academic enterprise. Three years prior to this, while addressing the Library Assessment Conference, John Lombardi raised the following question: "If everything is digitized, then perhaps the relevant measure of distinction is whether we, in our university library, capture, maintain, and contribute digitized copies of unique materials?"⁴

As a response to Lombardi's question, one of the key components of the LibValue project became that of assessing the beneficial returns on resources invested in the digitization and online access of special collections at the University of Tennessee Libraries. Basic data for estimating the return on investment valuation was gathered through contingent valuation questionnaires augmented by data garnered from Google Analytics.

In and of itself, the title of Carol Tenopir's article "Beyond Usage: Measuring Library Outcomes and Value" suggests that until recently much of the discussion of the benefits of library collections and services has been restricted to use value.⁵ Use value, correctly measured, indicates the value of collections to patrons who actually make use of the collections and services. However, this measure alone significantly underestimates the actual value patrons place on these collections and services. Use measurements ignore the value to potential users who value the option of accessing library collections in the event they require access. Such users place a value, which economists call option price, on the right to access these collections in the event he or she needs them. Stated more simply, though a patron may not use a collection for many years, he or she may still place significant value on the right to access the collection.

David W. Harless and Frank R. Allen were the first to demonstrate that significant value resides in reference services even for patrons who may not have used the services and that this value—the option value—is measureable.⁶ The idea of option value was initially introduced by Burton A. Weisbrod in reference to environmental amenities that cannot be valued through the marketplace.⁷ Weisbrod points out that the option value concept arises when an individual is uncertain about whether he or she will make use of a specific amenity. In the case of a library's special collections, the patron may be uncertain about when or how often they might access the collection. When uncertainty exits, the appropriate measure of the total value of special collections is the value of an individual's maximum willingness to pay for access to the collection before the uncertainty about use is resolved. This value under uncertainty is called the "option price." Use value in the traditional sense measures the maximum willingness to pay for use of the collections by individuals after the uncertainty is resolved.

Option value of any collection is calculated as the difference between the option price and use value, a measure that estimates the value to nonusers. The fact that some individuals have a positive option price but never exercise it is irrelevant. It is the option price that is the appropriate measure of the benefits to users whether they are potential or active.

The contingent valuation method provides a means for accurately estimating the option prices for access to a library's online collections. A special collection, like any other library service, may be considered as a public or quasi-private good for which there are collective property rights, as for example, the citizens of the United States "own" the Great Smoky Mountains and thus have a right to hike and camp in its wilderness. Unlike pure private goods where the cost of purchase explicitly indicates the monetary benefit of the goods to the purchaser, public and quasi-private goods are not exchanged in the marketplace and thus the benefit to the consumer is not readily revealed. Similarly, a library's special collections is a quasi-private good in the sense that members of a university community "own" the right to research the collections but the property right cannot be sold.

In some circumstances, the value of quasi-private goods not explicitly traded may be directly inferred from market transactions. Consider, for example, the value individuals may place on the privilege of living in a safer neighborhood. Since there is no explicit market in safer neighborhoods, there is no means for directly determining individuals' willingness to pay for safer neighborhoods. Nevertheless, willingness to pay can be inferred by examining the sell prices of houses and extracting the premium that people are willing to pay for houses in areas with safer neighborhoods. In many instances, however, it may be difficult to infer willing-to-pay values from transactions in the explicit markets. Under such circumstances, the contingent valuation method affords a useful means for estimating the needed values.

Contingent valuation (CV) incorporates carefully designed surveys to elicit willingness to pay for improvements or to avoid degradation in a public or quasi-private good. Because the theoretically ideal method for measuring benefits would be based upon individual preferences

revealed in market transactions, CV prescribes the construction of a hypothetical market in which the survey participant “purchases” the goods under consideration, thus revealing his or her valuation of the good.

Proponents of CV contend that it is possible to approximate the market in a survey by giving a detailed description of the good and the specific changes under consideration.⁸ Note that the valuations are contingent upon the hypothetical market constructed by the researcher and the increments or decrements in providing the good. CV requires that the hypothetical market include a detailed description of the good indicating the character and quantity of the present provision level, variations in the level of provision, and the method by which the individual would pay for the good. Although there are many potential biases in using CV to estimate willingness to pay, Robert C. Mitchell and Richard T. Carson argue that “contingent valuation represents the most promising approach yet developed for determining the public’s willingness to pay for public goods.”⁹

The value of most goods and services in our society is measured by individuals’ willingness to pay for these goods and services in dollar amounts. Without the availability of a reliable “market” in online access to digitized special collections, the value of such collections is difficult to quantify and difficult to compare with alternative goods and services. The CV method is one of a number of ingenious paradigms economists have devised for approaching this problematic issue. The CV method uses survey questionnaires to elicit individuals’ preferences for public goods by finding out what they would be willing to pay in dollar amounts for suitable alternatives.

Institutional Setting and the Implementation of the Survey

The University of Tennessee is a state-supported research library located in Knoxville, Tennessee. The University’s Hodges Library maintains the online digital special collections selected for the valuation assessment. These collections include the Albert “Dutch” Roth Digital Photograph Collection, the Thompson Brothers Digital Photograph Collection, From Pi Beta Phi to Arrowmont, and the William Cox Cochran Photograph Collection. All are part of the

University of Tennessee’s Great Smoky Mountains Regional Project available at <http://www.lib.utk.edu/digitalcollections/gsm.html>.

The survey is modeled after the reference services CV survey in Harless and Allen.¹⁰ Interviewees include the population of all patrons identified through their online use of one of the collections. Early survey results include interviews with 12 users of at least one of the online collections. The interviewer initiates the survey with a brief description of the methodology and then proceeds into questions concerning the user’s familiarity with the specific online collections being assessed as well as queries on (1) level of satisfaction with content, (2) level of satisfaction with access, and (3) frequency of access to the collections. Ten of the twelve were very satisfied with the content of the collections and the remaining two were satisfied. With the exception of one dissatisfied respondent, the responses to the quality of online access were fairly even across the very satisfied and satisfied spectrum. Frequency of access ranged from once a week to twice a year.

To create a hypothetical market and directly connect responses to willingness to pay, the interviewer asked patrons to specify how much they would be willing to pay for online access to the collections if they were not freely available.

In contingent valuation studies, some participants initially refuse to answer or respond that their maximum willingness to pay is zero as a protest response. Following the Harless and Allen model, such respondents were taken through a separate set of questions and statements in order to persuade them to participate if they had initially refused to answer. Individuals who responded with “zero” or “nothing” or who refused to offer a willingness to pay were asked a series of questions to identify the reason for their responses. An affirmative response to “Did you say zero or nothing because that is what access to the online question is worth to you?” is counted as a willingness of zero. An affirmative response to the other questions (“Did you say zero or nothing because you thought we were asking you begin paying for access to the collection?” and “Did you give this answer because you think the University of Tennessee should be able to provide access or spends too much money on online collections?”) prompts the interviewer

to read a short statement addressing the concerns, reexamining the willingness-to-pay question, and inviting the respondent to answer the willingness-to-pay question again.

Half of the responses indicated that users are willing to pay at least \$10 per month for access to the four online collections identified in the survey. Two respondents valued access to the collection zero and another refused to cite a figure. One respondent indicated a willingness to pay as much as \$20 per image if permitted to request copies of the images. The three remaining responses were \$5 per visit, \$25 per year, and \$10-\$20 per year. Using even the most conservative averaging of the responses, users of the four online collections are willing to pay in the neighborhood of \$5 per month for access.

Estimates of the cost of creating and maintaining access to the content of the four online collections referenced in the CV survey were approximated by measuring the costs of creating a separate, small, but similar collection of Great Smoky Mountains photographs known as the Paul Adams Photograph Collection. (This collection is also found at <http://www.lib.utk.edu/digitalcollections/gsm.html>). The 25 images of the Adams Collection were scanned and correlated with the metadata by a student worker in less than two hours and the online access was created by a technician in less than one week's work. While these images may be easier to digitize than certain other special collections material, the Adams project nevertheless indicates that the cost of digitizing and creating online access is not excessive. Upon release, the Paul Adams online collection was referred to favorably in a blog on the Great Smoky Mountain. The following day the site registered over 700 hits. Extrapolating the estimated \$5 willingness to pay over the 700 hits results in a measureable benefit over cost.

If one assumes the value of an online special collection is limited only to that value determined by actual usage, it follows that the total willingness to pay would not be higher for individuals who do not use the collection. The concept of option value, however, suggests that the willingness-to-pay value is more meaningful than the actual usage value. Infrequent or nonusers of the online collections know that the access exists and are

willing to pay to ensure that the service is available when the need arises. It can also be surmised that infrequent researchers are likely to be the more unsophisticated users of online access and whose need, and therefore willingness to pay, is greater.

To generate an initial user population for the CV surveys, pop-up questionnaires were affixed to each of the four online collections selected for the value assessment. When these questionnaires proved insufficient, the referring URLs in the log file associated with the servers for the collections were examined for identifying information on webmasters and bloggers as well as individual users of the collections. Google Analytics techniques were applied to the referring URL data to generate information about the users and how they accessed the collections.

The next step in the grant project is to meld the CV research with the Google Analytics findings to determine how access to online digital collections adds specific value to the mission and vision of the University of Tennessee. This mission, known as Vol Vision, embraces a three-part vision: Value Creation, Original Ideas, and Leadership (see <http://www.utk.edu/volvision-top25/index.php>). This project intends to demonstrate and measure "value creation through economic, social, and environmental development targeted to an increasing global and multicultural world."¹¹

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Notes

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Beyond Usability: Building Discovery Tool Requirements through User Stories

David Bietila

University of Chicago, USA

Abstract

This paper addresses the applicability of the user stories method in defining requirements for library search tools. The increasing configurability of discovery tools makes this method relevant to any library engaged in user-centered design. The University of Chicago Library recently utilized the user stories method to inform the design of a new interface for the Library's catalog; this study represents an example use case for this method. This study revealed disparities in user preferences regarding the catalog's behavior and appearance, including significant differences in basic user search and browse behavior. The stories collected were used to structure the design process and priorities for the new catalog.

Catalog User Stories at UChicago Library

The user stories method, an approach used frequently in agile software development methodologies, is a means of identifying user needs for a software tool. The method facilitates ongoing communication with users and aims to frame functional specifications in terms of value to users, rather than in technical details. The method produces a flexible list of user requirements that can be prioritized, revisited, or developed throughout the duration of a project. The user stories method serves a different function than the more familiar approach of task-based usability testing. While usability testing asks "What is difficult or confusing about this tool?" the user stories approach asks "What do you need this tool to do?" and allows for collection of user needs prior to beginning an implementation. The methods can complement each other, but answer substantially different questions. The user stories method is increasingly relevant for use in libraries as they develop and implement feature-rich discovery tools as a replacement for rigid, vended catalog systems.

University of Chicago Library will be offered as an exemplary case. The University of Chicago Library is a large research library that serves a university with a student body significantly weighted toward graduate students. The science library, which serves medical students and the hospital, and the law library are part of the general library system, so these constituencies were included in the study. Faculty are actively involved in the Library, and a faculty board advises on Library operations.

The Library is currently a development partner on Kuali OLE, a multi-institution project focused on the development of an open source integrated library system. The Library intends to migrate to Kuali OLE in 2013. Kuali does not include a web interface, so the Library will be implementing VuFind, another open source tool to provide access to the catalog. The user stories study provided key information needed to understand the user needs and preferences for the new catalog, particularly the web interface component.

There were three rationales for the Library's employment of the user stories method in the catalog design process. First, current discovery tools offer a variety of new functionality. The Library solicited user stories to ensure that features implemented in the new catalog were not being provided solely because of technical viability, but because they addressed an actual user need. Second, the current generation of discovery tools is significantly more customizable than the previous generation of vended integrated library systems. The user stories method provided the Library with rich data that could inform a complex set of customization choices. Finally, the move to an open source catalog from a vended ILS meant that no contract or RFP was required, and user requirements evaluation did not need to be explicitly defined at the outset. Rather, the Library could reap the benefits of an iterative design

A recent user stories project conducted by the

method in this project.

Determining User Needs

Like many libraries, UChicago had acknowledged the value of user-centered design, and has frequently incorporated usability testing into their technology projects. The Library's previous foray into discovery tool development was Lens, an AquaBrowser catalog implementation which provided features such as faceted browsing, user tagging, and a word cloud. Lens performed well in preliminary usability testing, but drew a polarized response from library users following its launch. While some appreciated the faceted browsing options, many complained that it lacked a fielded search option. Users complained that Lens was not precise enough in executing known item searches. They criticized the word cloud as a distraction that offered little practical value. Although Lens added a range of new features, there was ultimately a mismatch between its capabilities and the needs of significant user constituencies. Based on user reactions, the Library decided to retain both Lens and the old catalog, resulting in a need for ongoing dual maintenance. Scott Berkun, in his influential work on project management, describes three factors which impact the direction of a software project: the perspective of the business or organization, the perspective of the customer or patron, and the capabilities of the available technology. He argues that the customer viewpoint tends to be the most frequently misunderstood perspective,¹ and calls for the use of multiple appropriately framed research methods to better grasp it. An aim of the Library user stories study was to perform a comprehensive user needs assessment, and to promote a better fit between the capabilities of the new catalog and user preferences.

Configuring Discovery Tools

Until recently, library catalog interfaces were most frequently vended systems that offered limited customization options. Current discovery tools necessitate numerous complex decisions that libraries must make about the scope or collections included, the presentation of information, and the functionality offered. Access to richer user data can be invaluable in navigating through the many complex choices that need to be made in a discovery tool implementation.

The first development allowing for greater customization is support for heterogeneous collection types and metadata formats. It is no longer a given that a catalog will contain MARC records only. Discovery tools may search digital collections, images, and individual articles, along with books and databases. Libraries may decide to go beyond materials that they own or license. They might wish to include external data, such as the HathiTrust catalog, or freely available online resources. However, it is not obvious what patrons will find useful, and neither what they will regard as clutter, nor how much control they are likely to want over what collections are included in a particular search. When the Library recently implemented an article discovery tool, capable of searching MARC data and digital collections, it lacked any solid data suggesting a benefit to limiting the search to a particular slice of the collections, and so included nearly all possible coverage. The Library faces similar questions of search scope and coverage in the current catalog project, and turned to user stories to provide guidance.

A second area of potential customization is driven by the presentation options commonly permitted by open source discovery tools, including applications like Blacklight, VuFind, and XC. These tend to be built with much more current design practices, and use page templates that can be customized and styled. Fonts, color schemes, positioning, and language can be easily changed. Libraries can more readily tailor functionality, including what searches, browses, and facets are offered, and whether the catalog defaults to a basic or fielded search. The implementer can control what record data is displayed on the results page, and how facets are presented. The best decisions in these cases will be guided by the preferences of local user constituencies.

Iterative Design

When libraries used primarily vended catalogs and integrated library systems, desired functionality frequently had to be specified in considerable detail, as a comprehensive RFP was needed for contracts with vendors. However, as more libraries move to open source tools, requirements need not be defined as rigidly or exhaustively at the outset of an implementation. Without this limitation, libraries are free to move away from the intensive premeditation of waterfall-type implementation

practices, and to explore some of the benefits of iterative or Agile design approaches.

The user stories approach draws several of its assumptions and values from the Agile school of software development. The Agile Manifesto, a foundational document of this approach, asserts that Agile projects should value “Responding to change over following a plan.”² Much of the user stories format is aimed at providing adaptability. Its assumption is that requirements will nearly always change during the course of a project, and it can be a waste of effort to specify solutions at a fine level of detail early in a project. The design team will likely learn more about the use case and about the technical possibilities as they work through a project, so they may be able to define better solutions midway through a project. User stories are not intended to be full solutions, but bookmarks or reminders that a conversation needs to happen to specify a solution at a later point. Structuring ongoing communication with users into the design process provides opportunities for course corrections if a project starts to diverge too far from what users want. Drafts of a design may also prompt users to rethink the most important aspects of a tool, and keeping stories brief and granular allows them to be reranked, reordered, or tabled as needed.

In the recent implementation of an article discovery tool at the Library, use of an iterative approach provided the team opportunities to refine their understanding of the likely use cases between rounds of configuration and testing. While they initially assumed that this tool would be primarily used by undergraduates, as library staff worked with the tool, they were able to see more potential for use by a broader audience. The implementation team was able to incorporate these expanded use cases into their plan, and tailor the tool for use by more advanced researchers in a range of specialized subject areas. Without an iterative approach, this tool would have served a significantly more limited audience.

Collecting User Stories

In conducting the user stories study, the research team used Mike Cohn’s book *User Stories Applied for Agile Development* as a reference on the method. Cohn suggests that user stories may be uncovered using a number of different data collection methods. He recommends interviews, questionnaires, group workshops, and observation. The Library’s user stories study employed three of these methods, and also mined data from prior studies for user stories. Cohn recommends using methods with face to face contact when possible, to allow richer communication, but suggests questionnaires as a supplementary method.³

The Library’s research team began by mining existing data sources for potential user stories. This data was readily available, and, compared with recruiting users and conducted interviews, required minimal resources to collect. The sources that the research team consulted included LibQUAL+® and other library survey results, existing RFP documents, findings from usability tests with catalog elements, and comments and complaints about the catalog that had been submitted via e-mail. These sources yielded around one hundred stories, which the research team used to create a set of categories that served as a framework for subsequent interviews. This set of categories helped the researchers to have more focused and productive discussions when conducting sessions with actual users.

Because of the complexity of the catalog, and the variety of functionality it offers, using a script proved helpful in this study. The research team drafted a general script which they then adapted for use in individual interviews, group workshops, and written questionnaires. The script covered six key topics (see Figure 2), each starting with broad, open-ended questions, in order to minimize respondent bias, but also including increasingly specific prompts to be used as needed.

Topic	Open Question	Specific Question
Context of Use	What kinds of tasks bring you to the catalog?	Do you use the catalog to discover the literature on a given topic?
Integration	Where would it help to connect the catalog with other research tools?	How important is it for you to reach other tools from the catalog, such as WorldCat, Databases, ArticlesPlus, ILL, UBorrow, Scan & Deliver?
Searching and Browsing	Can you describe the steps you typically take when searching the catalog?	Are you a frequent user of Advanced (fielded) searching or Boolean searching?
Design of Results and Records	How would you describe the “look and feel” of pages in your ideal catalog?	When you get a list of results, what information is most important?
Formats, Limits, and Languages	When you get lots of irrelevant results for a search, what approach to narrowing your results set would make the most sense?	Do you ever search for media formats other than books and journals?
Using Records	Once you find the record you need, what is the next thing that you typically do with that information?	How important is the ability to save records, and created your own lists?

The research team recruited students primarily through the Library’s web site and through UChicago Marketplace, a Craigslist-like site used primarily by the University of Chicago community. Participants were offered \$15 gift cards as incentives for attending an individual or group session of up to an hour. Participants were selected to generate maximum diversity across fields and disciplines. Initially, the research team intended to conduct story workshops with the student participants, in which groups of six to eight students discussed their requirements for the catalog. However, the student response rate was very low for these group discussions. The research team eventually re-posted the study as a series of one-on-one interviews with student participants, and attained a much higher response rate. This shift led to a greater investment of time to conduct and transcribe interviews, but allowed for more attention to be devoted to each participant.

To recruit and interview faculty participants, the research team enlisted bibliographers and subject specialists. These interviewers were provided with a training session which explained the goals of

the study and which introduced best practices for conducting research interviews. Bibliographers then approached faculty members with whom they had existing relationships for interviews. The research team judged that the value of using interviewers already cognizant of the research requirements of their participants outweighed the potential risk of bias in recruitment in this case. Some interviewers self-reported a bias toward selection of more tech-savvy, active users of the catalog, but this bias did not appear to be universal.

In order to target more elusive user constituencies, the research team created questionnaires, and placed them at certain service points, including the service desk for the Special Collections Research Center, where the goal was to elicit feedback from visiting researchers, and at the Social Services Administration Library, where the targeted user group was commuting professional students. However, the response rate to these questionnaires was close to zero, and their use would need to be rethought in future efforts. In subsequent studies, the Library may shift to online questionnaires,

and offer an incentive for completion, in order to encourage more responses.

Following principal data collection, library staff were invited to review the user stories list, and submit any requirements that were not yet represented, though this accounted for only 3% of the total stories collected.

All told, the research team and interviewers conducted twenty sessions with a total of twenty-seven student and faculty participants. This was a qualitative study, and the goal was

not to gather a statistically significant sample, but rather to contact sufficient users to allow all major areas of concern to emerge in the discussions,

while avoiding collection of large numbers of duplicative responses. The participant selection used in the study was of adequate size and variety to produce a useful list of stories, though in future studies researchers might select for more graduate students and faculty participants, as those interviews were typically significantly richer.

The User Story Format

Each user story is a distilled description of a user need—typically just a title, a brief description, and possible test cases. The description might identify the user constituency from whom the story came, and the stories are frequently written as “I” statements.

A typical story might be:

Title	Show all translations of a work
Story	As a graduate student in East Asian Studies, I want a means of easily finding all translations of a particular work, even if the title is translated differently in each case. I would like the catalog to tell me which alternate titles are used.
Acceptance Test	Dream of the Red Chamber is one example.

Cohn specifies several qualities that define user stories.⁴ One quality is that stories should be kept modular and discrete, in order to allow flexibility of prioritization. For example, the following story conflates too many specific requirements into one story.

I need to sort search results by library, by availability, by floor & shelf location, by title, by author, by publication date, by format, and by call number.

In this case, each sort option should be a separate story, so that they can be evaluated for implementation and prioritized separately. In user stories, a compound story is referred to as an epic, and Cohn advises that they should be broken into smaller elements when feasible.

Stories should not specify a particular solution, but just describe a need. A solution will be negotiated during implementation, at which time further

conversation with users will happen. The following is a user statement taken from an interview transcript:

I would say displaying the table of contents for every book would be a tremendous waste of space but if you could have a little link thing saying “display table of contents” and then connect it via Ajax . . . to display it.

The actual need is that the table of contents ought to be hidden until the user chooses to expand them, but the user recommends a specific technology for accomplishing this. Specific technical solutions are not solicited during user stories interviews or included in stories. While users may be expected to be aware of their own preferences and needs, they are not designers, and may not be aware of all possible solutions or technical limitations. Stories are written to describe only the need, because the best solution may change as the project progresses, and specifying a solution at the outset may end up being a wasted effort.

Stories should describe a concrete need, which can be satisfied, and therefore can be assigned a development time estimate.

I would like results to be displayed in an uncluttered fashion with adequate white space, with text that is easy to read, not overly dense, in a legible font, and not too small.

Although this statement describes a need, it is not testable, and many of the criteria specified are subjective. This statement may still be very valuable information, and influence the ultimate design of the catalog, but it cannot be written as a user story. In the UChicago user stories study, statements like this were put in a separate document, and classified as design guidelines.

Analyzing User Stories

Prior to analysis, student employees transcribed recordings of each session, generating over 250 pages of transcripts. The first phase of analysis consisted of coding, which was a group effort involving thirteen library staff members. A simple scheme of five codes was applied, which included "catalog user stories," "other user stories," "context," "misconceptions," and "usage." "Other user stories" was used to code for requests relating to the web site, link resolver, and so forth, as users did not always distinguish what library tools were part of the catalog. "Content" passages were those that provided information about the research practices of participants, and they were used to better understand user needs and prioritize stories. "Misconceptions" was infrequently applied, but was used to identify cases where users were unaware of an existing catalog features. Following coding, the researchers converted relevant passages into the user story format. There were initially over

four hundred stories drawn from the data, which, after elimination of duplicates, were condensed into a final set of 211 stories.

The data was challenging to analyze in several respects. The high volume of stories collected was cumbersome and time consuming to organize and classify. The amount of stories necessitated a very systematic approach to processing and tracking. There were many cases of ambiguity, either due to the fact that a story had been drawn from a survey comment, or that the source interview lacked sufficient context or detail to understand the specific intent of a story. In some of these cases, a library assessment committee was asked to collect additional detail to clarify these stories.

Findings

The primary value of the study was the collection of individual stories, and the design team for the new catalog interface has been able to harness them to guide development. The study was also used to justify design decisions to stakeholder groups, including library staff, and faculty and student advisory groups. These groups could not be expected to review two hundred stories, so other approaches were needed to summarize the findings. Four approaches to synthesizing the findings were a topical breakdown of the stories, a sample of the most frequently occurring stories, a description of major usage patterns observed in the interviews, and prioritization guidelines drawn from the contextual data in the interviews.

The stories were assigned to topical categories to help convey the breadth of stories, and the relative interest in the various topics. The breakdown follows:

Categories	Requirements pertaining to:	Unique Stories
Search	Data fields to be searchable (such as title, author, keyword). Search behaviors (such as Boolean) to be supported.	34
Use	Options for exporting records, requesting library materials, maintaining a search history.	26
Results	Formatting of search results, including data fields to be presented on the results page, and relevance ranking of results.	25

Categories	Requirements pertaining to:	Unique Stories
Interface	Design and layout of catalog pages, support for web browsers and mobile devices.	22
Limits	Ability to limit results sets by factors such as format or language.	17
Contents	Scope of materials to be included in the catalog.	16
Full Record	Data, services, or formatting concerns specific to the full record display.	16
Browsing	Ordered lists of records (by author, call number, subject, etc.)	14
Language	Support for language, especially those using non-Roman characters.	12
Integration	Interoperability of the catalog with other discovery and research tools.	10
Suggestions	Capacity to correct spelling or offer related search terms.	7
Deduping	Indication and/or consolidation of related versions (whether editions, translations, or adaptations).	5
Performance	System responsiveness and error recovery.	2
User-created content	Creating lists or tags visible to other catalog users.	2

Stories that were mentioned in multiple interviews were deduped, but the research team tallied number of occurrences of each story. The most frequently occurring stories were noted in the findings, so that the implementation team could respond to cases where there was a true outpouring of support for a feature. The most frequently requested new feature was the inclusion of circulation status of items at the results page level, which would allow users to see if a material was checked out without having to visit the full record. Other requests directed that that catalog should highlight works which constituted good entry points to a discipline, and that it should better display related works, whether editions, translation, or adaptations. The existing catalog function most lauded was the ability to browse records by call number. Participants also stressed the importance of retaining a variety of record export options, including email, SMS, and citation managers, as well as the ability to refine results by format.

Although number of occurrences was not used as the sole indicator of importance or priority, it was one factor that the research team considered. The user stories method does not recommend any single approach for prioritizing stories. There are a variety of approaches in use, most of which are predicated on asking participants to assign numerical values to reflect the relative importance of their suggestions. The research team initially selected the MoSCoW method⁵ to aid in story prioritization. This involved prompting participants to rate the need for suggested stories on a scale including possible values of “Must,” “Should,” “Could,” or “Won’t.” Although some participants were comfortable with this scale, most had to be repeatedly prompted, which the research team felt broke the flow of the interviews. After the first few sessions, this part of the methodology was abandoned by the interviewers. Instead, the research team referred largely to contextual information gleaned from the interviews in order to guide prioritization.

Patterns of Use

Much of the contextual data collected did not directly translate into user stories, but it proved invaluable in prioritizing stories, and in specifying some general recommendations for the new catalog. The contextual content from the interviews often revealed detailed information about how the catalog fit into the interviewee's research process, and included their general preferences and concerns regarding the catalog. This data, along with the actual stories revealed some high-level differences regarding the role of the catalog for different user constituencies.

Many users came to the catalog primarily to use it as a discovery tool. That is, they wanted to use it to identify previously unknown materials pertaining to a topic that they had specified in their search or browse. There was a tendency among these users to want the catalog to be more inclusive in its coverage (more open content, digital collections, etc.). Users who engaged with the catalog as a discovery tool also favored initiating search in a single search box, and applying limits to their initial result set. One undergraduate public policy major spoke of the current discovery interface to the catalog "I really like how it's pretty straightforward, you just type it in. And even if you don't put in the whole title of stuff, it searches, I think, according to relevancy, which helps out with the process." The same student described using the advanced search interface of the catalog only about 10% of the time.

A second major user constituency identified was those who searched the catalog primarily to find known items in the collection. These users wanted searches capable of a high degree of precision, and preferred that the catalog default to an advanced (or fielded) search interface. They were inclined to enter more information in their initial search to improve precision, rather than applying post-search facets. One faculty member stated of the advanced search "Yeah, so that should be right up front. It shouldn't be like a Google search where they just give you one search box and you enter things and then you get five hundred pages. . . . Even when you can then refine what have you by blocks, by scholar, or images, video, and so forth . . . outwardly it may be great but it's not smart enough for what we need." These users were more likely to want to exclude collections from the

catalog beyond those directly owned or licensed by the library. When asked about the inclusion of open content in the catalog, a faculty member replied ". . . as long as you have the ability to rule all that stuff out. It's absolutely essential that we have a catalog that enables you to include only the items physically located in this library."

Most faculty members interviewed used the catalog primarily for known item searching. Students exhibited both behaviors depending upon the individual and situation. It was vital to learn that a significant stakeholder group had little use for "discovery" features, and typically wanted a catalog optimized for quick retrieval of records for known items. The implicit assumption in the design of Lens, the previous catalog interface, was that discovery was the predominant use case, but the user stories study did not bear this out.

User preference was further split regarding the display of search results. Some searchers wanted a streamlined results page, optimized for quick skimming of many results. Other searchers preferred extensive information, and suggested that more details, such as table of contents and subject headings, be displayed on results pages. These users wanted to be able to make a determination of a work's potential value without clicking through to a full record.

Recommendations

Apart from the functional requirements expressed in the user stories, the research team was able to synthesize three general recommendations from the findings. Interviewees frequently expressed wariness about the possibility of losing functionality that they relied upon. For this reason, the research team recommended prioritizing retention of current functionality over adding new features. Secondly, the research team recommended that configuration options be provided in the new catalog to help address the divergent patterns of use that had been revealed. The final recommendation was rationalization of the visual design of the catalog. Previous catalogs had sprawled beyond their initial design, leading to a confusing and cluttered layout. Many users commented that they preferred that the catalog have a simple or minimal aesthetic, and it was clear from the data that this was a priority for many users.

Conclusion

The user stories method can produce requirements data that is both rich and relevant to the design of discovery tools, and can complement the use of other user-centered design methods. Conducting a user stories study can be a significant undertaking, but the resources required scale with the complexity of the system under consideration, and the diversity of user constituencies that must be assessed. For libraries interested in exploring Agile project management methods, the user stories method can provide an accessible entry point.

The stories collected can provide significant value in guiding a library through many of the complex decisions associated with implementing a discovery tool, or potentially other types of tools and services.

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Notes

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“It’s All in the Metadata”: Towards a Better QA for E-books

Ravit H. David

Scholar’s Portal, University of Toronto, Canada

Dana Thomas

Scholar’s Portal, Ryerson University, Canada

Introduction

Interest in book information is no longer limited to librarians or publishers; in fact, when it comes to e-books, readers are often looking at bibliographic metadata to determine authority, credibility, and appropriateness of the source to their research, and, therefore, must feel they can trust the information associated with the book. Information that mirrors the object is often described as “metadata.” In the publishing world, although it is often agreed among scholars and readers that metadata is highly significant in digital environments, most implementations of e-book repositories and online reading services or platforms have taken a redundant approach to metadata quality assurance (QA) and quality control processes. In many cases content is made available to readers as soon as it is put online, and the onus is upon readers to report inaccuracy, inaccessibility, or other problems. When the quality of metadata is poor, it diminishes the value of any digital collection: it cannot be accessed and items cannot be found, and if items cannot be found, there is no readership.

The first objective of this paper is to describe the establishment of a quality control (QC) procedure for e-books loaded in perpetuity for Scholars Portal. The second objective is to share with you the results of an examination of MARC records supplied to Scholars Portal from various commercial publishers. We will describe the identification of the most significant MARC fields for discoverability. As well, we will explore the most common metadata errors found as a result of the creation and implementation of a manual QA workflow for the Scholars Portal e-book platform. The third objective of this paper is to sketch a map for future improvements to the QC currently in place, including ways to automate imperative checks and incorporate them into the loading

process in order to save valuable resources spent on manual QA.

The Current Landscape of E-books Production

E-books are considered an evolving industry. The e-journal has caught up very fast to the needs of readers, but not the e-book. One thing that we often see is publishers who have a good production line for e-journals adopting and adjusting it to serve their e-book production. However, these are two very different formats, and we at Scholars Portal find that e-books require very different treatment from e-journals in terms of the delivery of content, metadata, and MARC records. For example, the primary discovery method for journals is via databases/indexes and A–Z lists as opposed to library catalogues, so that MARC records are not as vital to e-journals as they are to e-books. Also, e-books are much more challenging to manage because the ISBN is much messier as an identifier than the more reliably applied ISSN.

OCUL and Scholars Portal Books

OCUL, the Ontario Council of University Libraries, is a provincial consortium of Ontario’s 21 university libraries. Established in 2007 and funded by Ontario universities, the OCUL e-book platform, called Scholars Portal Books, is designed to provide a single interface for accessing digital texts from the world’s most important scholarly publishers (both licensed materials and digitized public domain materials) that have been scanned and digitized for online reading and downloading. In this sense, Scholars Portal E-books is similar to a federated provider, or aggregator such as Ohio Link and HathiTrust. Licensed materials, those e-books that have been purchased by one or more OCUL libraries, can be accessed on both the

publisher's platform and via Scholars Portal Books. Our PDF-based reading interface offers multiple page view options, including a grid view to help users easily navigate in and among books. User accounts allow users to save searches, bookmarks, and notes, as well as to cut and paste small sections of text. The service runs on the e-brary ISIS and MarkLogic technology—a special-purpose, document-centered database management system that uses the XML data model and XQuery query language and is optimized for large collections of both semi-structured and unstructured information.

Local Loading Explained

It was a priority established early on by Ontario university libraries that Scholars Portal build a service that would house and archive content so that future generations of scholars may continue to access the same content licensed by Ontario libraries regardless of changes in subscription policies, which happens often in the publishing industry. By “local loading,” we mean the delivery of data files from the publisher or vendor for presentation via Scholars Portal, or SP, software platforms. From the publishers' point of view, the most important advantage to local loading is stability. SP is in the process of being recognized as a trusted digital repository by the Center for Research Libraries (CRL). Moreover, security measures ensure that a publisher's data will not be corrupted in the long-term and will be incorporated within new technologies as needed. The SP platform is also designed to ensure appropriate levels of access to authorized users via an entitlements system, as subscriptions vary between member libraries.

Currently, Scholars Portal books numbers around half a million e-books, which, until recently, were received mostly in PDF format from publishers.

No two publishers are alike, so solutions have to be adopted to meet each situation. Quality is an extremely hard goal to achieve with e-book loading given the current state of distribution channels. Rigorous checking of publishers' lists, rigorous post-load checking of content, and automated checks for content completeness are all part of the work flow and strategies used by the e-book team to help establish a stronger faith in the quality of the service. The quantity of work involved, however, is a challenge.

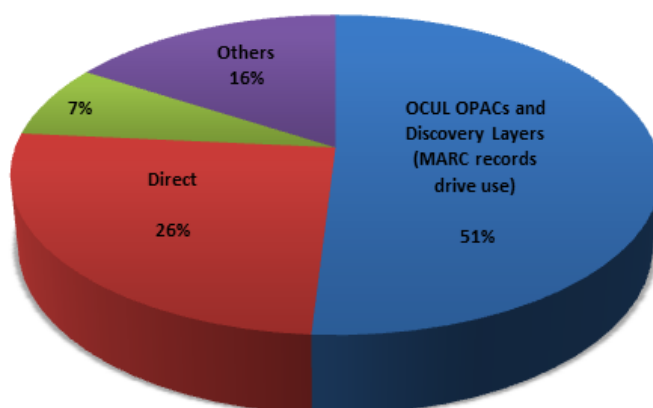
Discovering, for instance, that an encyclopedia contains only the introduction and the index during a reference interaction or an instruction session in front of students or faculty is highly undesirable. It is not only embarrassing, but it also damages our credibility, not to mention that it is a bad service. So instead of relying on this sort of live feedback from users and partners, it became necessary to announce a new collection or update only after it had been through a QC process. We still use librarian and user reports to analyze the data and learn what tests are needed, where the weaknesses in specific collections are, and so on, but we do not wait for or expect librarians and users to be the ones to discover problems.

To further put the discussion of the importance of quality control into perspective, it is important to reiterate that the Scholars Portal platform is designed to meet the needs of the Ontario scholars associated with the 21 university members. In order to guarantee usage of the platform when the vendor's native interface is also available for any given publisher's content, we need to ensure that the content is appropriately described, findable, and reliably accessible on our platform. Figure 1 indicates the breakdown of how our users are currently finding our content and illustrates the relative importance of the OPAC links, MARC records, and indexing.

Figure 1. Scholars Portal E-book traffic by source

2011/2012 Scholars Portal E-book Traffic by Source

- OCUL OPACs and Discovery Layers (MARC records drive use)
- Direct (SP Ebooks chosen as a search destination)
- Google
- Others (includes links from other SP services (journals, data, reworks etc and outside webpages, catalogues and guides))



The Scholars Portal E-book team must therefore balance the need to provide access to material quickly with the need to ensure a suitable level of quality before exposing the content to the schools.

The above discussion leaves us with several research questions for our present study:

What are the most common errors in the MARC records that we index?

Is there a difference in quality between the MARC records provided to us by different publishers, and, if so, to what we can attribute the difference?

Are errors consistent within publishers or across publishers?

How we can improve the quality of the metadata given to us by publishers?

Is there a way to automate QC procedures for e-books?

Literature Review

Emerging standards and the frequency of change in the current digital library environment makes it all the more urgent to develop and document practices of metadata QA processes at the present time. But why do we or should we care about metadata quality? It is true that the quality of metadata is to a large degree related to the purpose of traditional bibliographic control, as specified in the International Federation of Library Associations and Institutions (IFLA)'s Statement of International Cataloging Principles, in facilitating discovery, identification, selection, and use of information resources needed by end-users.¹

A standard definition of metadata quality is still under development. There are, however, several useful working definitions that have attempted to create a more systematic and organized view

of metadata quality through the introduction of generic frameworks for the evaluation of quality. In Moen, Stewart & McClure (1997), a procedural framework for evaluating metadata records is introduced, using a set of 23 evaluation criteria. The framework discussed in Gasser and Stvilia (2001) is based on concepts and ideas of the more generic field of information quality.² It identifies 32 information quality parameters classified into three dimensions: intrinsic, relational/contextual, and reputational.

Hillman, Dushay and Phipps of the National Science Digital Library assert that “the utility of metadata can best be evaluated in the context of services provided to end-users,” focusing on appropriateness.³ Hillman and all recommend that value is more appropriately defined at an element level (i.e. title) rather than at the record level (i.e. MARC record) in terms of the appropriateness of the information to users’ needs. They elaborate on seven characteristics of metadata quality: completeness, accuracy, provenance, conformance to expectations, logical consistency and coherence, timeliness, and accessibility. This type of definition of metadata quality is dependent on functional requirements. For example, if searching and browsing by publication year is listed as a functional requirement, then the publication date must appear in a specific standard. In our case, it must have the same tag and indicators in the MARC records. The functional requirement that quality metadata is designed to support is summarized by Guy et al. as, “quality is about fitness for purpose.”⁴ The purpose, however, can be internal and external. In the case of Scholars Portal, a service that is created to benefit a consortia, the quality of metadata reflects not only the degree to which the metadata in question perform the core bibliographic functions of discovery, use, provenance, currency, authenticity, and administration on the e-book platform, but also on the OCUL partners’ ILS’s, as we distribute MARC records to OCUL partners for loading in their catalogues. While stressing the importance of QA and QC procedures for metadata, some studies draw attention to issues centering on the creation of good quality metadata.⁵ In the case of our e-book platform, this is an issue. We have no control over the creation of metadata, since we receive metadata from different publishers and we never really edit or create MARC records. This in a way is also why it is even more crucial for us to be able to examine

the quality of the metadata we’re getting. Issues of metadata quality in relation to interoperability are especially pronounced in the context of federated collections like ours, and some studies dealing with metadata quality problems look at federated collections in particular. Shreeves et al. evaluated the quality of harvested metadata at an aggregator level in order to determine how metadata quality at the local level affects the searching of a federated collection.⁶ By examining the metadata authoring practices of several projects funded through the Institute of Museum and Library Services, they found that the quality of metadata varied between collections of metadata records. They discuss the challenges of maintaining consistency of metadata across federated digital resources while presenting quality control and normalization processes, which may bring forth shareable metadata.

Good metadata reflect the degree to which the metadata in question perform the core bibliographic functions of discovery, use, provenance, currency, authentication, and administration.⁷ Our metrics for the current study are built upon Statistics Canada’s Quality Assurance Framework, which presents six dimensions of information quality: relevance, accuracy, timeliness, accessibility, interpretability, and coherence.⁸ Bruce and Hillmann further refine these six principles by modifying them for the library community. The suggested criteria concern completeness, accuracy, provenance, conformance to expectation, timeliness, coherence, timeliness, and accessibility.⁹ These criteria are particularly developed in the context of aggregated collections; thus, they match the nature of the e-book platform of Scholars Portal that contains titles from a variety of commercial publishers. However, most of these studies discuss metadata in general and do not focus on MARC records in particular. For the purpose of our study, we focus on the accuracy of specific fields in the MARC records supplied to us by different publishers.

Method

In order to assess the quality of the metadata, the authors based our method primarily on the fitness for purpose definition provided by Bruce and Hillmann, and utilized the recommendation in Hillman, Dushay and Phipps that element level analysis is more useful than record level for identifying quality in our metadata.

Beginning in the winter of 2011, the authors formulated a workflow for our student assistants to use to gather data on MARC record fields within the SP e-book platform and to record how well major MARC record fields such as the title, author, and year of publication matched the objects. Beginning in December 2011, for each batch of e-book MARC record and content files received from our providers, we calculated a sample size based on a confidence level of 99% and a confidence interval of +/- 5%. Upon receiving a list of loaded e-books in the form of their locations called 'common ids' (ex. /Ebooks/ebooks0/gibson_cppc-chrc/2012-05-31/1/10544845), they are entered into one column of an Excel worksheet and saved. Given the large sizes of loaded batches a sample is taken for quality control testing. In order to draw a random sample of e-book titles for metadata checking, we used the randbetween Excel formula to select the number needed for our sample (we sorted our titles by common ID and had randbetween choose any number between 1 and x where x is the last row, or e-book title entry in our Excel sheet). Students then went to that common ID on our platform and examined the metadata we indexed.

The students used a table that the authors created on our Scholars Portal wiki, called Spot-Docs (spotdocs.scholarsportal.info) to record their findings. Each publisher had their own pages organized by batch to use to test the sample. The complete Excel file listing the titles in the batch is also attached to the page. The table is set up to record findings for each of the books in the sample by prompting students to indicate "yes" or "no" for the following questions: PDF complete? PDF downloads? MARC matches PDF? Title matches MARC? Author matches MARC? Year matches MARC? Table of contents links? Table of contents links to PDF?

Each book is tested to answer these questions by visiting Scholars Portal e-book platform at <http://books1.scholarsportal.info/home.html> and copying and pasting the book's common id after 'id=' in the URL.

The process begins by checking if the book is matched correctly with its corresponding MARC record (given we receive the PDF and MARC files separately, in large quantities, and create an

automated process for matching them up). This is achieved through comparing the title, author, and year that appears in the metadata with the actual e-book.

This also provides the opportunity to review and edit minor errors in the MARC record fields, which otherwise matches the e-book. Where errors are found, they are edited using our in-house metadata editor.

Having checked the MARC record, the e-book is visited to determine if it is in fact complete and that we have loaded the whole book. This is checked by clicking through the book and observing the page numbers as they turn. Additionally the option to export and save parts of the book to PDF is tested for functionality.

Lastly, the e-book is examined to record if it has a table of contents by answering whether the headings in the TOC directly link to the respective page online, and/or the headings provide a link to a PDF file which can be saved.

The answers to these questions are recorded on the Spot-doc wiki, with the option to record notes pertaining to these answers or other circumstances that are not captured in the categories provided.

Upon completion of a batch, re-occurring issues are noted and communicated to the manager to be addressed. The results of all the batches processed in a month are combined and exported to Excel for further analysis at the end of each month.

For the quantitative analysis of our MARC quality, the authors then created a single Excel file pulling the table data from our SPOTdocs wiki for each batch sampled and tested between and including December 2011 and August 2012. This master Excel file was then edited and pulled into SPSS in order to more easily calculate frequencies of errors, and to cross-tabulate the data to explore results by publisher, by MARC record source, and other groupings of interest. In keeping with our fitness for purpose framework used to determine quality of the MARC, the authors hypothesized that patrons would not utilize all MARC fields evenly, and therefore, errors in some fields would have a greater impact on discoverability and would thus

pose a bigger problem for the user than others. In order to determine the relative importance of our fields, we turned to the usage statistics that we gather via our e-book platform search logs and through Google Analytics. Our Scholars Portal Software Developer for e-books queried the e-books usage log to count all interactions on the platform that included a search event. These were then further queried to determine event type, which would include searches on each field available for searching on the platform: author, subject, title, LC, language, Publisher, ISBN, ALL fields (key word on any field) and Publication year. The parameters of the query were set to generate monthly counts for the full calendar year for 2011 and extending up to August 2012. Additional limits needed to be set after examining the data and finding that some of the traffic sources do not represent actual searches, but rather automatic hits on fields within our content that are logged as searches (this was especially true of the author field, that was inflated dramatically). Thus, our sources were limited to only gather searches that were associated with each of the 21 Ontario university patrons. We then calculated the percentages, by month, and an overall average for the full period, of the total searches that included a search on each of our fields. Upon finding that the keyword searching (searches on ALL fields) occurred in over 85% of searches, the authors also wished to explore the types of searches entered in to ALL fields in order to determine which of our metadata fields indexed on our platform would be most important in matching user queries to our content.

Because there was a massive amount of total searching during the full period, and coding search strings is extremely time-intensive, the authors determined that a general idea of search behavior would suffice for the current investigation. To achieve a better understanding of search behavior on ALL fields, the authors exported all searches recorded in our Google Analytics account for one of our busiest months (March 2012). The searches involving ALL fields were extracted, numbering 14,741, and a sample size of 637 was calculated (using the same criteria of 99% confidence level and a confidence interval of +/- 5%). Each of these 637 searches were read and coded according to the type of search used. Types that emerged demonstrated that there were titles, authors, subjects, topics, control numbers (ISBNs, ISSN,

DOIs), and combinations of the above entered into ALL fields.

The approach used to code was to assign a 'title' designation to searches that were obviously specific titles (i.e. /search.html?searchTerm=E nvisioning+Lastness:+Byron's+Darkness,+C ampbell's+the+Last+Man,+and+the+Critical +Aftermath.&searchField=All+Fields&collection=all&sortBy=relevance), and also searches that appeared more specific than a general topic and sounded as if they may be a title (i.e. /search.html?s earchField=All+Fields&limit=full_text&sortBy=relevance&collection=all&searchTerm=The+Troubled+Dream+of+Life). Where it was unclear whether the search could have been a general search topic or a specific title, the search was assigned a designation of 'Subject or Title' (i.e./search.html?searchField =All+Fields&limit=full_text&sortBy=relevance &collection=all&searchTerm=winnipeg+general+strike). A designation of "Subject" was given for single or few-word word topic searches, such as '/ search.html?searchTerm="aestheticism"&search Field=All+Fields&limit=full_text&sortBy=relevance&collection=all,' or where the search appeared topical and many keywords were used, (i.e./search. html?searchTerm="protests"+demonstrations+ "native+canadians"&searchField=All+Fields&so rtBy=date_reverse&collection=GIBSON_CRKN &facetField=LC+Call+Number&facetTerm=). An "author" category could not be created, as it was not possible to distinguish in the search strings between searches for proper names as authors or as subjects, so a category "subject or author" was created to accommodate these searches.

The frequency of these was then counted and compared with our field searching percentages in order to determine whether the keyword searching may reveal greater or lesser importance, as compared with the specific field searching breakdown, of any of our fields for discoverability. Finally, the e-mailed problem reports that could be located from within our investigation period (December 2011 to August 2012) were analyzed to explore the metadata associated with those errors our users (mainly librarians in this case) took time to report to us.

The data from these three sources was then used to apply a weighting to the MARC fields that could be used to assign an overall score for the metadata for

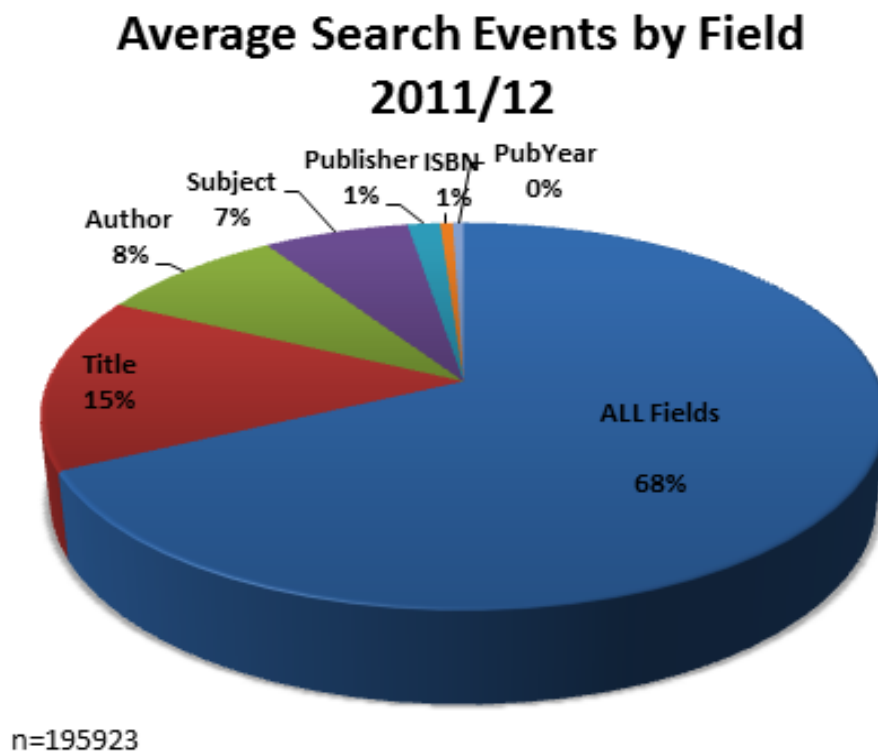
each sampled e-book reviewed by our students.

Findings

After looking at the search field data, the authors determined that the most important fields for searching and discoverability on the Scholars Portal e-book platform are the title, author and subject fields (see Figure 2). Searches that included

a title field search are almost double that for the author field, both when looked at on a monthly basis, as well as on average for the period included in our analysis. We also found from our sample of the keyword searching (searches on the ALL fields option) that many users are entering specific titles, or searches that may be intended to produce results about a topic or a specific title.

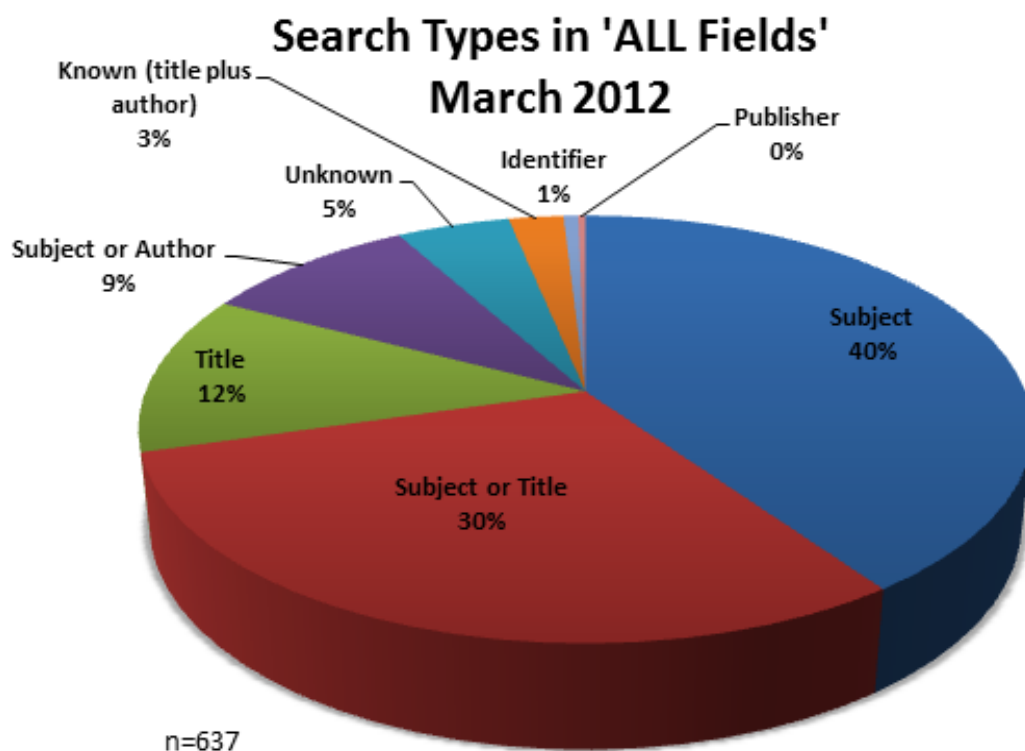
Figure 2. Average search events by field



Further, in the March 2012 search string coding (see Figure 3), we found that searches related to titles more than doubled those related to authors (9% at most) when looking at the categories of “title,” and “subject or title” (42% of the sample when categories combined). Since we are not able to distinguish between those searches that were subject/topical and those that were titles within the more generic searches in the “subject or title”

category, we can’t quantify how much more than the 12% title searching activity in ALL fields were likely attempts to locate matches between the user query and the title field vs. topical searching that could have been matched to title, subject fields, or other available metadata. What we do see is that the data here simply reinforces that the title field is more important relative to the author field.

Figure 3. Search types in 'ALL Fields'



MARC Field Data Analysis

Based on the use data, we determined that we could use a weighting for fields: a correct title would be worth a 4, an author, a 2 and publication year would be unweighted. The weighting would allow us to look at quality based on functionality

requirements, not just whether a field's data was correct or incorrect. If a record had correct metadata, its score would be 7, and if there were any errors, a score between 1 and 6. Our students recorded data for a total of 5997 e-books. Table 1 illustrates the breakdown by MARC record source.

Table 1. Frequencies by MARC source

MARC Sources		
Total	5997	100.0
Source A	2147	35.8
Source B	1234	20.6
Source C	888	14.8
Source D	607	10
Source E	461	7.7
Source F	336	5.6
Source G	303	5.1
Source H	21	.4

After running basic frequencies on the data in SPSS, we learned that the quality of our MARC, regarding the data elements we are collecting the data on, is excellent overall:

- 99.6% of the books were complete
- 99.4% allowed downloading of PDFs
- 99.1% titles matched the MARC
- 97.8% of publication years matched the MARC
- 91.5% of authors matched the MARC
- 88.6% of the MARC matched the content overall

The largest problem that we found is that only

45.8% of the titles have TOC links.

Within the problems related to the MARC matching, we explored these 679 records in order to answer our research questions.

In order to answer our research question concerning MARC field accuracy within and across publishers, we ran a crosstab for MARC problems by publisher. However, because some publishers use the same companies to produce their MARC records, we found the MARC problems by MARC Source crosstab to be more relevant (see Table 2).

Table 2. Accuracy of MARC fields by MARC source

Source H	100.00%
Source E	97.83%
Source B	96.76%
Source G	95.38%
Source F	95.24%
Source A	95.11%
Source D	84.51%
Source C	54.28%

When we did this, we found that the quality of most of our MARC sources is excellent, and only Source C and Source D require significant improvement.

We also wanted to see what specific fields are problematic in the records by MARC source provider. The results of this are illustrated in Table 3.

Table 3. MARC problems by field and source

MARC Source	# Problems	Title Problem	Author Problem	Year Problem
Source G	13	4	3	6
Source F	16	3	4	2
Source C	406	18	336	17
Source E	10	2	4	5
Source B	39	7	13	12
Source D	94	5	83	9
Source A	101	7	62	10

When the weighting and scoring was applied, this had the effect of improving the appearance of MARC source providers and publishers in terms of the quality, because in general, we found that the title field did not have as many errors in terms

of matching the content as did the author and publication year. Therefore, weighting the title as double the score of the author only created higher scores across the board. In the end, the authors decided not to apply the weighting, since our

aim is to look at the problems and target areas for improving our QA and QC.

The authors noticed while examining the problem counts, several records scored a perfect 7 (all 3 fields tracked matched the content), but still had a flag of “no” for MARC matches content. Looking at the notes, we can see that these problems are mostly minor changes to the title (such as a note

indicating that a volume number or subtitle was added) or there was an issue with a field, such as the subject or the extent that we did not include in our tracking.

Finally, 53 e-mail problem reports were read and problems counted by fields involved in the report. Table 4 illustrates the results.

Table 4. Problem counts by MARC field

Problem Field	Count
Title	19
Author	17
Year Only (no year problems plus other reported)	5
Other: Vol. number/ series name/ subject headings, pages numbers and other metadata fields	33
Title Only	5
Author Only	10
Other Only	18

Discussion

Based on our findings, we can see that the quality of our metadata as measured is generally excellent. We do see, however, that there are a few opportunities for improvement.

When we first started to ask students to check recently loaded batches of e-books, we weren't sure what to look at first. In time, we learned that each publisher required a different emphasis since their production and delivery mechanism of both the e-books and the metadata is different and hence, creates different challenges for us. Nevertheless, we found that two issues were common to most publishers: duplicates and incomplete books. For both problems we were able to automate the process and move it upstream to perform the checks prior to the loading of e-books on our platform.

Another element we measured both within each publisher and across publishers is consistency. In order to utilize subject headings within the platform, they must appear in the same field tag of each MARC record. Unfortunately, different publishers have found different solutions for

subject headings, and we cannot modify our mapping each time we load. Currently, we use one mapping file for all our loaders.

Here is a final point to consider:

With federated collections, we need to analyze the original MARC records in order to know if our mapping file is doing a proper job. Up to this point, we have focused on post-loading QC as a first resort, but, of course, as we move forward and want to improve the QC, we want all the checks to be done prior to loading. In the case of the original MARC records, we need to sample them and see if they contain all the fields requested in our guideline document for publishers, and if the fields are encoded in a way that matches our XML mapping file. If the data does not match, then we need to change our mapping file in order to index the desirable fields properly. As we get data from various publishers and resources, we cannot change the mapping file each time some publisher decides, for instance, to ignore the series field (830) and put the series name only in the XML file that comes with the book (as is the case with Springer records). Our mapping file needs to find the

most common application of MARC cataloguing practices represented in the records we get from our suppliers in order to guarantee the most accurate and complete indexing of the content.

For metadata to remain relevant, it must support end-user discovery outside its context. In our case, this is on an e-book platform that aggregates content from various publishers.

Limitations of the Study

Not all the evaluation methods suggested in the literature were addressed. The QA is tailored to the special needs of local loading and the distribution of its product—MARC record fields with the Scholars Portal URL. We also acknowledge that the study did not examine the original MARCs to determine if their quality allowed proper indexing of the different fields that we index on our platform.

The analysis of our use data also indicates that subject searching and topical searching is more important to discovery than we had originally thought. When we determined the workflow for our students, we did not ask them to record the subject. Assessing whether the subject headings are accurate would involve additional work that is perhaps beyond the skills our students possess. They could begin to compare whether the subjects we indexed include all of the subject field data present in the MARC record provided to us by the publishers, but there may be additional sources that would need to be checked to determine whether we have all of the appropriate subject data that exists for a given title. Another complexity in determining how important subject fields are vs. non-MARC subject data such as author keywords, table of contents, or summaries and book reviews, is that we can't determine whether the subject searching our users are conducting are actually resulting in matches on the subject fields in our index, or if they are matching other data in our e-book record. This aspect of search behavior and discoverability is an area that was beyond the scope of our present study, but the volume of topic and subject field searching warrants our attention as we evolve our QA and QC procedures.

Conclusions

Testing the quality of the metadata on the Scholars

Portal e-book platform has taught us that the quality overall is much better than we may have thought based on anecdotal evidence. We now know more about which sources for our MARC records are likely to have potential problems, and can target opportunities to clean metadata and improve content discoverability. Likewise, if we target clean collections we can instruct students to sample a small number of records and gradually spend less time on these collections.

QC/QA procedures prove to be expensive to develop and to maintain. The students were asked to time their work, and the costs break down as follows: it takes a student a minimum of one minute to check a title, and if we have 20 hours a week of students' work, then it will take us 416 days to check the metadata for all the titles on our platform. By conducting this research, we hope to raise awareness among the OCUL stakeholders as to the significance of investing in methodic and well-structured QC procedures when it comes to e-books.

We know that the more we move the checks upstream the more QC hours we save and the more in control we are over the quality of the content. In addition to the already automated checks that we have prior to loading for incomplete and duplicate titles, we would like to add some testing of the original records so we can predict success and optimize our loaders' capturing of metadata fields from the records. While programming time costs more than students' time in manual QC, it might be that adding some features to our loaders might prove efficient to a larger variety of encoding methods common to federated collections. Thus, while finding ways to automate the QC can be costly at first, we can save many students' hours if we have such tests run automatically. Finally, we feel that setting up a QA process not only contributed to our credibility but it enables us to communicate better with the publishers. We can supply up to date feedback about their data and are now in a position which allows us to detect problems early enough to arrange for new records, new content and other arrangements to improve our platform.

High quality metadata is vital to discoverability, accessibility, usability, interoperability and readability. As Scholars Portal continues to grow

the content on our e-book platform, we will continue to invest the time and energy required to achieve this goal.

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Notes

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“Feels Like You’ve Hit the Lottery”: Assessing the Implementation of a Discovery Layer Tool at Ryerson University

Courtney Lundrigan
York University, Canada

Kevin Manuel and May Yan
Ryerson University, Canada

Abstract

The research study was initiated to evaluate and assess the web-scale discovery (WSD) service Summon to coincide with its launch at Ryerson University Library in September 2011. The project utilized a mixed methods sequential explanatory strategy and applied an inductive analysis. Quantitative data was gathered with two online questionnaires, followed by a series of focus groups with students for the qualitative phase. The quantitative phase of the study collected over 6,200 survey responses (21% of the university population), with over 420 students indicating interest in participating in a qualitative follow-up (6.7% of the respondents). The survey data showed that most undergraduate students rated Summon highly in ease of use; however, there was a lower satisfaction with the large quantity of, and relevance of search results. Additionally, participants indicated that they used Summon in conjunction with other research tools, such as Google Scholar. In the qualitative phase, small focus groups, consisted of a total of 13 participants, allowed the students to express their experiences with Summon in depth. The study has given insight into the role of Summon in terms of undergraduate information-seeking behaviour. Participant feedback revealed potential improvements for Summon at Ryerson and will be useful to other institutions either using or considering the use of similar products. Overall, the results from the study will help to inform Ryerson Library practice surrounding future directions in reference, instruction, and service promotion.

Introduction

With the recent explosion of web-scale discovery (WSD) services in libraries, both users and library

staff alike are adjusting their information seeking behaviours in response to these new tools. The evaluation and assessment of WSD services will increasingly become a priority to determine user satisfaction and value of investment. Assessing this return on investment of a WSD service in any library is a challenging task and would require the use of multiple avenues of study to evaluate its impact comprehensively. Upon implementing Summon¹ in September 2011, a team of three librarians at Ryerson University Library and Archives began an assessment project. Recognizing the various potential study foci—such as usage statistics, information literacy, usability, etc.—the investigators chose to evaluate user satisfaction to meet a gap in research literature.

To contextualize this study, Ryerson University’s library serves a population of over 28,000 students, including about 2,300 graduate students, as well as 780 tenured and tenure track faculty and approximately 1,700 administrative and support staff. In addition, Ryerson boasts a growing distance and continuing education enrollment. Situated in the heart of downtown Toronto, the library is the only one serving the campus.

Given that the use of questionnaires is one of the preferred methods of gathering user feedback about electronic resources in libraries,² the investigators chose to conduct online surveys to gather quantitative data about user experience with Summon. Seeking feedback from the entire Ryerson community, they designed an online questionnaire to be completed voluntarily. After receiving approval from the university’s Research and Ethics Board, the team promoted and launched the surveys in October 2011.

Literature Review

WSD services are still new to many libraries, so researchers are only starting to publish library literature on tools such as Summon, EDS, primo etc. It was not surprising the research team found very little material in the initial literature review at the time of study planning. Using federated searching technology as a proxy for WSD services, researchers anticipated that the publication of library literature would follow in a similar fashion.

Using the five categories of federated searching literature from Way and Belliston, Howland & Roberts,³ the research team placed the current state of web-scale discovery library literature into the following analogous categories:⁴ (1) Comparisons of WSD products currently on the market to each other and/or to Google Scholar, (2) reports of specific WSD product implementations, (3) evaluation of the technical functionalities of products and how well WSD worked with and/or impacted other library systems or resources, (4) Usability and design of WSD and (5) articles examining librarians' and students' perceptions of and satisfaction with WSD products.

At the time of the study planning, published articles about web-scale delivery focused on providing information to librarians who were in the decision making phase of discovery service acquisition. As such, most articles were about WSD product announcements, feature comparisons,⁵ and implementations of various WSD products.⁶ These category 1 and 2 articles are regularly published as WSD products evolve, different institutions are implementing their WSD services, and they continue to be of general interest.

Early adopters of discovery layers shared their evaluation of the technical functions of Summon and how well it worked with, or impacted other library systems and resources. In "The Impact of Web Scale Discovery," Way reviewed Summon's impact on usage statistics, while Siltan checked the linking to full text articles,⁷ and Asher et al. compared searching between EDS and Summon.⁸ Many more researchers studied the usability of various WSD products, such as VueFind,⁹ Ebsco EDS,¹⁰ Summon,¹¹ and WorldCat.¹² Buck & Nichols,¹³ and Breeding explored furthering the design of future WSD products.¹⁴

The investigators found only a small amount of library literature evaluating user satisfaction with using WSD in the context of their research. At that time, only three articles were noteworthy. In their discussion of their Summon implementation, Slaven et al. shared qualitative feedback from their users related to decisions. Dartmouth University Library summarized their user assessment results in an internal report¹⁵ at a high level by user groups. Finally, Howard and Wiebrands shared their survey of librarians and staff about their perceptions of Summon.¹⁶ Interestingly, Way had already identified that "studies are needed to examine why and how patrons are using these resources and how easily they are meeting their information needs."¹⁷ The research team designed this study to contribute to the latter category of literature, with the aim to discover user satisfaction in the context of their search.

Nearly a year after the initial literature review, other researchers have since contributed to this last category of research. Articles surveyed librarians using Summon and document the librarians' perceptions and their experiences with Summon concentrated on the impact of WSD to information literacy instruction, or reference service delivery,¹⁸ furthering the work of Howland and Wiebrands. In some of these papers, librarians shared feedback from and about their patrons and their satisfaction with using Summon. Cardwell et al., reported feedback from lower level, upper level and graduate student groups based on their instruction and reference sessions. Buck and Mellinger, in their survey instrument, asked librarians to indicate the level of satisfaction of their patrons with using Summon.

Outside of librarians' observations or perceptions of user satisfaction, only a few publications have actually examined students' satisfaction with Summon using direct student feedback.¹⁹ Mussel and Croft presented the results of their satisfaction survey of distance education students.²⁰ Varnum only summarized a survey of library users of their Summon implementation, but did not elaborate on the composition of respondents. Outside of Summon no other WSD platform users have yet reported user satisfaction evaluation results of those systems. Ryerson's study is differentiated from some of the above studies in terms of scale and/or survey methodology as a both a qualitative and quantitative study and aims to fill this gap in

the existing research on WSD.

Methodology

In this study, the central research questions gauged the user's ease of use and the level of satisfaction with Summon. The investigators implemented a multi-phased project that utilized a mixed methods sequential explanatory strategy. They then applied an inductive analysis that would reveal insight into the information seeking behaviour of the respondents.

The initial research design included two online questionnaires to be followed by a series of focus groups with students, thereby collecting both quantitative and qualitative data. Questionnaire participants would be self-selected from the Ryerson community and were not required to have previous experience with Summon or to be active library users. Participants would also have the option to volunteer for post-survey qualitative interviews when completing the questionnaire.

Survey Monkey Gold level was selected as the questionnaire tool as it provided the required online accessibility and analysis tools. The surveys drew from a participant pool that would consist of all Ryerson Library users, faculty, staff, students and other community members. Overall the goal of the surveys was to produce a representative sample²¹ of the Ryerson community and their user experience with Summon.

Phase one of the project was conducted in September and October 2011. A questionnaire with 10 open- and closed-ended questions was created with the first five questions collecting demographic information such as enrollment and degree status, faculty, program and gender. The final five questions asked the respondent about their information search behaviour and awareness of Summon.

Posters promoting the questionnaire were placed around the campus and the team utilized the library's various social media outlets to solicit survey response. Using the library's news blog, a post linking to the questionnaire was published at the time of its launch and in the days leading up to the deadline for participation. The team also

reached out to users via the Ryerson Library's Facebook page, which has 1,022 'likes',²² and the library's Twitter feed, which has 1,197 followers.²³

Despite having offered an incentive of \$50 gift certificates from the Ryerson University Bookstore, the questionnaire drew only 191 responses, below the desired 400 participants to provide a more representative number of responses from the campus population.²⁴ Questionnaire participants were eligible for the draw for the incentives by voluntarily supplying their institutional e-mail address. The survey was available from September 28, 2011 until the end of October 2011.

Overall, the main goal of the first survey was to create an awareness of Summon and to explore some of the initial feedback to inform the development of questions for the second survey. The results of the first survey will be briefly noted here. 56% of respondents had used Summon while 74.7% indicated they planned to use it for their next search, whereas 10.6% would not use it again, and 14.7% were undecided.

For the second phase of the study, another questionnaire was developed in November 2011. Again, it was a combination of open- and closed-ended questions, but with 10–15 questions that were funneled based on the respondent's status and experience using Summon in their last academic research activity (see Appendix²⁵). Similar to the first questionnaire, the beginning of this survey collected demographic information such as gender, faculty, program, and enrollment and degree status. For the remainder of the survey, the questions asked respondents about their information search behavior in their last academic search assignment. More specifically, the investigators wanted to know if they used Summon, its ease of use, their satisfaction with the tool, and what other resources they use to search for academic information.

In an effort to draw a higher response rate in the second, more detailed questionnaire, the investigators offered a more substantial incentive of three iPads. As with the first questionnaire, respondents provided their institutional e-mail address voluntarily in order to be eligible for the prize draw and only included students.

In addition to the social media outlets and poster distribution, the team used a campus-wide e-mailing system to reach potential respondents. The second questionnaire was available from November 4–December 9, 2011. With the campus-wide e-mail, distributed just days before the questionnaire's closure, the number of respondents viewing the survey jumped from a few hundred to 6,344!

Such a large number of responses to the second questionnaire may indicate that library users were more inclined to participate because of the more substantial prizes offered, in comparison with the first questionnaire. It should be noted though that 141 of 191 respondents (74%) provided their contact information for the first questionnaire, whereas 3,930 of 6,344 respondents (61%) provided their contact details for the second questionnaire. These numbers demonstrate that many survey participants were not solely motivated by the prize draws.

The second questionnaire provided the option for respondents to volunteer to participate in follow-up focus groups or interviews, and participants were selected from this pool of community members. In the second survey, 424 students indicated an interest to participate in focus groups which were conducted in February 2012 with nine undergraduate and four graduate students. The turnout to the focus groups was much lower than expected but the timing of the scheduled sessions unknowingly coincided with some midterm exams.

In future evaluation and assessment projects, research teams should consider the use of campus-wide e-mail systems to reach as many potential project participants as possible. While both questionnaires yielded valuable information about user satisfaction with the WSD service at Ryerson, a higher volume of feedback was gathered from the second questionnaire and has been invaluable in moving the project forward.

Results and Discussion

The second survey collected 6344 responses with 6280 (99%) consenting and 64 (1%) declining to participate. 5363 (84.5%) respondents finished the survey. In terms of gender, the respondents were 59.2% (3238) female and 40.4% (2210) male, and the status distribution was 4861 (88.9%) undergraduates, 452 (8.3%) master's students, 80 (1.5%) PhD students, 12 (0.2%) faculty, 53 (1%) staff and 10 (0.2%) research assistants. The percentage of student status responses was fairly reflective of the actual student status distribution at Ryerson. For enrollment, 4347 (81.8%) were full-time students, 858 (16.1%) were part-time students, and 111 (2.1%) were not students. The top three faculties that replied to the survey were the Ted Rogers School of Management (business)—1517 (27.7%), Engineering, Architecture and Science—991 (18.1%), and Community Services (health/medical)—937 (17.1%).

The questionnaire asked the respondent to identify a recent assignment where they had to search for academic information and to use that scenario to answer the rest of the questionnaire. As for the breakdown of the assignments, 3776 (71%) of respondents were writing an essay, while 493 (9.3%) were writing an article/thesis, 373 (7%) were preparing for a presentation, 315 (5.9%) were preparing for a Lab, 359 (6.8%) were working on other academic research (case studies, preparing for exams, etc.).

When assignment type was cross-tabulated by subject of search²⁶ (see Table 1), essay was predominant in nearly all subjects of search—Art and Design (75.9%), Business (71.6%), Communication (52.8%), Education (95.7%), Engineering (31.3%), Health/Medicine (82.5%), Humanities (92.6%), and Social Science (88.9%). Engineering's lower responses were offset by the increase in research at 25% of responses,²⁷ and working on a Lab (24.4%). Science respondents were the only respondent with another assignment type, working on a Lab (35.9%), ahead of essay (32%).

Table 1. Assignment type by subject of search

Assignment type/ Subject of Search	Art & Design	Business	Communication	Education	Engineering	General	Health/Medicine	Humanities	Science	Social Science
Essay	75.9%	71.6%	52.8%	95.7%	31.3%	53.3%	82.5%	92.6%	32.0%	88.9%
Presentation	9.7%	9.9%	15.3%	1.7%	14.8%	13.3%	5.8%	3.1%	6.4%	3.0%
Research	11.2%	14.0%	15.3%	1.7%	25.0%	26.7%	9.1%	3.3%	25.1%	6.7%
Lab Related	1.1%	2.0%	15.3%	.0%	24.4%	.0%	1.2%	.9%	35.9%	1.0%
Exam Prep	.7%	.7%	.0%	.0%	1.5%	6.7%	.0%	.0%	.0%	.0%
Project	.7%	1.1%	.4%	.0%	1.1%	.0%	.5%	.0%	.3%	.1%

Overall, the majority of undergraduate students were writing essays (74.4%), followed by research (8.8%), working on a Lab (6.7%), preparing a presentation (6.6%). Project and exam preparation were less than 1% each.

When asked if they had used Summon to locate academic information, 3235 (60.9%) of respondents had used it while 2081 (39.1%) had not used it. 1028 participants skipped the question.

Summon Users

Respondents were asked how easy Summon was to use and 655 (20.5%) participants found it *extremely easy*, 1423 (44.6%) *very easy*, 946 (29.6%) *moderately easy*, 134 (4.2%) *slightly easy*, and 33 (1%) *not at all easy*. When filtered for just undergraduate students, the results were very similar with 19.89% finding it *extremely easy*, 44.66% *very easy*, 30.25% *moderately easy*, 4.36% *slightly easy*, and 0.84% *not at all easy*. Accordingly, these results produced a positively skewed curve.

In the next question, respondents were asked how easy it was to find resources when using Summon. 394 (12.4%) indicated it was *extremely easy*, 1119 (35.1%) *very easy*, 1290 (40.4%) *moderately easy*, 298 (9.3%) *slightly easy*, and 90 (2.8%) *not at all easy*. Cross-tabulating the variable ease of finding resources with student status revealed that within the undergraduate sample, 12.07% found it *extremely easy*, 35% *very easy*, 40.86% *moderately easy*, 9.46% *slightly easy*, and 2.62% *not at all easy*. Again, the responses produced a positively skewed curve

of results.

Responses to the open-ended question²⁸ helped clarify some of the reasons for ease of finding resources' lower ratings. There were 1678 comments from users that rated ease of finding resources from moderately easy to not at all easy. 260 respondents left a negative²⁹ comment, 22 were directly related to a technical problem with document retrieval with the OpenURL resolver³⁰ or issues with full text access.

Some usability issues in the comments echoed the finding of Gross and Sheridan.³¹ For example, book reviews were confused with records of a book:

"about 50% of the search results were 1-page book reviews, not very helpful"

"Advanced Search to find what I need, since, if I don't, I end up with tons of reviews about the book/article I'm trying to find rather than the thing itself"

"[...]Dammit, I want books".

Students demonstrated difficulty understanding the differences between various formats of the information in the result set which was then exacerbated by some users' preference for one format over another either due to research style or habit:

"I found that it was a little difficult differentiating the types of sources these search

results provided.”

“When I want resources, I usually look for a specific type”

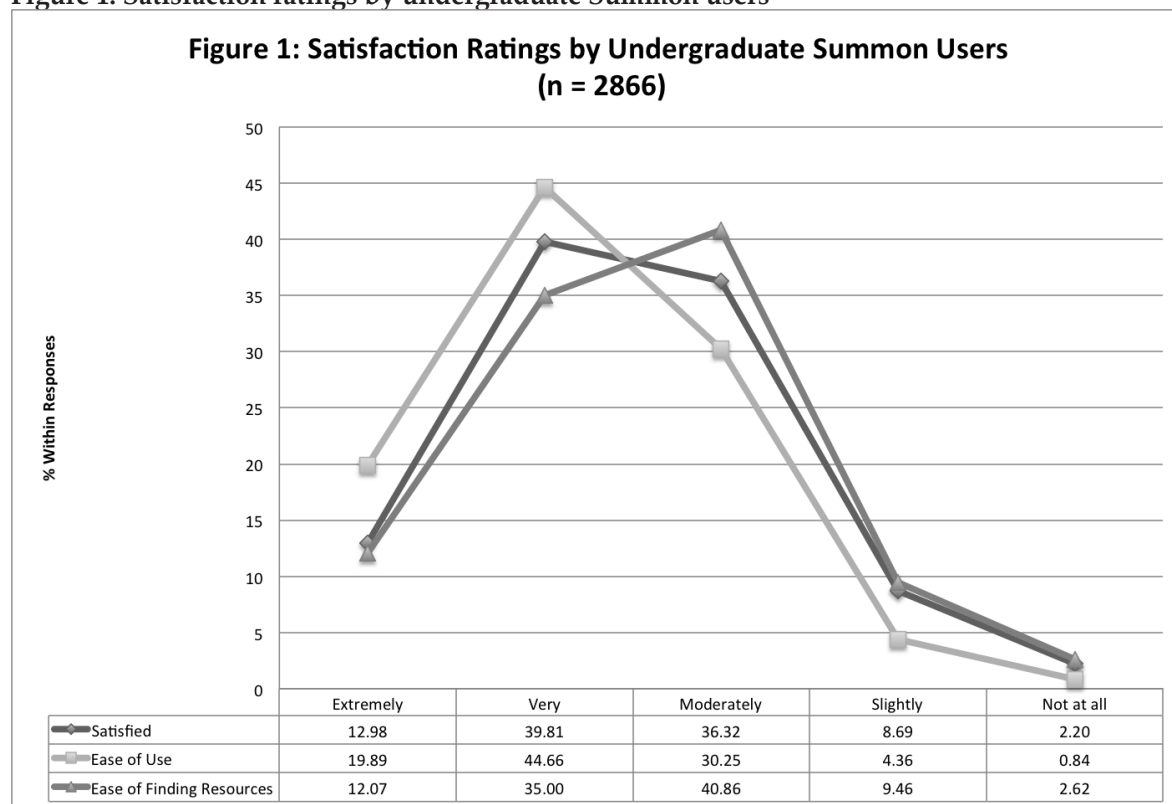
“I usually know what I’m looking for, that is, I know if it’s a book or a journal.”

Predominately, the negative comments were about the size of the result set for respondents’ queries. Without knowing the actual keywords used, the

investigators are unable to further determine if the volume of the information is from the nature of WSD searches or the use of vague keywords³² or other flawed search strategies.

In terms of satisfaction with Summon, 415 (13%) respondents were *extremely satisfied*, 1279 (40.1%) were *very satisfied*, 1147 (35.9%) were *moderately satisfied*, 272 (8.5%) were *slightly satisfied*, and 78 (2.4%) were *not at all satisfied*, producing another results curve that was positively skewed.

Figure 1. Satisfaction ratings by undergraduate Summon users



When just examining the undergraduate responses and satisfaction, 12.98% were *extremely satisfied*, 39.81% were *very satisfied*,

36.32% were *moderately satisfied*, 8.69% were *slightly satisfied*, and 2.2% were *not at all satisfied* (see Figure 1).

Compared with graduate responses, there was a very similar positively skewed curve, demonstrating a consistency in the satisfaction

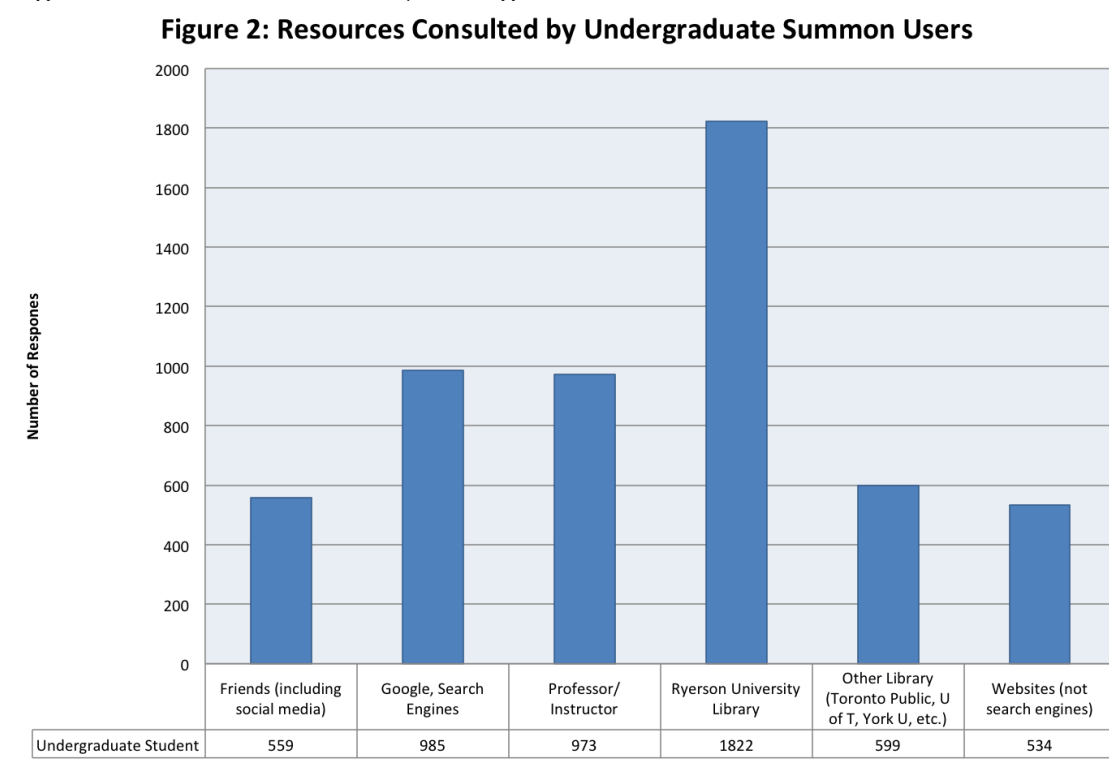
with Summon with the student respondents in general.

In Buck and Mellinger’s survey of perceived satisfaction by librarians of undergraduates using Summon, the result was that 49% were satisfied.³³ In the Ryerson study, the undergraduates that were *very satisfied* and *extremely satisfied* made up of over 52% of the respondents. If including respondents that rated that they were even *moderately satisfied*, the number goes up significantly to 89% in both the undergraduate and the overall survey population.

While many users found the product very or extremely easy to use, their overall satisfaction level was less positively skewed. Such data indicates that participants did not confuse ease of use with satisfaction. For example, some indicated that Summon was extremely easy to use, but were only moderately satisfied with it. This may have been because it did not fully meet their research needs or they were more satisfied with another product. This may be one of the reasons the satisfaction ratings were lower than ease of use ratings as demonstrated in Figure 1.

As with many evaluation and assessment projects, the study conducted reflects a snapshot in time. While all of the feedback is valuable, the data collected is representative of user satisfaction with the product at a time when the service was relatively new at Ryerson and before Summon implemented Index-Enhanced Direct Linking. Serial Solution had indicated initially an average of 20% improvement to resources over link resolvers,³⁴ this number is to increase over time as the vendor further enhances this feature. The resolution of technical problems may result in an increase in the ease of finding resources ratings.

Figure 2. Resources Consulted by Undergraduate Summon Users



In a cross-tabulation of the type of resources that undergraduate students consulted in a search for academic information (see Figure 2), the results illustrated that 1822 used the Ryerson University Library, 985 searched Google or other search engines, 973 asked a professor or instructor, 599 used other libraries (public, other universities), 559 asked friends (including social media), and 534 used websites (not search engines). The respondent could select one or more of these options.

The Library was the predominant resource in the

results for undergraduate students. Whether or not this high level of response was skewed because the respondents were influenced by answering a Library-sourced survey is unknown. The value of an instructor's opinion was also important to students. Not surprisingly the use of Google and other search engines scored quite high as well. As Ryerson is located in the centre of large metropolitan area with two other universities, it is also not unexpected that a number of responses for the use of another library, either public or academic, is present. The use of friends as a resource to find academic information was evident,

as well as the use of non-search engine websites.

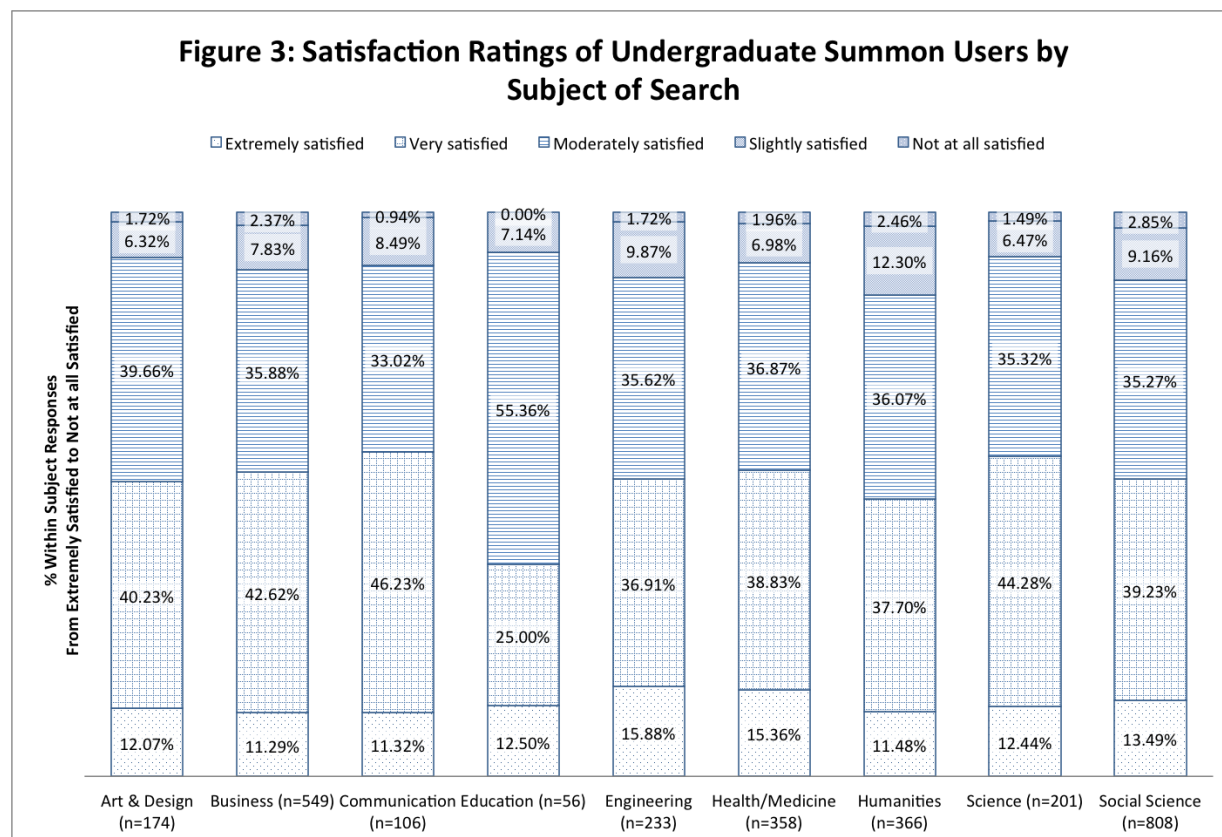
The value of the instructor's endorsement was further highlighted by comments to open ended survey questionnaires and the focus group where both undergraduate and graduate students expressed the best way to increase use of Summon

is by direct instruction in class. Students often will follow the direction of their instructor:

"If the professor tells me what to do, I just do it that way"

"The way I learned was through my professors"

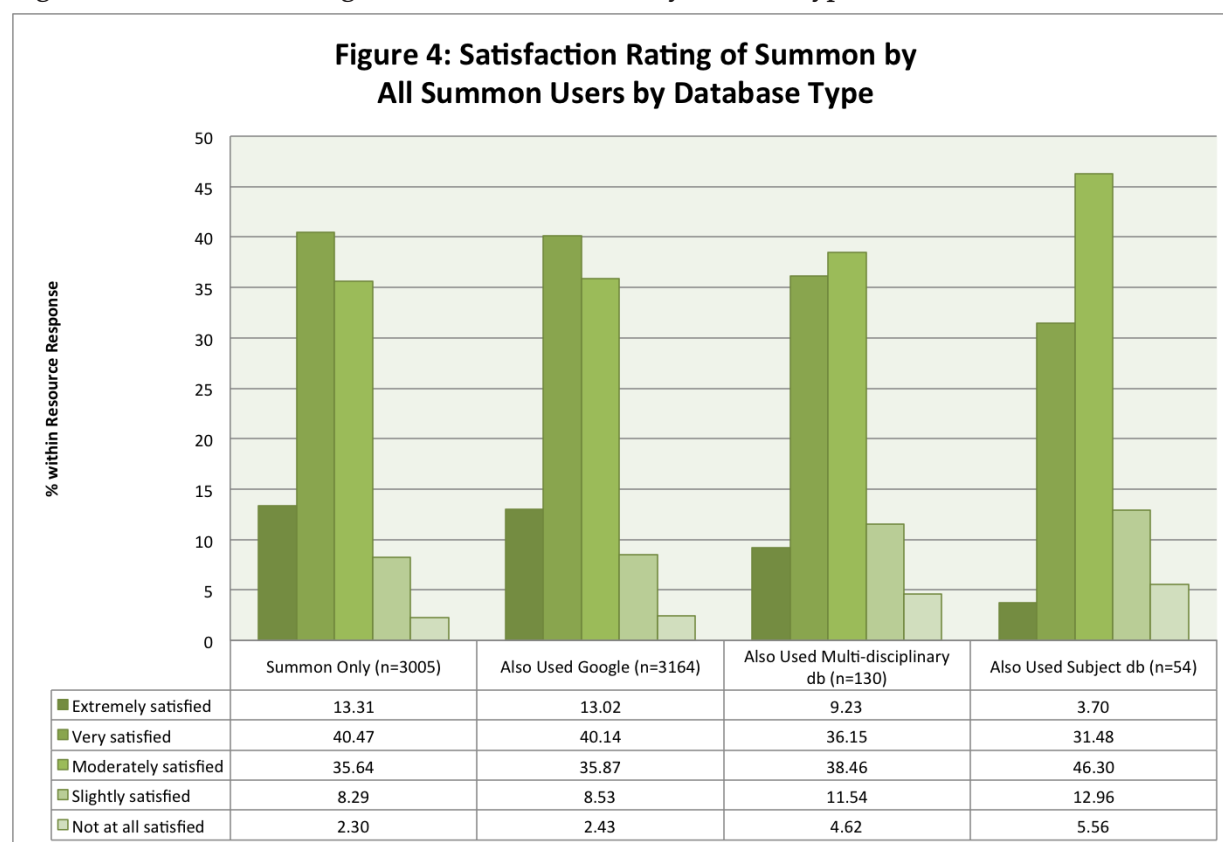
Figure 3. Undergraduate student satisfaction ratings by subject of search



When analysing the level of satisfaction amongst undergraduate students that has been cross-tabulated with the subject of the search, it revealed that most of the topics of research were very satisfied—at around 40%—with the Summon. The one exception was in the subject of education which had a lower *very satisfied* result at 25% and may be the result of a preference of using a

particular database such as ERIC for their research (see Figure 5). Accordingly, there were a higher number of *moderately satisfied* with education as a subject search at 55.36% compared to the other subjects typically around 35%. Humanities as a subject search had the highest combined slightly satisfied and not at all satisfied at nearly 15% compared to 10% for most of the other subjects.

Figure 4. Satisfaction Rating of Summon of all users by database types used



In another cross-tabulation, a comparison was conducted using the satisfaction with Summon with other types of resources to find academic information (see Figure 4). When looking just at respondents who only used Summon, 13.31% were *extremely satisfied*, 40.47% were *very satisfied*, 35.64% were *moderately satisfied*, 8.29% were *slightly satisfied*, and 2.3% were *not at all satisfied*.

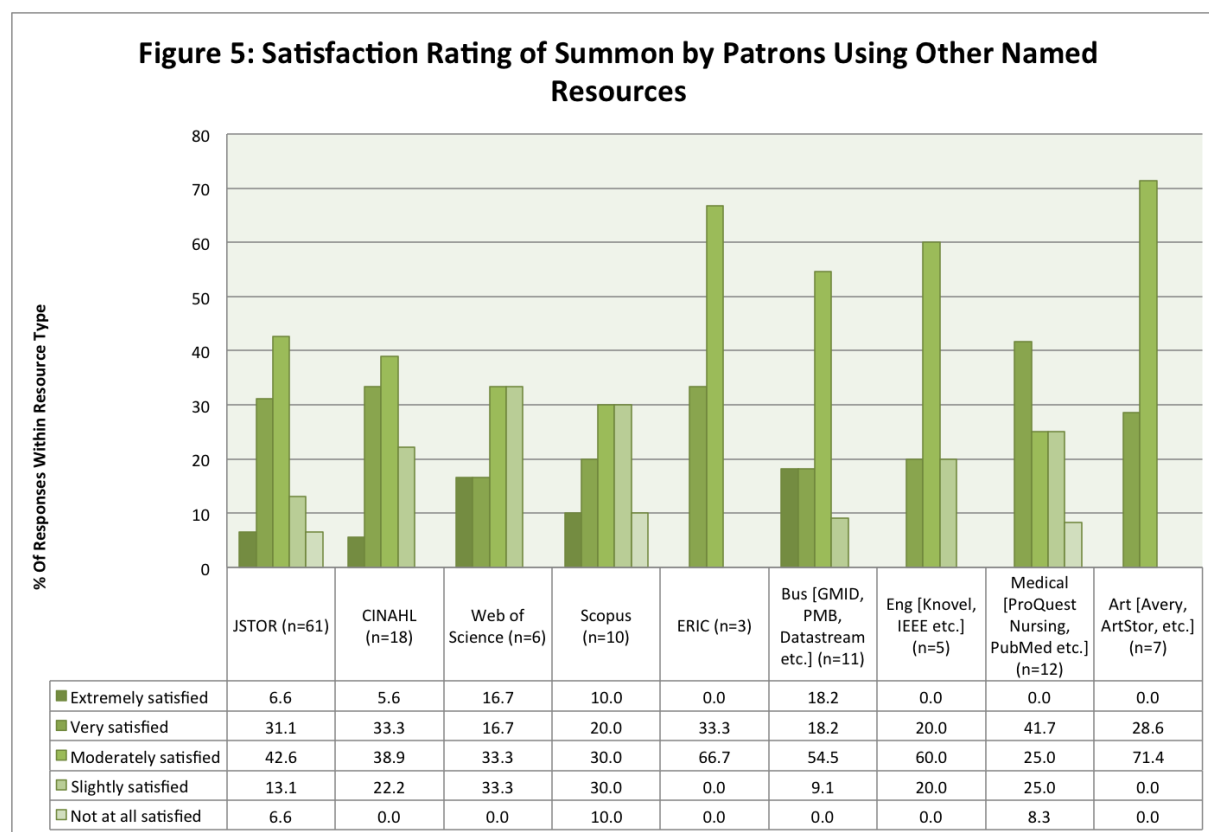
When thinking about the implementation of Summon, it was necessary to consider how other resources would compare such as databases or Google. The results from the survey illustrated that those respondents who had only used Summon had a very similar satisfaction rating to those who had also used Google or other multi-disciplinary databases.

Accordingly, these results supported other evidence collected from the focus groups that Summon provided the 'Google-like' search experience and was responding to the research

needs of the Library's users.

One anomaly that did come out of the results of satisfaction with Summon when compared to other resources was that those respondents who had also used subject specific databases gave a lower satisfaction rating than those who had used Google or other multi-disciplinary databases. Their responses did not present the same positive distribution. When conducting the focus groups, it was revealed in the session with graduate students that they had preferred using specific subject databases for their research rather than broader searching resources. It is therefore not surprising that these graduate students commented that the results from Summon were too general and broad for the purposes of their research needs. But they did recognize that it was a useful starting point for most undergraduate students. This type of a preference for subject specific databases may be the reason why users who also used subject specific databases rated Summon lower in satisfaction.

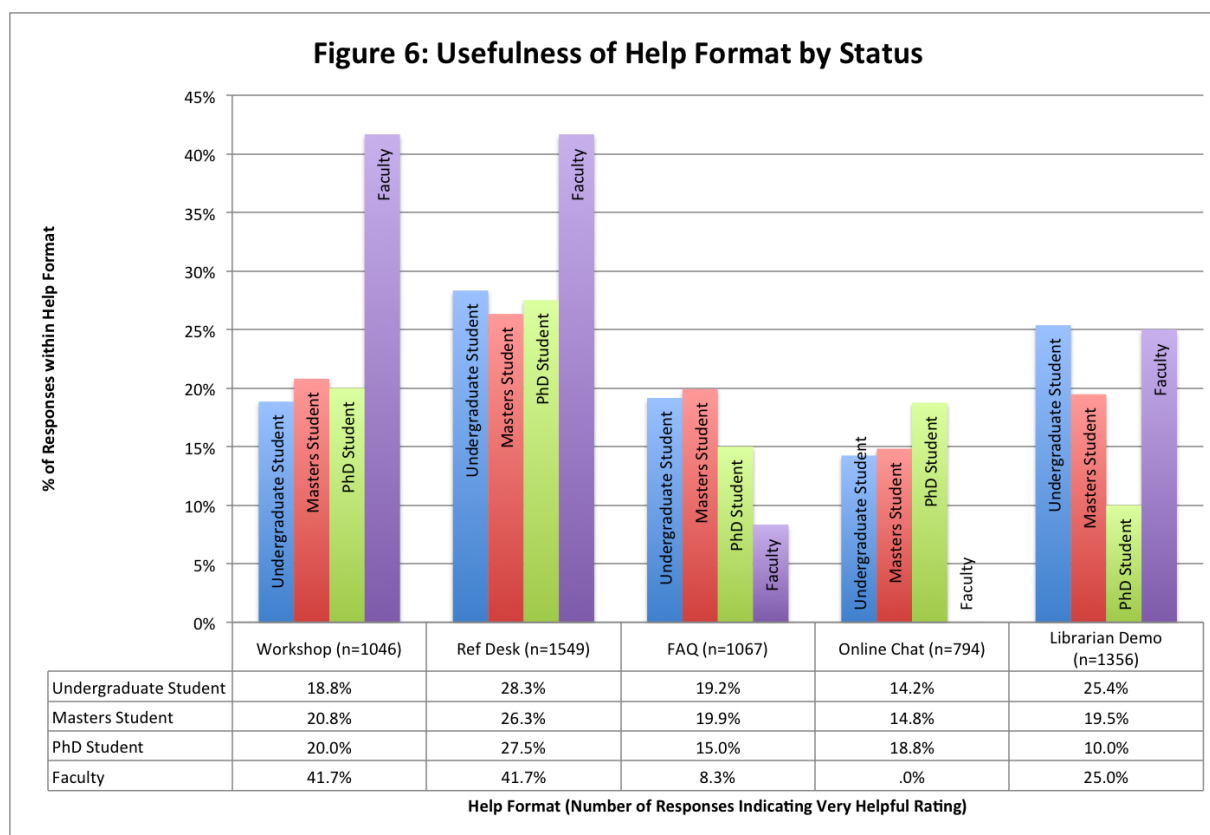
Figure 5. Satisfaction rating of summon by patrons also using named resources



Some interesting results came from the levels of satisfaction from users of resources other than Summon (see Figure 5). In particular, users of subject specific databases such as JSTOR, CINAHL and Medical (ProQuest Nursing, PubMed etc.) ranked Summon quite high, with well over 30% of respondents selecting very satisfied and higher. On the other hand, ERIC and art databases (Avery, ArtStor, etc.) had significantly lower satisfaction

results in comparison, where most were only moderately satisfied at 66% and 71% respectively. These results reflect focus group findings that within certain fields of research there is a preference for select database resources. Given the low numbers of responses that mentioned specific databases, this information—while of interest—should not be considered to be statistically significant or representative.

Figure 6. Usefulness of help formats by status

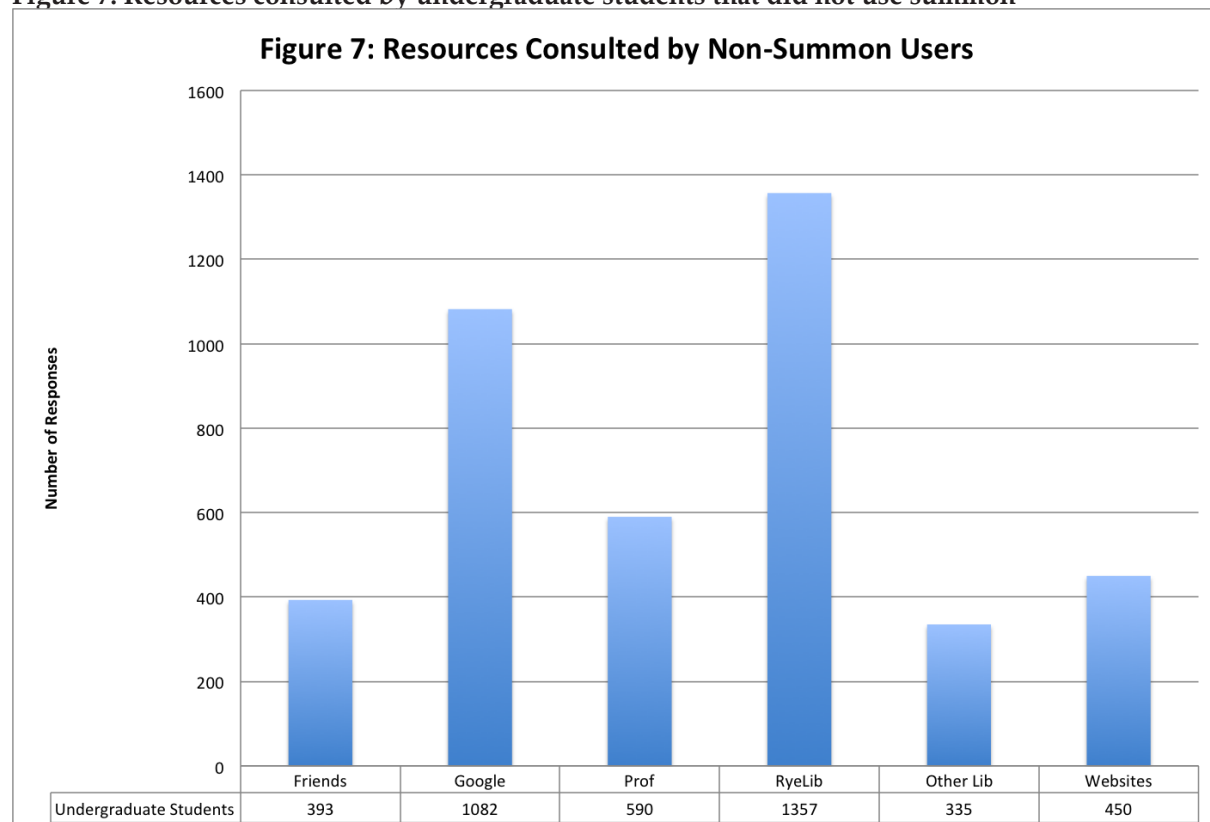


In addition to data collected about satisfaction and ease of use, the investigators asked for feedback about the respondents' preferred method of getting help with the product (see Figure 6). Contrary to conclusions that users prefer self-serve help tools and digital interactions, the most popular amongst all user groups surveyed was to receive in-person help at the reference desk. Other preferred methods include librarian demonstrations in a

classroom setting or a workshop, followed by FAQs and online chat services.

Non-Summon Users

Another question that produced some intriguing results when analyzed was comparing the types of resources by undergraduate respondents who had not used Summon (see Figure 7).

Figure 7. Resources consulted by undergraduate students that did not use summon

The majority, 1357, had used the Ryerson University Library, compared to 1082 that had used Google. 590 respondents had consulted their professors whereas 393 had asked friends about resources for academic information. As for the use

of websites, there were 450 responses and 335 had used libraries, such as other universities or public. Table 2 presents the other named databases used by non-Summon Users in descending order.

Table 2. Named Academic databases used by undergraduate non-Summon users

Database Used	Number of Responses
Google and Other Search Engines	1082
ProQuest	49
JStor	26
Ebscohost	23
Other Medical (ProQuest Nursing, PubMed etc.)	21
Academic Search Premier	16
CINAHL	13
Other Business (GMID, PMB, DataStream etc.)	12
ERIC	8
Scopus	5
Other Engineering(Knovel, IEEE, etc.)	3

Database Used	Number of Responses
Other Art (Avery, ArtStor, etc.)	3
Web of Science	1

Conclusion

The current results indicate that many users were at least moderately satisfied with Summon. While this consistency demonstrates that the service is likely meeting the needs of the targeted undergraduate population, more research is required to draw a more comprehensive conclusion. Opportunities for further research are plentiful. They may include, but are not limited to, comparisons between users who used Summon versus those who used other academic searches, such as Google Scholar or particular databases. It may also be of interest to determine differences, if any, in satisfaction levels of various user groups. For example, were undergraduate students more satisfied with the service than graduate students or faculty members? Furthermore, there may be differences in satisfaction levels across academic disciplines worth exploring.

It would have been useful to have gathered data on how far participants were in their respective programs. While the undergraduate population was the targeted demographic for this study, having students self-identify if they were new students, at a midpoint in their programs, or even at an upper undergraduate level could have provided some perspective on the data collected. For example, students at a third- or fourth-year level had likely already become accustomed to consistently searching for academic research using specialized tools and therefore would not have found Summon to be satisfactory. This is especially true in cases of highly specialized databases, such as those relying on controlled vocabulary searches, as many WSD services are unable to search these tools in the prescribed manners.

The data collected from the second survey points to consistency in satisfaction for Ryerson

Library's users and provides a springboard for further research. Although the results presented focus on the undergraduate experience, data was also collected from graduate students and will be presented in forthcoming publications. In addition,

having survey respondents self-identify which area of study they are in provides another avenue for analysis and publication of results. Overall, the cross-tabulation of the data revealed only a few anomalies, but it painted a picture of consistency. Most respondents found the product easy to use and were moderately satisfied with the results returned in searching.

Looking ahead, the data collected can also be used to inform Ryerson library practices surrounding reference, instruction, the creation of online tutorials and instructional resources, as well as the placement and customization of resources on the library's website. Although the project's value is primarily as an assessment of WSD services provided by academic libraries, the benefits of gathering the data will be far-reaching in aspects of public service in the library.

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Notes

1. Ryerson University Library re-branded Summon as 'Search Everything' on its Library homepage.
2. Marie Kennedy, "What are we really doing to market electronic resources?" *Library Management* 32, 3 (2011): 144.
3. Doug Way, "The Impact of Web-Scale Discovery on the use of a Library Collection," *Serials Review* 36, no. 4 (2010): 215.
4. Ibid., 215. Way uses the following five categories to discuss the literature of federated searching: "(1) Discussions of the desirability and/or difficulty of creating a robust federated search tool, (2) reports on one or more specific federated search implementations, (3) comparisons of federated search products currently on the market to each other and/or to Google Scholar, [and] (4) views on how to implement a subject-specific federated

- searching tool." Way cites Belliston, Howland, and Roberts' four categories of federated searching literature as the underpinning of his categorization, along with "a fifth category of articles examines librarians and end-users' perceptions of and satisfaction with federated searching." *Ibid.*, 215. See also C. Jeffrey Belliston, Jared L. Howland, and Brian C. Roberts, "Undergraduate Use of Federated Searching: A Survey of Preferences and Perceptions of Value-added Functionality," *College and Research Libraries* 68, no. 6 (November 2007): 474.
5. Jason Vaughan, "Serials Solutions Summon," *Library Technology Reports* 47, no. 1 (2011): 22–29, 2; Jason Vaughan, "Web Scale Discovery: What and Why?" *Library Technology Reports* 47, no. 1 (2011): 5; Ronda Rowe, "Web-Scale Discovery: A Review of Summon, EBSCO Discovery Service, and WorldCat Local," *The Charleston Advisor* 12, no. 1 (2010): 5–10; Athena Hoepfner, "The Ins and Outs of Evaluating Web-Scale Discovery Services," *Computers in Libraries* 32, no. 3 (04, 2012): 6–40; Chris Keene, "Discovery Services: Next Generation of Searching Scholarly Information," *Serials* 24, no. 2 (2011): 193; and Helen Timpson and Gemma Sansom, "A Student Perspective on E-Resource Discovery: Has the Google Factor Changed Publisher Platform Searching Forever?" *Serials Librarian* 61, no. 2 (Aug, 2011): 253–266.
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 7. May Yan and Kate Siltan, "If you Build it, Will They Come?" (Presentation, Electronic Resources & Libraries, Austin, TX, April 4, 2012).
 8. Andrew D. Asher, Lynda M. Duke, and Suzanne Wilson, "Paths of Discovery: Comparing the Search Effectiveness of EBSCO Discovery Service, Summon, Google Scholar, and Conventional Library Resources," *College & Research Libraries* (forthcoming). Published electronically at <http://crl.acrl.org/content/early/2012/05/07/crl-374.full.pdf+html>.
 9. William Denton and Sarah J. Coysh, "Usability Testing of VuFind at an Academic Library," *Library Hi Tech* 29, no. 2 (2011): 301–319.
 10. Sarah C. Williams and Anita K. Foster, "Promise Fulfilled? An EBSCO Discovery Service Usability Study," *Journal of Web Librarianship* 5, no. 3 (2011), 179–198.
 11. Helena Luca, "KonSearch Usability Study: Evaluation of the New Literature Search Engine of the University of Konstanz," (2011); Julia Gross and Lutie Sheridan, "Web Scale Discovery: The User Experience," *New Library World* 112, no. 5 (2011): 236–247.
 12. Melissa Becher and Kari Schmidt, "Taking Discovery Systems for a Test Drive," *Journal of Web Librarianship* 5, no. 3 (2011): 199–219.
 13. Stefanie Buck and Jane Nichols, "Beyond the Search Box," *Reference & User Services Quarterly* 51, no. 3 (Spring 2012): 235–245.
 14. Marshall Breeding, "Looking Forward to the Next Generation of Discovery Services," *Computers in Libraries* 32, no. 2 (2012): 28–31.

15. Dartmouth College Library, *An Evaluation of Serials Solutions Summon*, 2009.
16. Howard, David and Constance Wiebrands. "Culture Shock: Librarians' Response to Web Scale Search," ALIA Information Online Conference, Australian Library and Information Association, Sydney, New South Wales, Australia, 2011.
17. Way, "The Impact of Web-Scale Discovery," 219.
18. Catherine Cardwell, Vera Lux, and Robert J. Snyder, "Beyond Simple, Easy, and Fast," *College & Research Libraries News* 73, no. 6 (June 2012): 344–347; Stefanie Buck and Margaret Mellinger, "The Impact of Serial Solutions' Summon™ on Information Literacy Instruction: Librarian Perceptions," *Internet Reference Services Quarterly* 16, no. 4 (October 2011): 159–181.
19. Rosie Croft and Jessica Mussell, "Discovery Layers and the Distance Student: The Online Search Habits of Students," *Journal of Library and Information Services in Distance Learning* (forthcoming), published electronically at http://dspace.royalroads.ca/docs/bitstream/handle/10170/471/Mussell_Croft_Discovery_Layers.pdf?sequence=3; Slaven et al., "From 'I Hate it' to 'It's My New Best Friend!': Making Heads Or Tails of Client Feedback to Improve our New Quick Find Discovery Service"; and Varnum, "Serials Solutions' Summon: Familiarity Breeds Success," 18.
20. Ryerson also has a significant distance education community as part of the Change School of Continuing Education, but as they were not a focus of this study, distance education users were not asked to self-identify.
21. John Scott and Gordon Marshall, "Representativeness," *A Dictionary of Sociology.. Oxford Reference Online*, Oxford University Press.
22. Current, as of August 10, 2012.
23. Current, as of August 10, 2012.
24. Statistics Canada, *Introduction to Basic Statistics* (Toronto: Statistics Canada Advisory Services, 2010).
25. A shortened survey instrument is presented in the appendix showing the questions that students answered. Faculty/Staff/ Researcher Assistant questionnaires are omitted here for brevity.
26. Researchers coded the various subjects presented by the respondents from the drop down selection list and write-in subjects into the following ten subject categories to better organize the responses for analysis.
27. Graduate Students made up of 27.29% of the Engineering subject respondents.
28. Question 4d (Is there anything you'd like to share about your experience with Summon?)
29. Comments were coded into the following categories: Positive, Neutral and Negative.
30. Ryerson's link resolver SFX was struggling at the time to link to the new ProQuest platform. Comments such as "Links to ProQuest do not work" is an example from one "slightly easy" rating for ease of finding resource rating.
31. Julia Gross and Lutie Sheridan, "Web Scale Discovery: The User Experience," *New Library World* 112, no. 5 (2011): 236–247.
32. Ibid.
33. Sum of Satisfied and Very Satisfied ratings from Table 5 in Stefanie Buck and Margaret Mellinger, "The Impact of Serial Solutions' Summon™ on Information Literacy Instruction: Librarian Perceptions," *Internet Reference Services Quarterly* 16, no. 4 (2011): 159–181.
34. Andrew Nagy (Market Manager, Discovery Services, Serials Solutions), e-mail to Summon Clients, November 11, 2011.

Appendix

Search Everything Questionnaire

Introduction

You are being asked to voluntarily participate in a research study. This survey is designed to learn about your use of the *Search Everything* feature of the Ryerson University Library website. You should expect to be able to complete this questionnaire in 5-10 minutes.

Before you give your consent, please read the following information about your involvement.

*Questions with an asterisk means you must answer the question in order to proceed.

This survey is designed to identify your use and satisfaction of the *Search Everything* feature of the Ryerson University Library. All members of the Ryerson University community are eligible to participate in this questionnaire. Your choice of whether or not to participate will not influence your future relations with Ryerson University.

The questionnaire used in this study is not experimental in nature. The only experimental aspect of this study is the gathering of information for the purpose of analysis. All individual responses will remain confidential and only available to the investigators. Aggregated responses will be released through presentations and publications that are produced by investigators. Your responses are made anonymous from the collection of identifying data used in participating in the incentive (draw). We will **not** link your email or IP address to the survey responses unless you express interest in participating in future focus groups or interviews.

Should you feel uncomfortable answering any of the questions presented in this survey, you may stop your participation at any time by using the option to "Exit the Survey", effectively withdrawing your consent to participate. (You can also close this web browser to exit the survey.)

Ryerson library will benefit from the results of this study in the evaluation of the use of the *Search Everything* tool. You, as a participant will have no direct benefit from your participation outside of an increase in awareness of available resources.

Study investigators are Ryerson University librarians, Kevin Manuel (x2868), Graham McCarthy (x2119), Courtney Lundrigan (x4093) and May Yan (x5146). If you have any questions about your participation in this study, please contact Kevin Manuel.

To thank you for your participation, at the end of the survey, you may enter your Ryerson email address to be eligible for a draw. We will issue three (3) prizes of an Apple iPad 2 (16GB Wi-Fi model in your choice of Black or White, with any colour polyurethane cover). While we welcome all to answer this survey, only eligible participants with valid Ryerson email addresses will be eligible to enter the incentive draw. RFA and Library staff are not eligible to enter.

Answering yes to the question below indicates that you have read the information in this agreement and agree with the above terms.

***Do you consent to participate in the study?**

☐ Yes

☐ No

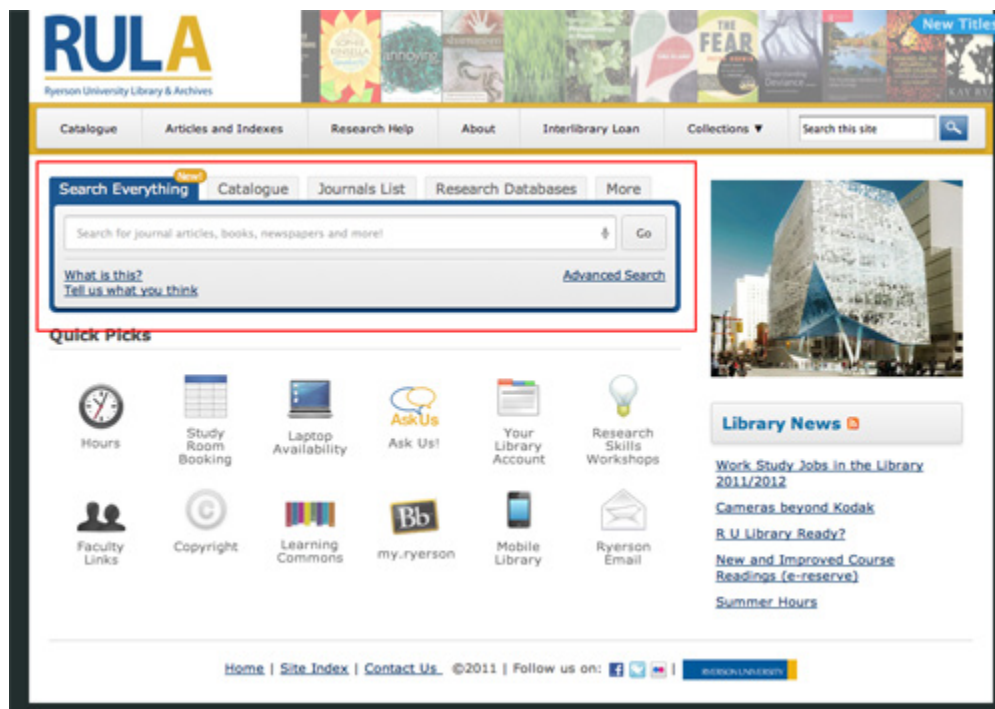
Search Everything

Search Everything is a new search tool that will let you access the majority of the Library's resources (online and print) with a single search right from the library homepage.

With an easy to use single search box, *Search Everything* helps you locate relevant information in much less time by searching across the library's resources in one place. Use *Search Everything* to look for books, journal articles, databases, newspaper articles, e-books, dissertations, institutional reposi-

tories, conference proceedings, cited references, reports, digital library, and more.

The following is a screenshot of the [Ryerson University Library Website](#) highlighting the *Search Everything* tool in red.



***1a. The library has a number of resources to help you get familiar with using *Search Everything*, please indicate if you used any of the following to learn about Search Everything:**

- ☐ Research Skills Workshops
- ☐ FAQ
- ☐ Reference Desk
- ☐ Ask Us online chat
- ☐ Librarian Demonstrated Search Everything in class
- ☐ N/A; Did not use

***1b. Please rate the resources in helping you understand how to use *Search Everything*.**

	1 - Not at all	2 - Some-what	3 - Very useful	N/A
Research Skills Workshops				
FAQ				
Reference Desk				
Ask Us online chat				
Librarian Demonstrated Search Everything in class				

Who you are

*2a. What is your gender?

- ☐ Male
- ☐ Female
- ☐ Other

*2b. What faculty are you in?

- ☐ Faculty of Arts
- ☐ Ted Rogers School of Management
- ☐ Faculty of Communication & Design
- ☐ Faculty of Community Services
- ☐ Faculty of Engineering, Architecture and Science
- ☐ Yeates School Graduate Studies
- ☐ Continuing Education
- ☐ Not Applicable

*2c. Which program are you in?

[Text box]

*2d. Which of the following best describe your current status with Ryerson University?

- ☐ Undergraduate Student
- ☐ Masters Student
- ☐ PhD Student
- ☐ Faculty
- ☐ Staff
- ☐ Research Assistant

Students - CE, Undergraduate & Graduate

*3a. If you are a student, what is your enrollment status?

- ☐ Full Time Program
- ☐ Part Time Program
- ☐ Not Applicable

Please think of a recent time when you had to search for academic information as an example. Use this example in answering the following questions.

*3b. What type of assignment were you completing when you were searching for academic information?

- ☐ Writing essay
- ☐ Writing Article/thesis
- ☐ Preparing for Lab
- ☐ Preparing for Presentation
- ☐ Other (please describe)

*3c. Please indicate the subject of this search? Choose from the drop down list, and if not found, enter the other subject in the textbox below.

Accounting

Aerospace Engineering
 Architecture
 Arts and Contemporary Studies
 Biology
 Biomedical Engineering
 Biomedical Physics
 Business Management
 Business, Administrative and Labour Law
 Gerontology
 Canadian Law
 Caribbean Studies
 Chemical Engineering
 Chemistry & Chemical Engineering
 Child & Youth Care
 Civil Engineering
 Communication and Culture
 Community Development
 Computer Science
 Criminal Justice
 Dance
 Disability Studies
 Early Childhood Education
 Economics
 Electrical Engineering
 English
 Environmental Studies
 Fashion
 Finance and Investment
 French
 Nutrition and Food
 Geography
 Graphic Communications Management
 Health Services Management
 History
 Hospitality and Tourism
 Human Resources Management
 Image Arts
 Immigration and Settlement
 Industrial Engineering
 Information Technology Management
 Interior Design
 International Business and Economics
 Journalism
 Law, Canadian
 Market Research
 Mathematics
 Mechanical Engineering
 Midwifery & Childbirth
 Molecular Science

Music

Nursing

Occupational Health and Safety

Philosophy

Physics

Physiotherapy

Politics

Professional Communication

Psychology

Public Health

Public Policy and Administration

Public Relations

Radio & Television Arts

Retail Management

Social Work

Sociology

Spanish

Spatial Analysis

Theatre

Urban & Regional Planning

Women's Studies

Other (please specify in space below)

[text box]

***3d. Did you use *Search Everything* in searching for academic information?**

- ☐ Yes
- ☐ No

Students - Used Search Everything

***4a. How easy is *Search Everything* to use?**

☐ Extremely easy	☐ Very easy	☐ Moderately easy	☐ Slightly easy	☐ Not at all easy

***4b. How easy is it to find resources you need using *Search Everything*?**

☐ Extremely easy	☐ Very easy	☐ Moderately easy	☐ Slightly easy	☐ Not at all easy

***4c. How satisfied are you with using *Search Everything*?**

☐ Extremely satisfied	☐ Very satisfied	☐ Moderately satisfied	☐ Slightly satisfied	☐ Not at all satisfied

4d. Is there anything you'd like to share about your experience with *Search Everything*?

[text box]

4e. Did you use any other resources in your academic search? [Click on as many as applicable.]

- ☐ Friends (including social media)
- ☐ Web Search Engine (Google, Bing, etc.)

-
- ☐ Professor/Instructor
-
- ☐ Ryerson University Library
-
- ☐ Other Library (Toronto Public, U of T, York U, etc.)
-
- ☐ Websites (not search engines)
-
- ☐ Other Academic Databases (please specify)
-

***4f. As a follow up to this questionnaire, we are looking for volunteers who are interested in being a part of focus groups to talk about your experiences with *Search Everything*. Please answer if you would be interested in being a part of this focus group? [Note that only if you choose to participate will your answers be associated with your email address. Separately at the end of this survey is the opportunity to enter for the prize draw. Answering No to this question will not affect your chances at the prize draw.]**

- ☐ Yes
-
- ☐ No
-

Students - Did not use Search Everything

***4b. Which resources did you use in your academic search? [Click on as many as applicable.]**

- ☐ Friends (including social media)
-
- ☐ Web Search Engine (Google, Bing, etc.)
-
- ☐ Professor/Instructor
-
- ☐ Ryerson University Library
-
- ☐ Other Library (Toronto Public, U of T, York U, etc.)
-
- ☐ Websites (not search engines)
-
- ☐ Other Academic Databases (please specify)
-

4c. The library has a number of resources to help you get familiar with using *Search Everything*, please indicate if any of the following might increase your interest in using *Search Everything* [Click on as many as applicable.]

- ☐ Research Skills Workshops
-
- ☐ FAQ
-
- ☐ Reference Desk
-
- ☐ Ask Us online chat
-
- ☐ Librarian Demonstrated Search Everything in class
-

4d. Is there anything you'd like to share about your experience with *Search Everything*?

[text box]

***4e. As a follow up to this questionnaire, we are looking for volunteers who are interested in being a part of focus groups to talk about your experiences with *Search Everything*. Please answer if you would be interested in being a part of this focus group? [Note that only if you choose to participate will your answers be associated with your email address. Separately at the end of this survey is the opportunity to enter for the prize draw. Answering No to this question will not affect your chances at the prize draw.]**

- ☐ Yes
-
- ☐ No
-

Did We Get What We Paid For? An Institutional Assessment of User Behavior and System Performance of Web-Scale Discovery Tools

Doralyn Rossmann, Brian Rossmann, Kelly Meadow, Scott Young, and Greg Notess

Montana State University, USA

Abstract

The purpose of this study is to assess an implemented web-scale discovery (WSD) tool with regard to user behavior, system performance, and collection coverage. An academic library that implemented Serials Solutions' Summon WSD in July 2010 serves as the source of data for this study. The assessment consists of four points of analysis. First, a quantitative design is used to assess link success from search results using a set of researcher-generated search queries. These results are categorized into full-text and non-full-text links, and are reviewed for their success in reaching the targeted item, including how many clicks it took to reach the item. The second portion of the study uses Summon transaction log analysis over a two-year period and addresses the hypotheses that search query quality is low and that quality of searches improved over the two-year period. The third section examines Google Analytics data for Summon for query types and overall Summon usage in comparison to the main library website. Finally, the study evaluates the coverage of library holdings in Summon and explores the implications of these findings.

This research design and subsequent findings provide other libraries with tools and benchmarks for conducting similar studies of WSD tools prior to selecting a product and after having implemented one. Also, in addition to assessing these tools, the findings will have implications for better understanding: (1) user behavior, (2) system performance, and (3) collection coverage and implications relative to WSD tools. These studies will inform how libraries can work with vendors and users to bridge gaps between these three areas. Originally, the study was to include a fourth area, user expectations, but that analysis was not complete at the time of this writing.

Introduction

Montana State University (MSU) Library acquired a web-scale discovery (WSD) tool, Serials Solutions' Summon, in July 2010 with a three-year contract. A search box for Summon, locally branded "CatSearch," was placed front-and-center on the main web page for the Library. With the contract at its midway point, the Dean of the MSU Library formed a Summon Assessment Group to assess the Summon product. It is intended that the results of this study will serve several purposes: help inform MSU Library's decisions when the contract for Summon comes up for renewal, inform MSU Library about how its patrons use Summon, suggest areas it might pursue to improve Summon functionality, and determine the location and promotion of whatever WSD tool is on the MSU Library's website. The study intentionally uses a variety of information sources and data points for the assessment to provide a more complete picture of Summon usage and functionality. This research design and subsequent findings provide other libraries with tools and benchmarks for conducting similar studies of WSD tools prior to selecting a product and after having implemented one.

Review of the Literature:

Because of the relatively new nature of WSD tools, the literature is just now beginning to offer a wide variety of approaches to assessing such products. As of the last Library Assessment Conference in October 2010, five major WSD tools existed and three of those had been released just that year: OCLC's WorldCat Local (released November 2007), Serials Solutions' Summon (released July 2009), EBSCO's EDS (released January 2010), Innovative Interfaces' Encore Synergy (released May 2010), and Ex Libris' Primo Central (released June 2010).¹ When the Summon Assessment Group first convened in January 2012, it considered issues like the "Google factor" and how users might interact with a search box located front-and-center on the

library's web site.² Other studies, such as those at Dartmouth, highlight the need to understand what is indexed in Summon relative to library holdings and subscriptions.³ At the beginning of the study, much of the information available was anecdotal from MSU librarians using Summon.⁴ The Summon Assessment Group decided to expand its body of knowledge to include more substantive data such as linking success rates from Summon to information resources. While the value of having qualitative data from user experience testing was identified, time and staffing constraints did not allow for exploration into that area in this phase of the project.⁵

Areas of Analysis:

Summon Link Analysis

Purpose:

While users report anecdotal issues with broken links to search results or having to click multiple times to get to the desired item, it was decided that studying click-through success rates over time would provide a clearer picture of system function. The following hypotheses were established:

- The majority of successful full-text links take users three or fewer clicks to reach the full-text item.
- Successful linking to full-text resources improved during the first two years of implementation.

Methods:

A quantitative design is used to assess link success from search results using a set of researcher-selected search queries. These twenty-six topics

come from actual queries found in the Summon usage logs. They were chosen by a member of the research team who identified these as searches for a subject rather than known items, such as specific books or journal articles. These queries were selected as they reflected a snapshot of different subject areas in Summon. These results are categorized into full-text and non-full-text links and are reviewed for their success in reaching the targeted item, including how many clicks it took to reach the item. These queries were conducted three times: in fall 2010, fall 2011, and summer 2012. The first twenty-five links for each query were included in the study, for a total of 650 items analyzed each time.

Results:

Table 1 shows that while failed links to full text dropped from the first year of analysis to the second, they increased slightly from year two to three. Still, the overall failure rate between years one and three declined significantly. Of the failed links in 2012, 34 percent were from the Lexis Nexis Academic database, 13 percent were not clear in their source as they went directly to a publisher site, and 13 percent were from Gale Opposing Viewpoints in Context. The remaining errors were less than ten percent per database spread over 25 databases. Removing the highest failed link source, LexisNexis Academic, from the results still results in a 20 percent failure rate. The study's first hypothesis, that successful linking to full-text resources improved during the first two years of implementation, is supported by these findings, but it is worth noting that the success rate was higher mid-study than in the latest year of analysis.

Table 1: Failed links to full text

Semester	Percentage failure rate
Fall 2010	45
Fall 2011	23
Summer 2012	27

Table 2 shows that in the 2012 portion of the study,

97 percent of successful links required three or

fewer clicks to reach the item. This supports the study's hypothesis that the majority of successful

full text links take users three or fewer clicks to reach the full text item.

Table 2: Full text: number of clicks to reach full text,

Failed link	158
1 click	82
2 clicks	194
3 clicks	136
4 clicks	6
5 clicks	4
6 clicks	2
Non-full-text link	68
Total	650

Discussion:

Looking at the figures from 2010, 2011, and 2012, there are some known changes that have taken place during the time of the study, and there are other factors that may account for the presence of errors. Since its product launch, Serials Solutions has made improvements to its system with fixes and enhancements launched every two and, later, every three weeks. Also, some vendors have improved the quality of their linking. For example, a vendor had been putting a hyphen in its metadata for journals which included two issues published together, which caused a broken link from Summon. This vendor now follows the proper OpenURL metadata standard for this type of citation, which results in properly functioning links. Locally, MSU Library began regularly reporting errors to Serials Solutions or the source vendor when encountering problems. Also, MSU Library started going through its list of resources in Serials Solutions 360 Resource Manager (its electronic resource management system) to reduce erroneously activated titles to which it does not

have access. Five main factors can be identified as possible sources of the remaining errors:

- The Summon system with its indexing and linking technologies.
- The content provider itself with metadata or linking technologies.
- The in-between step of the OpenURL resolver used by MSU Library, Serials Solutions' 360 Link, could be improperly resolving links.
- The link within the 360 Resource Manager to a resource or the items listed as contained in that source could be inaccurate.
- MSU Library may have erroneously selected a source as a part of its subscription base when it, in fact, is not.

Conclusion:

It is difficult to isolate some of the sources of problems with broken links encountered in any WSD tool. MSU Library hopes to get a better sense of the role of the Summon product and the 360 Link product by having colleagues at other libraries run the same searches against systems

that use different WSD and OpenURL Linking products. Also, it has since turned off access to LexisNexis Academic in the Summon search results since it is such a highly problematic source, and it corrected a problem in the URL used for Business Insights, which has resolved issues with that source. It continues to report problems to Serials Solutions and content providers. Looking beyond MSU Library, this type of study can help any library get away from anecdotal reports as a means of assessing a WSD and can help identify areas that can be improved.

Summon Transaction Log Analysis

Purpose:

The queries typed into a search box can be a window into a better understanding of user behavior within an information retrieval system. When Summon went live at MSU Library in mid-2010, the Summon Administration Console was not made available until later that year. The Summon Administration Console provides statistics on volume of use as well as the queries entered into the Summon search box, which can help with understanding the quality of search queries performed in Summon and how these queries looked over multiple semesters. It was a startling discovery to learn that *facebook.com* was the most common query entered into the search box when looking at the Summon Administration Console in late 2010. The frequency of *facebook.com* was problematic due to the fact that Summon does not support web addresses the way search engines do. In April of 2011, a member of the Summon Assessment Group performed her own study to better understand the *facebook.com* phenomenon.⁶ The following hypotheses were established:

- Queries performed within Summon are of a low quality.
- Query quality improved during the first two semesters of implementation.

Samples of 100 queries per month from August 2010 through April 2011 were coded by query type, resulting in a dataset of 900 queries divided into query types. Surprisingly, both of these hypotheses were proven false as will be shown in more detail in the methods and results section of this report. As a part of the formal Summon assessment, a second iteration of this study was conducted with some minor changes. Here, what follows is a comparison of the data from both studies.

Methods:

The total number of queries from each month from August 2010 through April 2011 and August 2011 through April 2012 were downloaded from the Summon Administration Console. All query processing and statistical analyses were performed in the R data analysis software application.⁷ The dataset was constructed from a stratified random sample of 100 queries for each month. Since Serials Solutions lists the query and its frequency, queries were multiplied by how many times they were performed before the random sample was extracted. The month of origin for each query was retained for analysis of results. Thus, a total of 900 queries were used for the first year of study and 1,000 queries were used for the second year of study.

The majority of queries listed in the Serials Solutions administration console were blanks, meaning nothing was entered into the search box. A blank search box could mean that users are skipping the search box and navigating to other areas in the interface, such as the advanced search; thus, blank queries were removed from the data set. In the first year's study, in order to input the data into R, some special characters, such as *, {}, "", and ~, were also removed. The removal of these characters from the dataset eliminated some potentially useful information, especially since Summon supports the use of * and "" symbols. A workaround for the removal of special characters was established for the second year's study; thus, special characters were included in the samples for the second year.

Each of the original 900 queries was assigned to one of the following seven query types: URL, invalid, natural language, database/journal, subject, known-item, and Boolean operator. The 1,000 queries in the second year of the study were assigned one of eight query types. It was decided that determining which of the invalid searches could have been considered a site search was useful information; thus, a site-search category was added for the second year. The subjectivity of query quality and type was addressed by creating a set of rules to determine the query types.⁸

After the queries were coded, the query types were grouped into high and low quality. The concept of quality for this study was dependent upon whether

or not the system would support the methods implemented within the query. For example, a URL is an effective way to locate information within a search engine; however, URLs are not supported by Summon and thus they were labeled as a low-quality query. The low-quality grouping consisted of the URL, invalid, site search, and natural language query types. The high-quality grouping consisted of the subject, Boolean operator, known-item and database/journal query types.

In the first year's study, two-sample t-tests were used to compare the proportions of high-versus low-quality queries for the entire academic year, as well as for both semesters individually, and the proportions of high-quality searches by semester were also compared to detect a change in search quality between the semesters. Simple linear regression was performed on each search type, as well as for the combined high-quality queries,

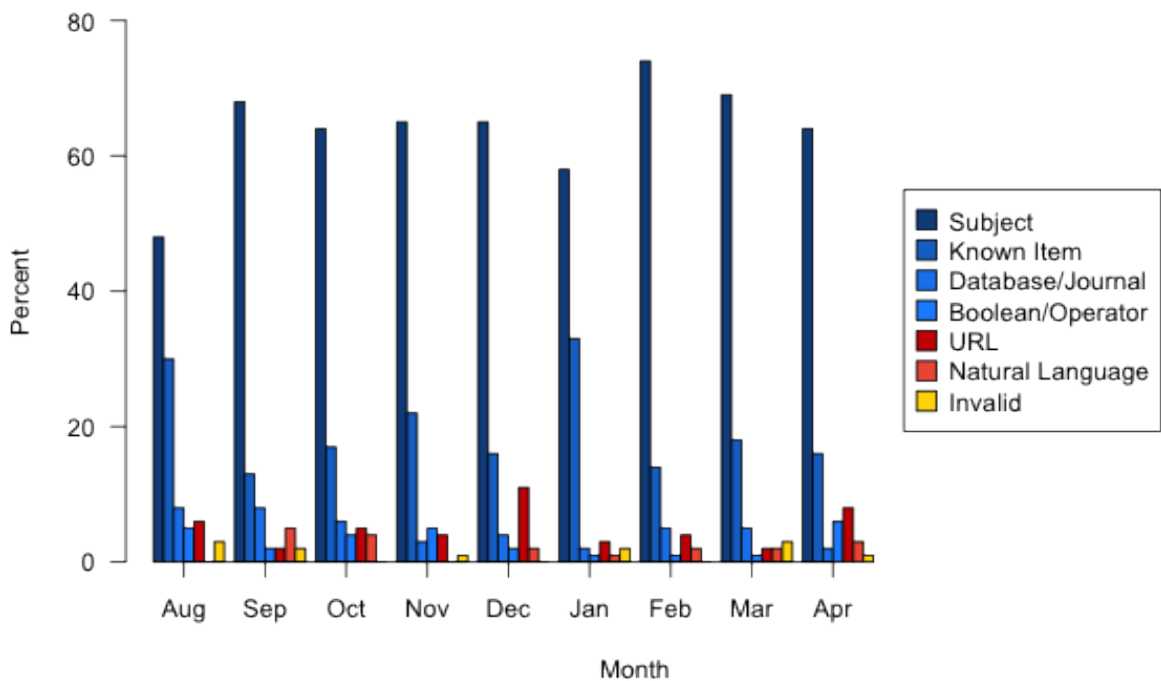
through the academic year to test for a change in any of the categories over time.

Once the study was performed again in the second year, two-sample t-tests were performed on each search type to detect significant changes between each year. The site-search type was included in the invalid type for this comparison.

Results:

Figure 1 shows the percentages of each query type by month from August 2010 through April 2011, with high-quality categories as cool colors and low-quality as warm colors. Subjects were clearly the most common type of query, followed by known items. It is apparent that low-quality queries are a small proportion of the overall queries coded in the study. This also shows that the quality of queries did not appear to change over time.

Figure 1: Frequency of query types by month for August 2010–April 2011. Low-quality queries are displayed in warm colors. High-quality queries are displayed in cool colors.



The high-quality search percentage is similar between semesters with no significant change (p value = 0.536, from a two-sample t-test). The mean for high-quality queries in semester 1 is 91%, and the mean for high-quality queries in semester 2 is

92.25%. The standard deviation for semesters 1 and 2 is 2.83 and 2.87, respectively.

There was a significant difference between high-

and low-quality queries over the entire academic year ($p < 0.001$, from a two-sample t-test). The mean of the high-quality queries was 91.56%, and mean of the low-quality queries was 8.44%.

The results put the hypotheses of the original study into perspective. The first hypothesis of this study was that the quality of queries within Summon is low. This hypothesis is rejected given the large and consistent differences between high- and low-quality queries. The second hypothesis of this study was that the quality of queries in

Summon improved during the first two semesters of implementation. This hypothesis is also rejected since there was no significant difference in high-quality searches between the two semesters.

Figure 2 shows the percentage of each query type by month from August 2011 through May 2012, with high-quality categories as cool colors and low-quality as warm colors. The results are similar to the previous year with subjects as the most common query type followed by known items.

Figure 2: Frequency of query types by month for August 2011 – May 2012. Low-quality queries are displayed in warm colors. High-quality queries are displayed in cool colors.

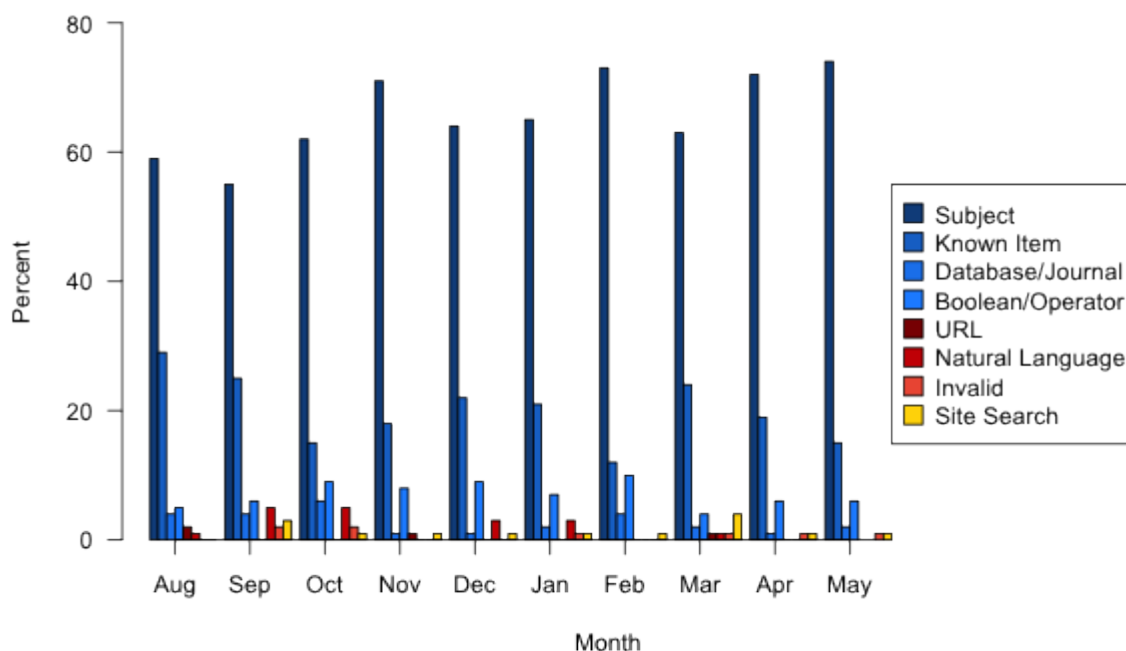
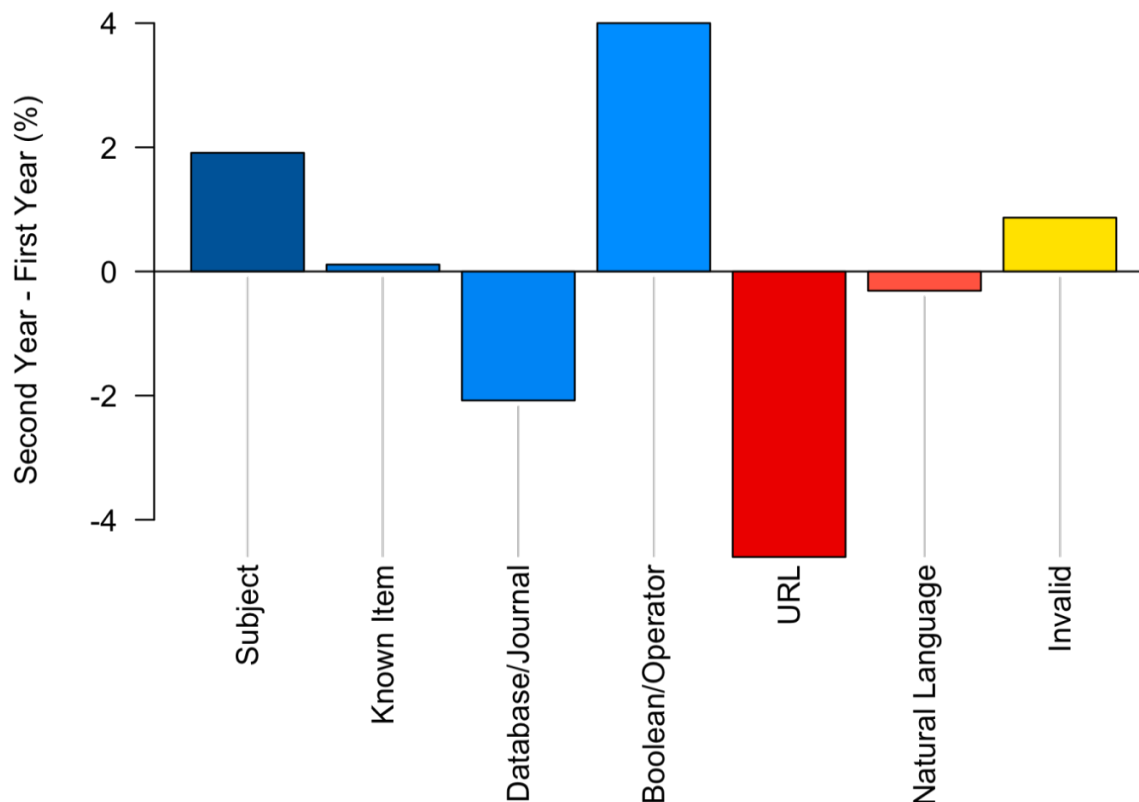


Figure 3 shows the percentage of each query type for each year of the study and the percent difference of each query type by year. There were two query types with a statistically significant difference from the first year to the second year. Boolean operator queries increased a significant amount ($P < 0.001$) in year two, although this is

caused by the inclusion of special characters in the second year of the study. The difference is not significant if the queries utilizing special characters are removed from the dataset. URL queries decreased a significant amount ($P = 0.0015$) in year two.

Figure 3: Percentage of each query type for each year of the study and the percent difference of each query type by year



Discussion:

The Concept of Quality

These results could signify that the single search box model of discovery via Summon is sufficient for most students. However, there are some who do not understand the most effective ways to search, and others who do not even understand the meaning of searching library resources. The fact that most search queries are legitimate could mean that library resources are becoming easier to access through Summon.

There are some implications for further instruction when only the high quality queries are considered. Table 3 shows the percentage of query types for the high quality queries performed in each year. Since the use of Boolean operators and other operators yields more effective results, a higher percentage of this query type would be an indication of effective searching behavior. Even with special characters added in year two, Boolean/operator queries are still a small percentage of the total queries.

Table 3: Percentage of query types for high-quality queries performed each year

Query Type	First Year (%)	Second Year (%)	Overall (%)
Subject	69.8	68.9	69.3
Known Item	21.7	20.9	21.3
Database/Journal	5.2	2.8	3.9
Boolean/Operator	3.3	7.3	5.4

Unfortunately, within the limitations of this study, it is impossible to determine whether or

not the users considered their search sessions to be successful. Overall, the concept of quality is

relative, and the ability to form an effective search query appears to be out of reach for many users of the system.

Facebook.com

The impetus for this study was that *facebook.com* was the most common query, after a blank, entered into Summon. According to the Summon Administration Console, the last time this search was performed was November 2011. Thirty-five searches for *facebook* without the *.com* appear between December 2011 and April 2012, but users may be doing research about Facebook or looking for the site itself. Other URL searches continue to show up in the data, but the numbers have dropped significantly since the first year of the study. This is an encouraging sign that users better understand what the Summon search box does not do.

Conclusion:

This study is merely a window into a better understanding of how Summon is being used at MSU Library. The data from the administration console shows that Summon is being heavily used. Although it is unlikely that the majority of queries entered into Summon are of high quality from the perspective of skilled information seekers, it is apparent that the majority of queries are valid. Further instruction on how to form an effective query may be necessary in order to distill the information library users need from the volume of resources available via discovery layers. The various query types that emerged from the study may leave room for a response from an interface design perspective as well. For example, the amount of site search queries performed within Summon may necessitate a site search feature in the Summon interface. This study merely scratches the surface of what can be accomplished in understanding Summon and how users are interacting with it. By better understanding user behavior, this study comprises a piece of the puzzle in evaluating the effectiveness of Summon and informs future discussions of Summon's role at MSU Library.

Google Analytics Transaction Log Analysis

Purpose:

In addition to the data provided through the Summon Administration Console, data provided from external web analytics tools can provide

different insights into the system. Web analytics has emerged in recent years as a valuable assessment tool in understanding online user behavior. By providing insight into how users navigate a library website, the study of web analytics can lead to more effective delivery of web content and web services.

In February of 2012, MSU Library activated Google Analytics (GA) user tracking within Summon. With GA in place, valuable user and site performance data became available to us. A full account of GA capabilities and a robust analysis of GA data are beyond the scope of this study, but a focused tour and examination of data provided by GA will prove instructive in demonstrating the value of web analytics in understanding user behavior within a WSD.

Methods:

Among the full suite of metrics offered through GA, two particular metrics that are valuable for understanding Summon usage were identified: landing pages and total page views. The landing pages metric provides data showing which page within a website a user begins navigation. To aid understanding of this metric, an independent GA account was established for the Summon web server, which allowed control for a user's navigation within Summon as distinct from MSU Library's primary website. This distinction is important for allowing one to see which percentage of library home page visitors initiated a Summon search and then landed into the Summon web server.

Results and Discussion:

Comparing total page views of MSU Library website's homepage with the total landing page visits into the Summon server provides an indication of the overall number of Summon searches that originated from the MSU Library home page. Total page views for the MSU Library home page for the sixth-month period February 13, 2012–August 13, 2012, numbered 198,447 (Figure 4). Total landing page visits for MSU Library Summon searches for the same period numbered 21,838 (Figure 5). Of these 21,838 landing page visits, GA referral data shows us that 20,905 of those visits originated from the MSU Library home page (Figure 6). This data indicates that 9.5% of users visiting the MSU Library's home page have

initiated a search using Summon.

Figure 4: Total page views for MSU Library Summon searches in six months, 2012.

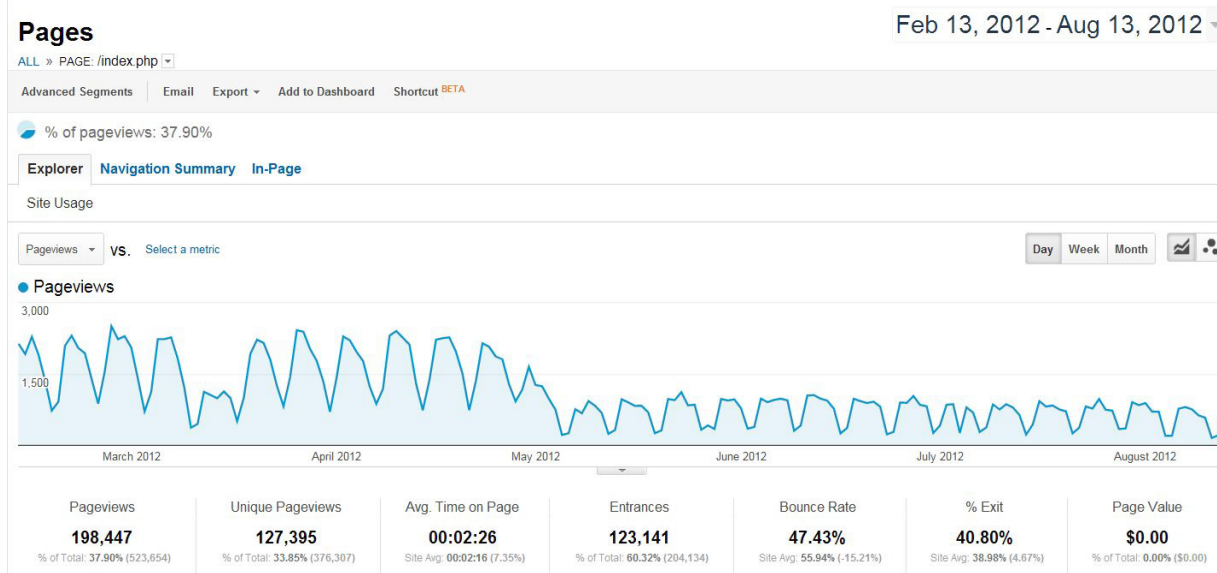


Figure 5: Total landing page visits for MSU Library landing page in six months, 2012.

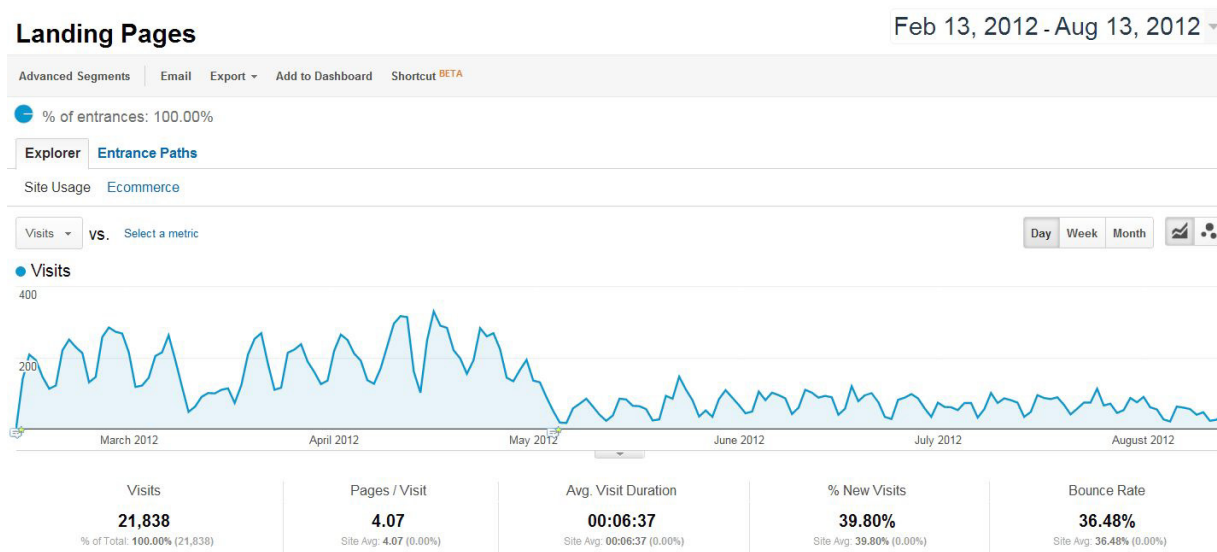
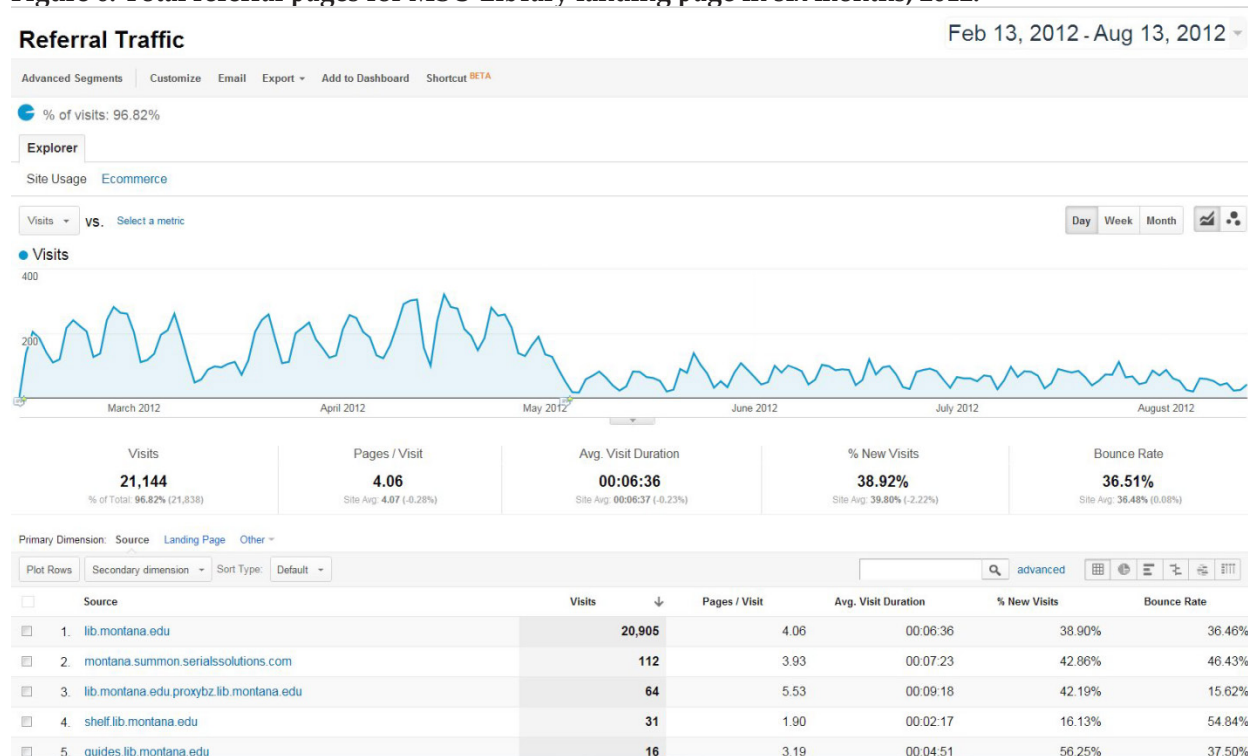
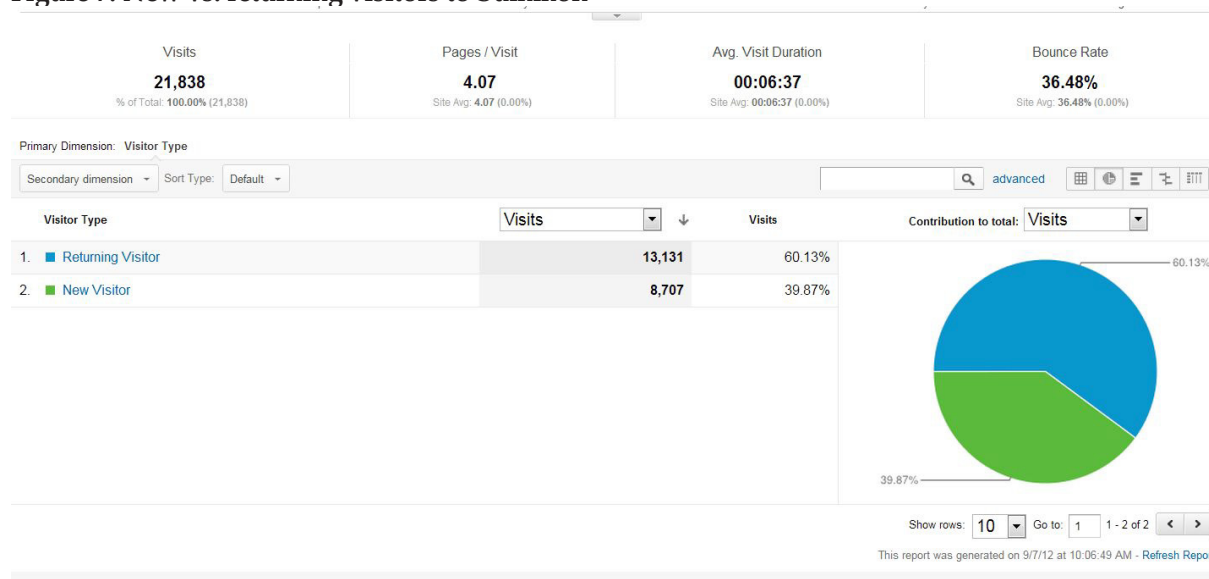


Figure 6: Total referral pages for MSU Library landing page in six months, 2012.

Providing this figure with additional context allows one to more fully understand it. One can look at additional data with GA to help us interpret not only how many users are engaging Summon, but also how they are using Summon. Looking at new versus returning visitors allows one to

see how many users are coming to Summon for the first time and how many are returning to the tool after having used it before (Figure 7). The evaluation over time of this metric combined with landing page visits may indicate user satisfaction with Summon.

Figure 7: New vs. returning visitors to Summon

Further insight into user behavior within Summon is available through a second important metric, total page views (Figure 8). This metric allows one to see the total number of searches, search queries, and the number and type of facets that users selected in conducting searches. For the sixth-month period February 13, 2012–August 13, 2012, GA recorded 72,787 searches. This large dataset can be mined from within GA by using the included search tool. The methodology is still being developed for analyzing these results, but already

shows promise in charting user capability in conducting searches. For example, if one identifies faceting as an important factor in successful Summon searches, one can examine, over time, the relative use of faceting by users to determine if the functions of Summon are being employed to their full advantage. Likewise, one can examine the full range of search queries recorded through GA to understand the information-seeking behavior of users and consequently tailor and refine the Summon tool.

Figure 8: Total page views for Summon at MSU Library for six month period

Pageviews		Unique Pageviews		Avg. Time on Page		Entrances		Bounce Rate		% Exit		Page Value	
88,857		79,997		00:02:09		21,838		36.48%		24.58%		\$0.00	
% of Total: 100.00% (88,857)		% of Total: 100.00% (79,997)		Site Avg: 00:02:09 (0.00%)		% of Total: 100.00% (21,838)		Site Avg: 36.48% (0.00%)		Site Avg: 24.58% (0.00%)		% of Total: 0.00% (\$0.00)	
Primary Dimension: Page Page Title Other ▾													
Plot Rows		Secondary dimension ▾		Sort Type: Default ▾		advanced							
☐	Page	Pageviews	↓	Unique Pageviews	Avg. Time on Page	Entrances	Bounce Rate	% Exit	Page Value				
☐	1. /advanced/	3,482		1,957	00:01:01	1,704	19.78%	18.70%	\$0.00				
☐	2. /search?s q=&x=0&y=0	213		191	00:00:48	164	39.63%	37.09%	\$0.00				
☐	3. /search?s q=	134		121	00:01:03	35	20.00%	11.94%	\$0.00				
☐	4. /search?s q=pubmed&x=0&y=0	93		84	00:04:43	77	61.04%	60.22%	\$0.00				
☐	5. /search?s q=jstor&x=0&y=0	69		62	00:02:43	55	69.09%	68.12%	\$0.00				
☐	6. /	65		56	00:00:58	49	22.45%	20.00%	\$0.00				
☐	7. /search?s q=CINAHL&x=0&y=0	59		52	00:05:30	50	86.00%	84.75%	\$0.00				
☐	8. /search?s q=cinahl&x=0&y=0	55		49	00:01:33	45	80.00%	78.18%	\$0.00				
☐	9. /search?s q=Coelurosauravus	43		42	00:06:23	41	95.12%	95.35%	\$0.00				
☐	10. /search?s q=hours&x=0&y=0	42		42	00:00:54	40	95.00%	92.86%	\$0.00				
☐	11. /search?s q=web+of+science&x=0&y=0	39		37	00:07:37	35	85.71%	87.18%	\$0.00				
☐	12. /search	30		22	00:01:13	11	45.45%	33.33%	\$0.00				
☐	13. /search?s cmd=nextPage()&s pn=1&s q=plant+science+master's+thesis+peter+zuck	27		26	00:00:42	25	100.00%	92.59%	\$0.00				
☐	14. /search?s q=matlab&x=0&y=0	26		23	00:04:13	21	80.95%	80.77%	\$0.00				
☐	15. /search?s q=pubmed	24		19	00:02:28	5	60.00%	45.83%	\$0.00				
☐	16. /search?s q=CINAHL	23		21	00:05:02	16	87.50%	86.96%	\$0.00				
☐	17. /search?s q=library+hours&x=0&y=0	23		22	00:00:53	21	90.48%	91.30%	\$0.00				
☐	18. /search?s q=mergent&x=0&y=0	21		21	00:01:33	21	85.71%	85.71%	\$0.00				
☐	19. /search?s q=eric&x=0&y=0	20		19	00:03:11	15	26.67%	45.00%	\$0.00				
☐	20. /search?s q=cinahl	19		12	00:02:43	8	87.50%	42.11%	\$0.00				

It is crucial to state at this point the importance of establishing comparative benchmarks for the interpretation of GA data. Benchmarks can be set over time and used to compare similar ranges of data as changes are made in web design and service delivery. In August 2012, for instance, MSU Library launched a redesigned and restructured home page that more prominently features the Summon search box. After collecting GA data for another six-month period following the launch of the new design, a comparison of that data to the previous six-month period may provide user behavior insight into the connection between library web design and the use of a web-scale discovery tool such as Summon.

Equally important for the evaluation of GA data is establishing goals, which are necessary for providing contextual information. A library should identify, for example, an acceptable ratio of home page visits to Summon visits. If GA indicates that 9.5% of home page visits result in Summon searches, the challenge for libraries is in determining the value of that figure. A new home page design may initially increase that number, but over time stagnating or decreasing Summon usage may indicate that users are unhappy with the tool.

Conclusion:

While GA can provide extensive user behavior data, the challenge of interpreting that data reveals the limits of web analytics. Tools like GA

are successful in providing vast data related to where users go within a website and how they move around. Web analytics, in essence, records the choices a user makes, but it cannot tell us why a user makes those choices. Acknowledging this limitation is an important factor in fully understanding not only Summon user behavior but also library website user behavior. When appropriately contextualized, data gathered from web analytics can be a valuable component in the overall assessment of user behavior and WSD tools.

Holdings and Indexing Comparison

Purpose:

As part of the study, the coverage of resources was evaluated in the WSD in comparison to library holdings. This information informs several decision points. First, if something is not indexed in Summon, should MSU Library cancel that subscription or find an alternative source, or encourage Serials Solutions and the providing vendor to get that item indexed in Summon? Also, if there are a large percentage of items not indexed in Summon, should MSU Library explore other WSD tools to see if there is better coverage?

Methods:

In August 2012, MSU Library requested that Serials Solutions provide a title-level analysis of its holdings against the Summon index. This is a free service offered upon request. MSU Library provided a list of ISSNs to Serials Solutions, which was generated from the resources that it had set as active in its instance of 360 Resource Manager. Serials Solutions then took the unique ISSNs from this list and de-duplicated titles with multiple ISSNs to provide the information requested. In addition, the MSU Library took its list of subscribed databases and compared them against Serials Solutions' list of indexes with full-text content that are indexed in Summon.⁹ Of the items in the database list, ones that are abstracting and indexing services only were determined by consulting the Ulrichsweb database.¹⁰

Results:

The MSU Library subscribes to a total of 139 databases. Of these, 59 are abstracting and indexing databases, so they are not included in the Summon indexing. Of the remaining 80 indexes for consideration, 65 are indexed in Summon. Three more databases that are not in Summon's partner

list for indexing have MARC records for the items that are included in the Library's catalog and are, therefore, indexed in MSU Library's Summon instance. In total, 85 percent of MSU Library's full-text subscription databases are indexed in Summon. Fifteen percent, or 12 titles, are not indexed in Summon.

As was suggested by a representative at Serials Solutions, a more complete picture of Summon's coverage is gained by understanding how many individual serial titles are indexed in Summon. The file provided to Serials Solutions included 79,757 entries. After Serials Solutions de-duplicated titles from this list, there were 42,464 unique titles to analyze. Of the titles with active ISSNs, only 2,679 items are not yet covered in Summon. And of these titles not yet in Summon, only 709 titles are peer-reviewed sources. According to the report from Serials Solutions "we can say that we are already in active negotiations with some, if not most, of the content sources on this list." So, 6.3 percent of the library's titles are not indexed in Summon, and only 1.6 percent of peer-reviewed titles are not indexed.

Discussion:

Returning to the questions posed prior to analyzing the amount of indexed content in Summon, if something is not indexed in Summon, should MSU Library cancel that subscription or find an alternative source, or encourage Serials Solutions and the providing vendor to get that item indexed in Summon? Also, if there are a large percentage of items not indexed in Summon, should other WSD tools be explored to see if there is better coverage? The study's findings show that the MSU Library has a relatively small set of items that fall into the not-indexed category, with just 12 databases and several hundred journals. This finding suggests that it is a manageable task to encourage the vendors of those databases and journals to include their content in Summon and to look at alternate sources for this information, when possible.

Conclusion:

Libraries can conduct similar studies before committing to a WSD product to make sure that indexing rates of local holdings are acceptable to a library. Also, this information helps inform collection development decisions if indexing in a WSD is important to the library for discoverability.

Libraries may want to encourage publishers and WSD providers to partner whenever an item is identified as not indexed in the WSD. If these groups know that there could be financial implications for not cooperating, it can be a motivating force to getting the information included.

Study-wide conclusions:

Reviewing the information gleaned in this study, libraries have a great deal of control in shaping user experiences in their interactions with WSD tools. Libraries can make sure their collections have coverage in their WSD by serving as an advocate with WSD vendors and content providers. They can work with these groups to encourage cooperation in having resources indexed in WSDs and in making sure that OpenURL standards are followed. Likewise, information about the purpose of WSDs and their placement and usage on a library website can be presented whenever possible. Library website designers can use tools like Google Analytics to understand user behavior and design website presentation of such tools accordingly. Likewise, librarians interacting directly with users can shape their instruction skills and technologies to inform usage of these tools most productively. While a drop in failed link rates from 43 percent to 27 percent over several years is an improvement, a quarter of searches still failing would likely be considered by most to be unacceptable or highly intolerable. The more information libraries can provide to the WSD producers and the content providers about what is workable within the library arena, the more powerful libraries can be in shaping the tools that are now so important to the users being served. The more informed libraries are in identifying areas of improvement and education with WSD, the better libraries can be in making WSDs tools for actual discovery.

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Quality Frameworks in Academic Libraries: Organizing and Sustaining Library Assessment Activities

Sarah Anne Murphy
The Ohio State University, USA

Purpose

Academic librarians and libraries currently use a number of interchangeable terms, including assessment, quality improvement, impact, evaluation, and evidence-based librarianship to describe their efforts to study the effectiveness of their services and programs. Most libraries, however, lack the knowledge or resources to move beyond highly focused, piecemeal measures of service quality, learning outcomes, and website usability. A practical and sustainable assessment program not only requires human, financial, and capital resources, but a formal structure or framework to organize library assessment activities. While a few libraries have adopted established quality improvement frameworks, such as Lean Six Sigma or the *Baldrige Criteria for Performance Excellence*, others have either consciously or unconsciously started to incorporate elements of such frameworks into their practice. This study examined whether academic libraries are moving towards formally or informally adopting established quality frameworks to structure and organize their assessment programs. It also gauged whether academic librarians were interested in learning more about established quality improvement frameworks as a means for supporting and realizing sustainable change within their organizations.

Research Design: An online survey was distributed in July 2011 to 536 academic libraries that indicated they employed more than 10 professional librarians and had a Carnegie Foundation Basic Classification of Master's/S or above in the 2008 Academic

Library Survey conducted by the National Center for Education Statistics (<http://nces.ed.gov/surveys/libraries/>). Specifically, the websites of the libraries included on this list were used to obtain the email of the highest ranking professional librarian responsible for assessment or quality improvement. The survey was then distributed

to this individual. If this librarian could not be identified, the survey was distributed to the email of the library director, with a request that it be forwarded to the individual responsible for assessment or quality improvement in his or her library.

Results: Of the 536 surveys distributed, 158 were returned, representing a 29.5% response rate. While only eight survey participants indicated that they used an established quality improvement framework to structure or organize their assessment program, 36 participants working without a formal framework did indicate that they had some system to identify, prioritize, and organize their assessment projects. Almost all respondents (95.6%, n=158) indicated their library leaders promoted and supported the gathering and utilization of assessment or quality improvement data. Only 44.3% (n=158), however, indicated their library provides a budget to support their library's assessment or quality improvement program and only 52.5% (n=158) noted their library had staff specifically assigned to coordinate their library's assessment or quality improvement program. A majority of respondents (83.5%, n=158) indicated they would be interested in learning more about quality improvement frameworks for libraries.

Implications/Value: Few academic libraries formally employ an established quality improvement framework to structure and sustain their assessment programs or have a formal system to identify, prioritize, and organize their assessment projects. There is interest among academic librarians responsible for their library's assessment program in learning more about quality improvement frameworks for libraries.

Introduction

Academic libraries currently use a number of interchangeable terms, including assessment,

quality improvement, impact, evaluation, and evidence-based librarianship, to describe efforts to study the effectiveness of services and programs.¹ Most libraries, however, lack the knowledge or resources to move beyond highly focused, piecemeal measures of service quality, learning outcomes, and website usability, towards a practical and sustainable assessment program that supports ongoing change and improvement.² Programs such as the Association of Research Libraries' *Organizational Performance Assessment for Libraries (OPAL)* initiative are beginning to educate academic libraries of the need to allocate human, financial, and capital resources to support effective assessment.³ A few libraries have formally adopted established quality improvement frameworks, such as Lean Six Sigma or the Baldrige National Quality Award, to structure and organize their library assessment activities.⁴ Other libraries, either consciously or unconsciously, have moved towards informally incorporating elements of such frameworks into their practice. Through continuous, disciplined monitoring of the quality and effectiveness of library services and programs, libraries can affect sustained change and improvement.

This study examined the extent to which academic libraries are moving toward formally adopting established quality frameworks or informally adopting such frameworks to structure and organize their assessment programs. Specifically, it questioned 1) whether academic libraries utilize established quality improvement frameworks such as Lean Six Sigma, the Baldrige National Quality Award, or ISO 9001:2008 to structure or organize their assessment programs, and if not, whether they have adopted elements of such programs; and 2) whether academic librarians are interested in learning more about established quality improvement frameworks as a means for structuring or organizing academic library assessment.

Literature Review

Academic libraries can ensure consistent, quality delivery of service, realize the benefits of more effective decision making, and efficiently make use of limited resources by utilizing quality frameworks, or elements of such programs. The costs of quality in today's information-driven economy are high.⁵ Failure to provide quality library service or products may permanently affect

libraries' relationships with students, faculty, funding agencies, and campus administration. While recognized quality improvement disciplines or frameworks, such as Lean Six Sigma or the Baldrige National Quality Award offer a common vocabulary and structure for managing the costs of quality, fiscal, political, or cultural circumstances may prevent a library organization from fully implementing them. Still, libraries which have implemented these programs, or elements of these programs, have realized significant benefits.

The University of Arizona Libraries, for example, utilized Lean Six Sigma's team-oriented DMAIC approach to improving business processes for at least two comprehensive studies which produced useful data to support decision making and implement change.⁶ "Lean manufacturing" or "lean production" focuses on eliminating waste by optimizing flow, while Six Sigma focuses on identifying elements of a process which are critical to quality, and then minimizing variation within a process by bringing the process into statistical control. For one Arizona study, a process improvement project team was specifically "charged with analyzing and improving the effectiveness and cost-effectiveness of the library's information and referral processes wherever they took place throughout the library." For the other, a second team was charged to "assess the service quality and cost of filling interlibrary loan journal borrowing requests."⁷

The Ohio State University Libraries also utilized Lean Six Sigma tools and processes for a series of three studies intended to improve its virtual and telephone reference services. Lean Six Sigma training reminds practitioners that any data is only as valid as its measurement system. The Ohio State studies utilized the DMAIC approach in concert with measurement system analysis to create standardized definitions for both service and service quality. They also produced consensus-based checklists to monitor service performance and sustain change.⁸ A fully functional customer contact center resulted from these projects, along with improvement in turn-around time for e-mail reference transactions and the handling of patron telephone calls.

Other libraries have experimented with implementing the *Baldrige Criteria for Performance*

*Excellence.*⁹ Sponsored by the US Department of Commerce's National Institute of Standards and Technology, the Baldrige program assists organizations with assessing their performance and focusing on improvement. By working through the criteria and associated documentation for the Baldrige National Quality Award, organizations may improve their productivity, enhance customer satisfaction, and position their organization to rapidly respond to change. The Baldrige program recognizes that "successful service organizations also depend on well-developed and well-managed processes that are measured and improve based on data and information collected on a regular basis . . . the success of service organizations is no less dependent on effective leadership, strategic planning, customer engagement, and business results, for example, than is the success of manufacturing organizations."¹⁰

Unless an author specifically stated that a library followed an established quality improvement discipline or methodology, however, it is difficult to discern from the library literature that such frameworks are driving a quality improvement or assessment program. Terms such as Six Sigma, Lean, MBNQA, TQM, or quality improvement do not appear as subject headings in the library community's major indexing and abstracting databases, forcing researchers to rely on keyword searching alone. Some libraries may consciously choose not to disclose that they are following elements of such a program. This may be a strategically valid decision considering other organization's challenges with implementing total quality management programs in the 1990s.¹¹ Regardless of whether a library has formally or informally adopted key elements of an established quality improvement framework, by having a structure for operating its assessment activities, a library has positioned itself to support ongoing change and improvement.

Methods

To develop a better understanding of the number of academic libraries which formally utilize an established quality improvement framework to structure and organize their assessment programs, or have informally adopted elements of such programs, an online survey instrument consisting of sixteen open and closed questions was developed (Appendix A). This instrument was pre-tested locally by three librarians and staff with an

interest in assessment at The Ohio State University. The instrument was designed using branching logic to adjust to participant responses. Thus, participants who responded "no" to whether their library had a system for identifying, prioritizing, and organizing assessment projects would skip directly to question twelve. Survey questions were based on the core attributes and components of a quality improvement framework, which are outlined in tables 1 and 2.

A survey sample was generated using results of the 2008 Academic Library Survey conducted by the National Center for Education Statistics.¹² Libraries which indicated they employed more than ten professional librarians and served an academic institution with a Carnegie Foundation Basic Classification of Master's/S or above were identified. The websites of these institutions were then searched to obtain the e-mail of the highest-ranking professional librarian responsible for assessment or quality improvement or the e-mail of the library director if this individual could not be identified.

Recruitment e-mails introducing the survey objectives and requesting participation were distributed to 536 potential survey participants in June 2011. Library directors were asked to forward the survey to the individual responsible for assessment or quality improvement in his or her library if this individual could not be identified in the initial review of institution websites. To improve response, a second e-mail with a link to the survey instrument and a second request for participation was distributed two weeks later. The survey window closed July 31, 2011, and results were immediately output to a Microsoft Excel spreadsheet for coding and analysis.

Results

Of the 536 surveys distributed, 158 were returned, resulting in a 29.5% response rate. Only eight libraries (5.1%, n=158) indicated they utilized an established framework to structure or organize their assessment program. Three of these libraries, however, identified LibQUAL+® as the framework used by their library, indicating either a disconnect with the question or a lack of familiarity with the examples of quality improvement frameworks that were provided. Two of the libraries that indicated they used an established framework did

not name what framework they deployed. One of these libraries noted they dedicated a department to assessment and followed a project-oriented approach, the other participated in writing quality improvement plans for its parent institution. Of the remaining three libraries, one utilized Lean, one deployed the Balanced Scorecard, and one identified iSkills as the framework for their assessment program.

While only eight academic libraries claimed to utilize an established framework, 36 (24.0%, n=150) libraries noted they did have a system for identifying, prioritizing, and organizing assessment projects. More specifically, 22 of these 36 libraries indicated their assessment program utilized all or all but one of the components a formal assessment or quality improvement program utilizes to manage its assessment activities. These components were outlined in question numbers two through eleven of the survey instrument and are listed in tables 1 and 2. Five libraries responding to this cluster of survey questions indicated they used less than two components. A few libraries in this cohort indicated in the comments that their assessment programs have recently been established.

One of the most important aspects of any system for identifying, prioritizing, and organizing assessment projects is a means to define and document project scope. Of the 36 libraries that responded to survey question numbers four through eleven, 23 indicated their system did have a formal mechanism for defining project scope. Comments revealed that four of these libraries have implemented a documentation system to manage their assessment projects, requiring individuals proposing an assessment project to write a statement defining project scope or a research question; establish project timelines and deliverables; identify potential methodologies; and assign responsibilities. Further, seven libraries indicated they followed an established methodology for defining project scope, using project planning methods, a modified six sigma approach, or university accreditation guidelines which require measurable goals or defined outcomes.

More than 75% of the 36 participants who answered question numbers four through eleven

indicated that their library had a system to select appropriate research methodologies to obtain meaningful data illustrating unmet customer needs, analyze results, identify potential root causes, or implement potential solutions. Fewer respondents noted that their system for managing assessment activities had a methodology for selecting research methodologies to obtain meaningful process capability data. Most (63.9%, n=36) had a mechanism to sustain an improvement and to document, communicate, and share the knowledge generated from a project. Descriptions of the methodology used by these 36 libraries for identifying, prioritizing, and organizing assessment projects ranged from references to using components of a specific program or philosophy, such as DMAIC or PDCA from Six Sigma and other quality improvement programs, to a description of the actual tools deployed by the participants library for assessment. A few additional participants indicated their assessment program was driven by the requirements of their university assessment office or accreditation review.

Nearly all survey respondents (95.4%, n=151) indicated their library leaders promoted and supported the gathering and utilization of assessment or quality improvement data. Fewer than half, however, indicated that their library provides a budget to support their assessment or quality improvement program (44.3%, n=158). Just 52.5% (n=158) of participants indicated that staff had been specifically assigned to coordinate assessment or quality improvement initiatives for their library. Open responses indicated that titles for positions responsible for assessment ranged from assessment coordinator to associate or assistant dean, to committee chair, or dean of libraries (Table 3).

The majority of the 103 positions or committees/teams identified as responsible for assessment reported directly to the dean or director of libraries (58.2%) Most individuals held dual roles (22.4%, n=23), as head of reference and library assessment, or head of technical services, with assessment as part of their position's portfolio. Fewer individuals identified assessment as their primary assignment. (16.5%, n=17) Further, a number of associate deans or library directors identified that assessment fell within their suite of responsibilities. The majority of the 68 libraries who reported their library did

not have staff specifically assigned to coordinate assessment or quality improvement initiatives indicated that assessment was handled on an ad hoc basis. (79.4%, n=54) Survey participants, however, indicated they would like to learn more about quality improvement frameworks, with 132 of 158 respondents indicating they would be interested in attending a conference or workshop, reviewing recommended readings, or viewing a webinar.

Discussion

Library conversations focused on measuring the effectiveness of library services and programs are particularly challenging considering the array of terminology utilized within the library literature and by the library community to describe such efforts. Comments for this study revealed a conceptual framework for defining library assessment similar to one proposed for analytics in higher education is needed.¹³ Such a framework would facilitate a unified conversation on assessment within the library community. Assessment of student learning outcomes, for example, differs both conceptually and functionally from measurement of the overall effectiveness or quality of a library service.

Libraries are starting to formally or informally utilize quality frameworks to structure or organize

their assessment programs. While only five reporting libraries formally follow an established program, nearly a quarter of all survey respondents revealed that their library organizations have implemented components of such programs. It is not clear whether these libraries consciously or unconsciously implemented these components over time.

Most established quality frameworks recognize that human, financial, and capital investment is imperative to establish an assessment or quality improvement program which realizes sustained change. Fewer than half of survey participants indicated their library provided a budget for their program, and roughly half indicated their library specifically assigned staff to support assessment activities. This may reflect the size of some of the institutions surveyed, where a formal, large scale library assessment program may not be practical. Some participants also noted their library assessment program is part of a larger university assessment program, which may be an appropriate approach for handling assessment activities at some institutions. As institutions of higher education respond to calls for greater accountability, however, academic libraries must dedicate personnel and resources to assessment, or they will not realize the benefits of demonstrating the results of their services and programming.

Table 1. Attributes of an Established Quality Improvement Framework

Attribute	# of Libraries Reporting Attribute Present
System for identifying, prioritizing, and organizing assessment projects/activities (See Table 2, n=150))	36 (24.0%)
Support from library leaders, who promote and support the gathering and utilization of assessment or quality improvement data (n=158)	151 (95.6%)
Budget/Financial Support (n=158)	70 (44.3%)
Dedicated Staff (n=158)	83 (52.5%)

Table 2. Core Components of an Established System for Identifying, Prioritizing, and Organizing Assessment Projects

Core Component #	Attribute: The System Has a Methodology to:	# of Libraries with Component Implemented
Core Component #1	Define project scope	23 (63.9%)
Core Component #2	Select appropriate research methodologies to identify situations where customer requirements are not being met	31 (86.1%)
Core Component #3	Select appropriate research methodologies to determine process capability, or the capability of a process to meet its purpose or customer specification	20 (55.5%)
Core Component #4	Analyze results and identify potential root causes for identified issues	30 (83.3%)
Core Component #5	Develop, pilot, evaluate, and implement potential solutions to solve issues where customer requirements are not being met or process capability is determined to be unacceptable	28 (78.8%)
Core Component #6	Sustain the improvement, and document, communicate, and share the knowledge generated from the project	27 (63.9%)

Table 3. Positions Responsible for Assessment or Quality Improvement

Category Classification	Examples
Assessment Coordinator (n=17)	– Assessment Director – Assessment Librarian – Coordinator of Assessment – Director of Library Assessment – Library Assessment Coordinator
Administration (n=21)	– Assistant Director for Assessment – Associate Dean for Library Services – Associate Director – Dean of University Libraries – Director of Libraries
Committee (n=17)	– Chair, Library Assessment Committee – Chair, User Assessment Group – Planning and Assessment Team

Category Classification	Examples
Dual Role Positions (n=23)	– Coordinator of Reference Services and Library Assessment – Head of Public Services – Instruction and Assessment Coordinator – Serials & Assessment Librarian – Web Librarian
Student Assistants (n=2)	– Student Assistants – Graduate Research Assistants
Other (n=23)	– Data Analyst – Data Specialist – Planning and Assessment Officer – Process Improvement Specialist – Service Quality Librarian – User Experience Librarian

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Appendix A. Survey Instrument.

Page 1

- 1) Does your library currently utilize an established quality improvement framework, such as Lean Six Sigma, the Baldrige National Quality Award, ISO9001:2008, or others, to structure or organize your assessment program?

☐yes **go to page 2**

☐no **go to page 3**

Page 2

- 2) If yes, which framework does your library use? **Go to page 5**

Page 3

- 3) If no, does your library have a system for identifying, prioritizing, and organizing assessment projects?

☐yes **go to page 4**

☐no **go to page 5**

Page 4

If yes, does this system have a methodology to :

- 4) Define project scope?

☐yes

☐no

- 5) If yes, please describe:_____

- 6) Select appropriate research methodolo-

gies to obtain reliable, meaningful data to identify situations where customer requirements are not being met?

☐yes

☐no

- 7) Select appropriate research methodologies to obtain reliable, meaningful data to determine process capability, or the capability of a process to meet its purpose or customer specification?

☐yes

☐no

- 8) Analyze results and identify potential root causes for identified issues?

☐yes

☐no

- 9) Develop, pilot, evaluate, and implement potential solutions to solve issues where customer requirements are not being met or process capability is determined to be unacceptable?

☐yes

☐no

- 10) Once a solution is implemented, is there a system in place to sustain the improvement, and to document, communicate, and share the knowledge generated from the project.

☐yes

☐no

- 11) Please describe the methodology used by your library

Go to page 5

Page 5

- 12) Do your library leaders promote and support the gathering and utilization of assessment or quality improvement data?

☐yes

☐no

- 13) Does your library provide a budget to support your library's assessment or quality improvement program?

☐yes

☐no

- 14) Does your library have staff specifically assigned to coordinate your library's assessment or quality improvement program?

☐yes **go to page 6**

☐no **go to page 7**

Page 6

- 15) If yes, what is the title of the position(s) responsible for assessment or quality improvement?

- 16) To what position(s) does this individual or do these individuals report?

Go to page 8

Page 7

- 17) If no, please explain how your library assigns or handles assessment or quality improvement initiatives (e.g. via committee, on an ad hoc basis, etc...)

Go to page 8

Page 8

- 18) Would you be interested in learning more about quality improvement frameworks for libraries?

☐yes **go to page 9**

☐no **go to page 10**

Page 9

- 19) If yes, how would you like to learn more about quality improvement frameworks for libraries(please check all that apply)

☐Conference/workshop

☐Recommended readings

☐Webinar

Go to page 10

Page 10

Please tell us a little bit about yourself and your institution:

- ☐16-20
- ☐21-25
- ☐26-30
- ☐30+

20) Are you male or female?

- ☐male
- ☐female

21) What is your age?

- ☐21-29
- ☐30-39
- ☐40-49
- ☐50-59
- ☐60+

22) How many years have you been a librarian?

- ☐0-5
- ☐6-10
- ☐11-15
- ☐16-20
- ☐21-25
- ☐26-30
- ☐30+

23) Is your institution public or private?

- ☐public
- ☐private

24) How many professional librarians are on your library's staff?

- ☐0-5
- ☐6-10
- ☐11-15

25) What is the approximate number of full-time instructional faculty employed by your university?

- ☐1-499
- ☐500-999
- ☐1000-1499
- ☐1500-1999
- ☐2000-2499
- ☐2500+

26) Approximately how many undergraduates does your library serve?

- ☐1-2499
- ☐2500-4999
- ☐5000-7499
- ☐7500-9999
- ☐10000-12499
- ☐12500-14999
- ☐15000-17499
- ☐17500-19999
- ☐20000+

27) Approximately how many graduates does your library serve?

- ☐1-2499
- ☐2500-4999
- ☐5000-7499
- ☐7500-9999
- ☐10000-12499
- ☐12500-14999
- ☐15000+

28) Where are you located?

Pull-down menu with U.S. states.

End

Library Assessment: More than Numbers

James Self

University of Virginia, USA

Introduction

Research libraries have been collecting statistics for more than a century. Initially the counts were limited to input factors: collection size, staffing, budgeting. Eventually output variables were added: circulation, reference transactions, interlibrary loan. The development of the user-centered library during recent years has brought forth a new set of data elements with an emphasis on customer feedback, resource sharing, qualitative information, performance measures, and electronically generated data. The term “assessment” has come into vogue, reflecting the broader scope of data collection and measurement.

Libraries and library organizations have responded to the changing times through a number of initiatives, including the New Measures Project of the Association of Research Libraries (ARL), development of the LibQUAL+® survey, and the ARL on-site assessment consulting service, originally called “Making Library Assessment Work” and later renamed “Effective, Sustainable, and Practical” assessment. Findings from this effort have been published and reported at various venues. The Library Assessment Conference grew out of this assessment project.

This paper focuses on the current state of library assessment, providing some examples of practices and innovation at major libraries, but it also includes some observations on the history, development, and purpose of library assessment.

Data for the paper came from the usual sources: literature reviews, informal communications, electronic bulletin boards. In addition, the author received a research leave that supported on-site visits to 10 notable libraries. Each of these libraries participated in the ARL assessment consulting project between 2005 and 2009. The research project provided an opportunity to observe developments that had occurred during the intervening years.

History

James Gerould, first full-time librarian at the University of Minnesota and later chief librarian at Princeton, was a firm believer in the utility of library statistics. Gerould founded the series of statistical compilations that the Association of Research Libraries (ARL) took over in 1932, and has continued up to this day. Gerould and his contemporaries believed library statistics were useful and worthy of compilation. He and his contemporaries hoped they would lead to improvement, and would serve as points of comparison. Gerould stated his view in this way: “No questions arise more frequently in the minds of progressive librarians than these: Is this method the best? Are we up to the standard of similar institutions of our class?”¹

Is this really assessment? The term was probably not used in 1906. There is little evidence these data compilations actually led to change or improvement, other than making a case for larger collections and larger budgets. However, it shows the library profession has a rich history of keeping statistics and believing in the importance of those statistics.

In earlier days, it may have been easier to assess libraries. It was pretty clear as to what the library was supposed to do. There was no need to justify the existence of the library; it was widely agreed that it was an unqualified good thing. Thomas Jefferson expressed the sentiment in 1809: “I have often thought that nothing would do more extensive good at small expense than the establishment of a small circulating library in every county. . .”²

In those times, when everyone knew libraries were a good thing, it was relatively easy to figure out which libraries were the best. The biggest, the one with the most books, must be the best. The value of the library was the collection. And when one compares collections, more is always better than

less. It is easy to rank the libraries from top to bottom by a simple count.

Changing Times

In recent decades serious questions have arisen as to whether a tally of volumes is a valid measure of the quality of a library. The user, rather than the collection, has moved to the center of the discussion.

As noted above, the development of the user-centered library has led to new data elements that focus on the customer, not on the collection. The change in the assessment outlook did not happen in a vacuum; developments in the outside world were forcing changes to the world of libraries. In university libraries some key customers were no longer interacting with the library in the same way, or with the same frequency.

One crucial group of customers at the University of Virginia (U.Va.), the fulltime teaching and research faculty, exemplify this drastic change. When the U.Va. Library conducted its first comprehensive faculty survey in 1993, 79% of the respondents reported visiting a library in person at least once a week. Two decades later the number had fallen to 22%. The library is no longer a place that most faculty need to go to.

Graduate students show up at the library more than faculty; but only half as often as in the early 1990s. Among graduate students at U.Va., the number making weekly visits to a library fell from 84% in 1994 to 38% in the most recent survey.

Undergraduates are another story. They come to the library just as frequently as in the old days. At U.Va. two thirds of all undergrads report weekly visits to a physical library—almost exactly the same as in 1994.

But what are the undergraduates doing? Not what they used to. They are not checking out as many books, and they are not running up the tally of reference questions by asking for help with those English composition library assignments. In 20 years the tally of reference questions has fallen 80%.

These trends are not necessarily a bad thing. Users have access to more information more easily using the online tools and resources. The difficulties of using a card catalog or a printed periodical index generated a lot of reference questions from hapless undergraduates.

The undergraduates of 1982 were not necessarily better scholars because they checked out more books or asked more reference questions. Libraries have made the search for knowledge easier, and that is good. But it is a very different world from a generation ago.

New Techniques, New Measures

How do we evaluate and compare libraries now, when the most heavily used resources are online, and served from a remote location? It is clear that number of volumes does not give us a very meaningful yardstick. Likewise, if we only count the incidence of traditional library activities, such as circulation and reference, we see everything in a steep downward curve.

Obviously there is a need for new and better tools, better evidence of the library's worthiness. How can we show our worthiness? The past two decades have brought many tools and techniques for assessing library performance.

The most pervasive is the large-scale customer survey, pioneered by a few libraries, such as the University of Washington and the University of Virginia, and then institutionalized and standardized by ARL in developing and sponsoring LibQUAL+. At last count over 1,200 libraries throughout the world have conducted this survey. As a profession, we know so much more about the desires and perceptions of our customers than James Gerould could have imagined. The extensive deployment of customer surveys exemplifies the transition from a collection-based library to a user-centered library.

Another example of the transition is usability testing. If the user cannot use the resource or the interface, it is not his or her fault. The library needs to offer transparent, self-service resources. An offshoot of usability testing, designed for computer interfaces, is the wayfinding study, which applies usability tools to physical spaces.

Ethnographic studies, as conducted at the University of Rochester, take the user focus a step further. The library makes the effort to learn about students in their own environments, looking for ways the library can fit into their lives.

Another trend in the new era is the search for measures of the library's efficiency, cost-effectiveness, and value, such as devising a scorecard or dashboard that indicates the success or failure of a number of important activities. The library is judged by the success of its endeavors or activities, not by the quantity of its information resources.

Finally, surveys of the library staff should be noted. Surveys of work life, organizational effectiveness, and internal customer service have all been deployed since the turn of the 21st century. ARL has moved to the forefront in this area with ClimateQUAL®, an online survey with questions designed to understand the impact staff perceptions have on service quality in a library setting.

The effort to prove our worthiness has brought forth a whole category of librarians—many, many positions with assessment in the title. The first Library Assessment Conference in 2006 attracted just over 200 registrants. This year the conference froze registration when the number reached 550, but could certainly have drawn another 150 had there been capacity. The trend is apparent throughout the profession. Within ALA, ACRL, and regional and state organizations, one can find a plentitude of assessment programs, committees, and workshops.

Observations from the Field

As noted earlier, the author had the opportunity in 2011 to make a second visit to 10 libraries that had participated in the “Effective, Sustainable, and Practical” assessment consulting project. Between the first and second visits, the most striking change was the expansion of assessment activities. Staff in those libraries had come to accept assessment as a core activity, a normal and expected part of library business. At one library the interim administration recruited and filled the position of assessment librarian; they thought filling the position would be a good selling point as the university recruited a new dean of libraries.

More people, with more advanced skills and training, were doing assessment work. They were doing more of the tried and true techniques—surveys, data collection, and usability testing—but they had also expanded into new and specialized areas. For example, there were specialists in user experience, often with an anthropology background, and specialists in assessing library collections. There was more collaboration both within the university and with other institutions. More library folks were interacting with the campus assessment office, and more libraries were engaged in collaborative collection projects. However, sustainability continued to be an issue at some of the libraries; it was easier to conduct a one-shot assessment project, than to develop an assessment program.

The libraries under discussion were all large research libraries, and long-time members of ARL. The views regarding ARL rankings and the ARL index varied, but overall there was skepticism as to whether the comparison of input and expenditure data was still meaningful. One library director commented, “Like all research libraries we are saddled with huge paper collections.” He certainly did not think having a larger print collection necessarily made a better library. However, this viewpoint was not universal. At two libraries senior administrators said they were still serious about building their print collections. They described their institutions as latecomers to the business of collection building, and the libraries were making up for a late start.

The visits to the 10 libraries revealed many interesting and innovative activities. One library director spoke of the benefit, within the university, of merely having an assessment plan. It gave the library more credibility in its dealings with the university administration.

Appreciative inquiry was cited by another library. For several weeks customers were encouraged to state, in a blog, something they liked about the library. Not only were the results gratifying to library staff and useful for library operations, but they made good stories to share with donors.

Another library reported extensive use of postcard surveys, a quick instrument to get feedback on a hot topic.

One library collected considerable and very detailed data to create and monitor a business plan for each individual unit, but this was definitely an unusual situation. There was no consistent pattern among the libraries as to how much data was used to measure performance.

One librarian borrowed terminology from the construction industry, reporting the use of a “punch list” to mark the items needing attention following a customer survey. At other libraries some “punch list” items emerged from their data collection, but they did not use that term.

One library engaged in a multiyear project to improve services for graduate students. They used surveys, comment cards, focus groups, talks with dissertation writers. The process uncovered many space problems. They took the opportunity to increase and repurpose space for graduate students when thousands of books were moved offsite.

Another library followed up their LibQUAL+ survey by launching a project to improve “access to known items.” The project sought to identify and remove all the stumbling blocks that keep users from locating and securing materials that the library owns or has access to.

Conference Topics

The abstracts of papers at the 2012 Library Assessment Conference also show the growth of assessment topics. Among the more interesting are secret shopping projects, efforts to assess special collections, collaborations with other campus units, using data and stories to get more support within the university, and devising a scorecard to assess consortial performance.

Despite the huge increase in library assessment activity, there is still work to do.

We are not able to count electronic journals and other e-resources in a uniform and widely accepted way. With the help of project COUNTER we have made progress in counting downloads of journal articles, but ambiguities and inconsistencies remain. Comparisons across institutions are problematic. It could be very useful to have sharing of electronic usage and unit cost data across libraries.

We are working on learning outcomes and value, but do not have standard tools or metrics as yet.

Most of us conduct customer surveys, whether LibQUAL+, Counting Opinions, or our own customized surveys. It would be useful to have a way of comparing results across institutions, some agreement as to what is important and what questions we should ask.

In the past libraries used collection size to make comparisons and to identify peers. Now the ARL Index looks at the most basic inputs—expenditures and staff size. We could use a new index that indicates if a library is doing its job well, by delivering value to its clientele.

Natural Limits to Assessment

The assessment process has some inherent limitations. The most obvious is that we look at the present and the past and make decisions about a future that will change in unexpected ways, beyond our control.

When we talk to people through a survey or a focus group, they are good at telling us what they like and dislike right now. And some can say what new things they would like. But their vision of the future is equally limited; they have no idea of the possibilities.

How many undergraduates in 1982 would have said they wanted to be able to see listings of library books, the library catalog, on their own telephone?

The truly creative innovations, those that shift the paradigm, rarely come from an assessment process. But assessment is very useful at telling us if innovations are working.

In addition to the inherent limitations, organizational or institutional factors may hamper assessment.

Complacency: “We are doing fine; let’s not rock the boat.”

Fear: “If we ask the customers how we are doing, we may not like the answer.”

Arrogance: “The customers may think they know what they want, but we know what is best for them.”

Inertia: “We will do the assessment project sometime, but not just yet.”

Operations mindset: “We will start the assessment work as soon as we finish the processing backlog.”

In closing I will reveal something of my point of view by citing a statement from my old boss at the U.Va. Library, Kendon Stubbs.

Kendon was a pioneer in developing new and interesting data tools, especially with ARL statistics. But he never forgot the reason for collecting data. They were not numbers for the sake of numbers. The data were collected so they could measure our performance, improve our service, and increase customer satisfaction.

The Purpose of Assessment

It seems obvious that library assessment is a very good thing. It has made our libraries better; it has improved our services and resources. It has made us conscious of the need to get the most for our money. Our users have benefitted from our assessment work.

But how far does it really go? Ultimately what is library assessment supposed to do? Do assessment practitioners follow the assertion of Jefferson who once proclaimed, “For here we are not afraid to follow truth wherever it may lead?”³ Is assessment really an unbiased inquiry that might lead anywhere, or does it have a point of view?

Is it a disinterested search for truth? Or is it an inquiry sponsored by an interested party, in the same way that Pfizer might pay for a study of the effectiveness and safety of Viagra? Would a library assessment project ever recommend fewer resources for the library? Is there a possibility of ending up with a lesser library?

If that possibility does not exist, then are we still talking about assessment, or we are talking about advocacy, or perhaps marketing?

When we do library assessment, do we have a client? And who is that client?

A Personal Point of View

Personally, I would hope that we could say that our clientele are the users, the customers. The students and faculty who depend on us.

An article on library statistics and standards closes with this assertion:

“University libraries that wonder what they must do to be saved will not find the answer in the [data tables]. . . They must look for and measure what is necessary to give users what they need when they need it.”⁴

That’s a good way to think about what library assessment should be: finding and assessing what is needed to give users what they need when they need it.

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Notes

1. J. T. Gerould, “A Plan for the Compilation of Comparative University and College Library Statistics,” *Library Journal* 31 (1906): 761–763.
2. Thomas Jefferson to John Wyche, 19 May 1809, The Letters of Thomas Jefferson, Retrieved at <http://www.let.rug.nl/usa/presidents/thomas-jefferson/letters-of-thomas-jefferson/jefl195.php>.
3. Thomas Jefferson to William Roscoe, 27 December 1820, Retrieved at <http://www.monticello.org/site/jefferson/follow-truth>.
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Charting Success: Using Practical Measures to Assess Student Learning in a Peer2peer Model

Annie Donahue

University of New Hampshire Manchester, USA

Abstract

In 2003, the University of New Hampshire (UNH) Manchester Library developed the Research Mentor Program. In this collaborative initiative, the Library partnered with the College's Center for Academic Enrichment (CAE) to improve students' information literacy skills in all First-Year Writing courses. One critical component of this collaboration is the incorporation of peer writing tutors trained in basic library research skills who work side-by-side with the instruction librarians in the classroom. By recognizing the integration of research and writing, this approach connects first-year students to essential support throughout the research process. Within the classroom, research mentors work with librarians to model effective research strategies. Outside the classroom, they work directly with students in individualized tutorials.

Over the years the anecdotal evidence suggested the program was a successful one, but a systematic evaluation that provided clear evidence was long overdue. In academic year 2011, the library instruction team planned and implemented the first phase of a program evaluation to gather data to assess the impact of this peer2peer model on student learning. Beginning with a pilot study in the spring 2011 semester, this study continued through the next two semesters resulting in data that highlighted strengths and indicated areas for improvement. This paper will discuss selected quantitative and qualitative findings from this eighteen-month study measuring the effectiveness of delivering information literacy through a peer2peer approach, replacing the traditional one-shot library instruction methodology with a semester-long engagement in information literacy skill-building.

Introduction

Due to limited budgetary and staffing issues, small academic libraries face a cornucopia of challenges

when delivering a broad spectrum of services to their constituents. These challenges often engender innovative and creative solutions that yield delightful and unexpected outcomes. The Research Mentor Program at the UNH Manchester is one of those happy circumstances. Through this program, research mentors become the conduit whereby the librarians are able to extend academic support beyond the library walls to reach first-year students at each stage of the research process—from brainstorming topics; developing effective search strategies; and evaluating sources to preparing outlines; developing thesis statements; and drafting through the writing/revision cycle.

UNH Manchester, one of the nine colleges and schools of the state university, is a commuter campus located approximately 50 miles west of the residential campus in Durham, New Hampshire. The city of Manchester is the most populous and diverse city in the state and the university's urban campus serves more than 1,150 undergraduate and graduate students at its Millyard location. Degree programs offer a broad liberal arts core with an applied emphasis in coursework that incorporates internships and service-learning. Small class size and teaching excellence are hallmarks of the college. First-Year Writing courses are capped at fifteen students and generally six sections are offered each semester. The Library's information literacy instructional plan includes three 90-minute sessions per section to scaffold learning in manageable units each building upon the previous unit. This intense delivery model is a deliberate effort to meet students' developmental readiness levels and to embed information literacy into the curriculum of the composition program.

The genesis for the Research Mentor Program came from an idea presented in a poster session at an Association of College and Research Libraries (ACRL) annual conference. The original

design utilized students trained in basic library research techniques to assist other students with their research projects at evening and weekend drop-in sessions held in the residence halls. By making a few modifications to the delivery methodology proposed; capitalizing upon the College's collaborative culture; and partnering with a successful peer tutoring enterprise, the UNH Manchester Library was able to experiment with an innovative, student-centered approach to increasing information literacy competencies.¹

The program has evolved and grown over the nine years since its inception. Recent changes include extending the use of peer mentors across the disciplines and into upper-level courses, but the core partnership began, and continues in the First-Year Writing course. The Library's instruction team has also grown, increasing from two to three instruction librarians. In the current iteration of the program, each librarian plays a significant role in ensuring its success. The Information Literacy Instruction Coordinator partners with the Director of the CAE to design and teach the credit-bearing Tutor Development course required of each peer writing tutor. The Information Literacy Specialist develops the course objectives and delivers instruction for all sections, partnering with the research mentors to include modeling of best practice techniques through a peer2peer lens. The Library Director collaborates with the instruction team to craft effective assessment instruments, liaises with the teaching faculty and administration to ensure adherence to research protocol, and analyzes the data collected.

Library instruction assessment efforts at the UNH Manchester Library have been ongoing but sporadic since 2000. No formal systematic plan was ever developed, although the desire for a consistent, organized approach to assessment existed. Low staffing levels coupled with high volume demands on the day-to-day operational tasks meant that making time for assessment was challenging. Inspired by Donald Barclay's theory that "some hard evaluative data . . . are better than no data at all," the librarians began to "conduct some kind of meaningful evaluation by using whatever resources [were] at hand."² A mix of anecdotal and survey methods to determine student satisfaction with the traditional one-shot instruction sessions were the easiest to accomplish in the early years. Soon after, influenced by

Thomas Angelo and K. Patricia Cross, an adaptation of the "Minute Paper" assessment technique was introduced to formatively assess students' understanding of the concepts presented.³ This methodology continues today as an online survey linked to the course Research Guide.

The assessment movement in higher education, and especially in academic libraries, has generated a plethora of discussion in the professional literature. Megan Oakleaf and Neal Kaske identified three primary reasons to assess information literacy instruction: 1) increase student learning; 2) demonstrate accountability; and 3) improve instruction.⁴ They also offered a set of guiding questions to consider before embarking on an assessment project which proved valuable in developing a plan for the Research Mentor Program evaluation.⁵

The impetus for undertaking this program evaluation was the imminent retirement of the Director of the CAE, scheduled for the end of the academic year. As the search for a new director began, we wondered how we could articulate the value of the program to the candidates. Whenever we discussed the program's value, we attributed success to the connections forged through "a network of people dedicated to helping [students] achieve their academic goals."⁶ Yet no data existed to support this claim; no evidence that students' achieved their goals was ever collected. It was time to formalize assessment and develop a plan that would measure the impact of the program. In fall 2009, the information literacy instruction team began planning and building an assessment plan to evaluate the program. Although we all agreed that improving teaching and learning were important goals for this evaluation, demonstrating the program's effectiveness and value to ensure the continuation of the program was an essential purpose for this study.

A review of the program objectives (see Table 1) suggested a three-phased approach for the evaluation plan: 1) measure change in students' information literacy skills in First-Year Writing courses and their self-perceptions of confidence with the research process, 2) examine peer tutor experiences and their perceptions of self-development as a result of participating in the

program, and 3) investigate faculty perceptions of their students' learning outcomes attributable to

the program's peer2peer model.

Table 1: Research Mentor program objectives listed by department.

Library's objectives	CAE's objectives
Improve students' information literacy skills	Improve students' library research and writing skills
Reduce "library anxiety" among first-year students and increase students' confidence levels with the library research process	Expand tutor roles and enhance their own research skills
Enhance students' critical thinking skills	Facilitate transfer of communication skills from tutor training to the library setting
Promote librarianship as a career possibility	Provide tutors professional development opportunities for CRLA ⁷ tutor certification

Overlap between the departments' focused primarily on increasing critical thinking, improving research and writing skills, and giving students' the tools to become information literate. These objectives became goals to measure during the initial phase of the program evaluation. Although both departments identified professional development opportunities for the peer tutors participating in the program as an important outcome; the CAE's objective is tied to certification potential prior to completing the undergraduate degree, while the Library's objective advocated post-baccalaureate potential. Assessing these objectives will be undertaken in the second phase of the evaluation when the focus turns to the peer mentors' experiences. This paper explores the methodology, findings, and limitations of our eighteen-month study that focused on the first phase of the program evaluation, student learning.

Durham classes participated in the study. A confusion with communication led to incomplete post-test responses from Durham participants in the pilot semester. A lack of faculty interest on the residential campus to continue to participate in the study resulted in our decision to limit participation in the study to Manchester students in subsequent semesters.

Limiting participation to the Manchester campus meant fewer course sections would be available each semester resulting in a smaller pool of potential participants. Although random sampling was preferred, the capped enrollments in these courses made convenience sampling the most logical approach to obtain a reasonably-sized data pool. Participation was voluntary, and students could opt to leave the study at anytime time during the semester.

Methodology

The study received Institutional Review Board (IRB) protocol approval in January 2010, and we implemented a pilot study that spring semester. All students enrolled in the First-Year Writing course on the Manchester campus and students enrolled in two sections of the course offered on the Durham campus were invited to participate.

Given that the peer2peer model used in the Research Mentor Program is only offered on the Manchester Campus, the inclusion of the course sections from the Durham campus was intended to serve as a control group to provide comparison data. In subsequent semesters, however, no

Several quantitative and qualitative measures were designed to assess the evaluation goals identified for this study. A pre-test/post-test instrument measured students' knowledge about the library research process by asking students to respond to questions, both fixed-choice and open-ended, thereby demonstrating their competency levels for defining, investigating, and evaluating an information need. A four-point Likert scale measured students' perceptions of their ability and self-confidence in conducting library research. A reflective response essay measured students' perception of the impact of the peer2peer model on their research skills by allowing them to describe how working with a research mentor contributed

to their individual progress in the research process.

The pre-test instruments were administered on the first day of the course during the pilot semester, but in subsequent semesters pre-tests were given during the second week of classes. In the following two semesters, we delayed administration of the pre-test to allow students time to understand their course expectations before making a decision about participating in the study. Results of the pre-test formed a baseline measure of students' abilities and were available to the librarian prior to the first information literacy instruction session. Two weeks before the semester ended, students were given the reflective response essay prompt and asked to submit the completed response the following week in class. Then, in the penultimate class, the post-test instruments were administered. All assessment instruments were administered online using *SurveyMonkey*TM software in one of the College's computer classrooms during normal class hours.

Findings

The sample size is small for each semester but consistent with enrollment patterns for the College. During the pilot semester, 54 Manchester students were enrolled in First-Year Writing sections and 31 students agreed to participate in the study. There were 48 students enrolled in the two sections offered on the Durham campus and 34 students agreed to participate in the study.

We found the 57% participation rate for Manchester disappointing. We speculated that administering the pre-test on the first day of class before students had any understanding of the class expectations may have contributed to the low participation rate. Perhaps we were right; each subsequent semester had a 100% participation rate in the study's pre-test. In fall 2011, the sample size was 76 students and in spring 2012, the sample size was 48 students. Attrition rates for First-Year Writing significantly affected the post-test sample size in each semester. In the pilot semester, 28 Manchester students remained in the study but only nine Durham students completed the post-test instrument. In fall 2011, the post-test was completed by 55 students and in spring 2012, the post-test sample size numbered 32.

The pre-test/post-test instrument included six questions designed to identify students' previous

library research experiences and an additional thirteen questions focused on information literacy competencies. Among the thirteen information literacy questions were nine questions—three clusters of three questions—that directly mapped to the learning objectives of the information literacy instruction sessions delivered in the First-Year Writing course. The cluster approach enabled students to demonstrate knowledge of each learning objective by answering a set of three questions that explored a single information literacy competency from multiple perspectives. Each cluster included two fixed-choice questions and one open-ended question. One fixed-choice question was written as an informational inquiry while the second was placed within the context of a potential research scenario. The open-ended question required students to describe the research activities they would complete to accomplish the task presented in the question. This paper will report the results of these cluster sets for the Manchester sample in each semester. A further discussion of additional pilot semester results was presented at the 9th Northumbria International Performance Measurement in Libraries and Information Services Conference.⁸

Cluster results for each semester indicated a positive progression toward competency in each of the three interrelated research skills: 1) using library resources correctly; 2) building effective search strategies; and 3) evaluating sources. These skills map to the first three standards identified by the Association of College and Research Libraries:

1. the student determines the nature and extent of the information needed,
2. the student accesses needed information effectively and efficiently, and
3. the student evaluates information and its sources critically.⁹

These three standards form the core learning objectives in the First-Year Writing information literacy instruction curriculum. In the pilot semester, data was originally analyzed only for the two fixed-choice questions. There was no scoring instrument to measure the open-ended question until summer 2012 when a rubric was built and utilized to score the data collected.

Findings for the fixed-choice questions showed improved results each semester in five out of six

questions. The one question that showed a negative result was the evaluating sources question in the research scenario format. In post-test results for this question, students in the pilot semester scored an 11% increase over pre-test results, but fall 2011 students scored a 7% decrease from their pre-test results. In spring 2012, this question yielded no change in students' pre-test to post-test results.

Results for the remaining five questions point

toward an increase in knowledge over the baseline measure; the percent of change across the remaining cluster questions ranged from a 6% to 57% increase. Table 2 visually depicts the quantitative results for each semester. In this table, the fixed-choice question formats are distinguished by the designations A and B; designation A refers to the informational inquiry format and designation B refers to the research scenario format.

Table 2: Results of the fixed-choice questions by semester.

Cluster Sets:	Pre- test	Post-test	Pre-test	Post-test	Pre-test	Post-test
IL Standards 1-3	Spring 2011	Spring 2011	Fall 2011	Fall 2011	Spring 2012	Spring 2012
Library Resources - A	68%	86%	48%	82%	62%	81%
Library Resources - B	74%	100%	61%	82%	75%	81%
Search Strategies - A	32%	89%	43%	84%	53%	90%
Search Strategies - B	16%	68%	28%	47%	28%	44%
Source Evaluation - A	55%	79%	76%	82%	64%	84%
Source Evaluation - B	74%	85%	80%	73%	78%	78%

The final question in each cluster set was an open-ended question that required students to demonstrate the research skills they would employ in response to the task described. Once again, each question mapped to one of the information literacy competencies. This question was scored using a rubric to translate qualitative responses into quantitative scores. The rubric scored students' results on a five-point scale from novice to expert, based on the number of criteria students identified for each competency.

The first cluster set measured students' ability to define their information need. Seven criteria identified in ACRL's Information Literacy Standard 1 were incorporated into the rubric used to score students' responses. The rubric allowed for five rating levels determined by the number of criteria students listed in their responses. A copy of the rubric is available in the appendix to this paper. One criterion, *explores general information sources to increase familiarity with the topic*, universally

ranked highly in both pre-test and post-test results across all three semesters. Two additional criteria indicated notable growth from pre-test to post-test results in the pilot semester and the fall 2011 semester: 1) *identifies key concepts and terms that describe the information need*, and 2) *defines and modifies the information need to achieve a manageable focus*. There was virtually no score change for these two criteria in the spring 2012 semester. Students' responses demonstrated an increase in identifying key concepts by 24% in the pilot semester and 16% in the fall 2011 semester; results for achieving a manageable focus increased by 12% in the pilot semester and 28% in the fall 2011 semester.

The rankings of novice to expert were based on students' naming the criteria associated with the standard. When students described their research process by articulating one or no criteria they ranked at the novice level, two criteria ranked at the emerging level, three criteria ranked at the intermediate level, four or five criteria ranked

at the advanced level, and six criteria ranked at the expert level. Scored results, listed in Table 3, indicate students' skill levels improved across most semesters, as noted by a drop in novice rankings

and a rise in emerging and/or intermediate rankings. The rankings for spring 2012 semester are virtually unchanged at the novice rank, but do reflect increase at the emerging rank.

Table 3: Information Literacy Standard 1 ratings by semester.

Ratings	Pre-test Spring 2011	Post-test Spring 2011	Pre-test Fall 2011	Post-test Fall 2011	Pre-test Spring 2012	Post-test Spring 2012
Novice	71%	57%	38%	22%	30%	31%
Emerging	23%	36%	43%	27%	35%	50%
Intermediate	6%	7%	14%	36%	28%	16%
Advanced	n/a	n/a	5%	15%	7%	3%
Expert	n/a	n/a	n/a	n/a	n/a	n/a

The second cluster set measured students' ability to construct an effective search strategy. Four criteria identified in ACRL's Information Literacy Standard 2 were incorporated into the rubric used to score students' responses. Although students in each semester scored well in the pre-test on one criterion, *identified keywords, synonyms, and related terms for information need*, approximately one-third of students' responses denoted no search strategy at all. Post-test scores demonstrated that "no search strategy" responses were cut in half and that search strategies using a combination of keywords with Boolean operators increased significantly; by 33%

in the pilot semester, 47% in the fall 2011 semester, and 19% in the spring 2012 semester.

Table 4 demonstrates the change in rankings across the three semesters. When students described their search strategy, if they merely repeated the topic phrase or gave no answer they ranked at the novice level; if they identified keywords and related terms they ranked at the emerging level; and if they identified keywords and used Boolean operators they ranked at the intermediate level. No students incorporated all four criteria denoted for this information literacy standard.

Table 4: Information Literacy Standard 2 ratings by semester.

Ratings	Pre-test Spring 2011	Post-test Spring 2011	Pre-test Fall 2011	Post-test Fall 2011	Pre-test Spring 2012	Post-test Spring 2012
Novice	32%	14%	27%	11%	14%	12%
Emerging	68%	54%	57%	27%	72%	50%
Intermediate	0	32%	16%	62%	14%	38%
Advanced	n/a	n/a	n/a	n/a	n/a	n/a
Expert	n/a	n/a	n/a	n/a	n/a	n/a

The third cluster set asked students to name the criteria they used to evaluate sources. Five criteria identified in ACRL's Information Literacy Standard 3 were incorporated into the rubric used to score students' responses. Across all semesters in pre-test scores results, students identified the criterion *accuracy and authority* more than any other associated with the standard. These scores ranged

from 64% in the pilot semester to 75% in both fall 2011 and spring 2012 semesters. Two other criteria, *timeliness* and *relevancy*, scored in excess of 40% across all pre-test results. Post-test scores for these three criteria remained strong in each semester. The notable change in the results for this question is an increased number of students identified more than one criterion for evaluating sources in the

post-test data. This finding is graphically depicted in Table 5.

When students described the criteria used to evaluate sources, a response with one or no criteria

was ranked at the novice level, two criteria ranked at the emerging level, three criteria ranked at the intermediate level, four criteria ranked at the advanced level, and five criteria ranked at the expert level.

Table 5: Information Literacy Standard 3 ratings by semester.

Ratings	Pre-test Spring 2011	Post-test Spring 2011	Pre-test Fall 2011	Post-test Fall 2011	Pre-test Spring 2012	Post-test Spring 2012
Novice	65%	39%	39%	27%	33%	34%
Emerging	32%	39%	32%	40%	35%	34%
Intermediate	0	22%	26%	27%	32%	32%
Advanced	3%	0	3%	6%	n/a	n/a
Expert	n/a	n/a	n/a	n/a	n/a	n/a

Limitations

The data collected in this phase of our evaluation study indicates a positive progression in student learning across the semester. We attribute this positive outcome to our peer2peer approach, integrating research and writing through a partnership between librarians and peer writing tutors. There are however, several limitations in this study that make generalization of the findings impractical. The overall sample size is small and the use of convenience sampling, rather than random sampling, may not capture a true representation of first-year students' abilities. High attrition rates in First-Year Writing courses lead to lower post-test responses which can impact accurate analysis of pre-test/post-test comparison data leading to a potentially false conclusion.

The fixed-choice test methodology incorporates further potential limitations. The questions measure students' knowledge of facts, but tend to support a "recognize rather than recall" response which is "indirect assessment" of students' knowledge not necessarily a measure of students' ability to apply that knowledge appropriately.¹⁰ On the positive side, this methodology is easily administered and analyzed; it is locally specific allowing us to measure the objectives of our information literacy instruction sessions. With the data collected in this study, the librarian can adapt her lesson plans and activities to respond to students' developmental readiness level more fully.

The open-ended questions gave students the opportunity to articulate their research behavior, enabling a more direct measurement of their ability to apply information literacy skills. An effective scoring mechanism was needed to convert the qualitative responses to a quantitative measure that could be analyzed against the results of the other two cluster set questions. A rubric was the natural choice, but with limited experience in designing and using rubrics a review of the literature was a necessary first step.¹¹ In the rubric design, we began by aligning the criteria to the objectives of the First-Year Information Literacy curriculum which provided the framework within which to craft the measures. A valuable source for examples of designing and using rubrics was found at the RAILS (Rubric Assessment of Information Literacy Skills) website.¹²

Although the rubric made scoring results possible, the process was considerably more time consuming than anticipated. This methodology also contributed to potential limitations in the study, significantly due to the use of a single rater to score results. Although effort was employed to maintain an objective scoring plan, it was challenging to interpret students' responses consistently when scoring at "different points in time."¹³ Use of trained student raters has been an efficient and effective approach at other institutions. Therefore, in future rubric use we will consider training research mentors to participate in scoring to increase reliability of the results.¹⁴

Conclusion

In this paper, we have examined the findings from a section of the pre-test/post-test instrument used to measure change in student learning in our First-Year Writing course. The three cluster sets map to the curriculum objectives for information literacy instruction, and demonstrate a positive progression toward increased learning in the three targeted areas identified. The findings, although specific for our local situation and probably not generalizable, are a valuable baseline for informing our teaching and learning practice.

Students scored higher in the fixed choice questions than the open-ended ones, demonstrating the ability to more effectively identify the applicable information literacy skill than use the language of information literacy to describe their own research behavior. Next steps will require assessments that measure performance rather than name behaviors. The instruction team is currently considering several possible approaches to deepen our understanding of the effectiveness of integrating a peer2peer model to replace the traditional one-shot library instruction methodology with a semester-long engagement in information literacy skill-building.

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Appendix



Research Mentor Program Information Literacy Rubric

ACRL Information Literacy Standards	Novice (0)	Emerging (1)	Intermediate (2)	Advanced (3)	Expert (4)	Rating
IL Standard 1 - student determines the nature and extent of the information needed: a) reviews syllabus or confers with instructor to identify information need b) develops a thesis statement and formulates questions based on information need c) explores general information sources to increase familiarity with the topic d) defines and modifies the information need to achieve a manageable focus e) identifies key concepts and terms that describe the information need f) identifies the purpose, differences, and value of potential resources	Describing research process, student articulates none or one criterion (a-f)	Describing research process, student articulates two criteria (a-f)	Describing research process, student articulates three criteria (a-f)	Describing research process, student articulates four or five criteria (a-f)	Describing research process, student articulates all criteria (a-f)	
IL Standard 2 - student accesses needed information effectively and efficiently: a) identifies keywords, synonyms, and related terms for information need b) selects controlled vocabulary specific to the discipline or information retrieval system c) constructs a search strategy using appropriate commands (i.e. Boolean operators, truncation, etc.) for the information retrieval system selected d) identifies gaps in the information retrieved and determines if the	Constructing search strategy, student articulates no criteria (a-d)	Constructing search strategy, student articulates one criterion (a-d)	Constructing search strategy, student articulates two criteria (a-d)	Constructing search strategy, student articulates three criteria (a-d)	Constructing search strategy, student articulates all criteria (a-d)	

search strategy should be revised									
IL Standard 3 - student evaluates information and its sources critically: examines and compares information from various sources in order to evaluate a) reliability and validity b) accuracy and authority c) timeliness d) point of view or bias e) relevancy	Evaluating sources, student articulates none or one criterion (a-e)	Evaluating sources, student articulates two criterion (a-e)	Evaluating sources, student articulates three criteria (a-e)	Evaluating sources, student articulates four criteria (a-e)	Evaluating sources, student articulates all criteria (a-e)				
Total Rating									

Developed by A. Donahue, UNH Manchester, Summer 2012

The A-Team: Making a Plan Come Together Across Campus

Rhonda Huisman

Indiana University-Purdue University Indianapolis, USA

Abstract

The need for a deeper understanding of information literacy skills, standards, organization, and programmatic structure of instruction at the campus level has been on the minds and hearts of academic librarians for more than two decades. However, there are glimmers of hope, evidence of progress, and great possibilities for future collaborations and deeper engagement when schools are faced with accountability as they prepare for accreditation. The campus-wide examination on student learning, engagement, process, and retention is a wide road, but (often suddenly) there is a need for data and evidence on what kinds of impact the library and librarians demonstrate, particularly during times of campus reorganization or accreditation. Initiating a large-scale evaluation of instruction and assessment can be daunting, but there are steps to including important constituents from across the campus, making up an *A-Team* with great skill and strength.

Introduction

"A crime we didn't commit"

Evaluation of library instruction has been a part of the discourse for over two decades, with motivation factors varying from institutional accountability, measuring student learning outcomes, improving and revising curriculum and general education requirements, and meeting requirements for accreditation.¹ "All constituencies are demanding greater accountability and transparency on the part of colleges and universities, including proof that students who earn an undergraduate degree are prepared for the workplace or to earn an advanced degree."² Rossi, Freeman, and Lipsey point to the fact that if the evaluation efforts, data, and report are not accurate or valid in the description of the program performance, there may be misperceptions about success, and whether or not the standards line up to the actual activities that are taking place.³ As librarians, we rely on anecdotal or rhetorical pseudo-evidence that our students are doing well, and engage in small, controlled assessment efforts

based on formative and more recently, summative evaluations, including portfolios, annotated bibliographies, and research papers, utilizing rubrics as the scoring or evaluation instruments.⁴ Certainly, the trend over the last ten years includes planning documentation, particularly in ARL libraries reported that in 2010, 92% had strategic plan foundations such as visions, values, and goals, and many had made significant efforts towards library assessment programs.⁵ However, librarians may have limited incentives or support to gather these types of data or documentation, and even less support showing meaningful faculty collaborations.

Institutional Context

Indiana University-Purdue University Indianapolis is a large, urban research university located in the heart of downtown Indianapolis, just steps away from the state capitol, Lucas Oil stadium, and a few miles from the Indianapolis 500 Motor Speedway. IUPUI enrolls and serves combined undergraduate and graduate population of over 33,000 students, many of whom are non-residential, returning, first generation, or at-risk. University College, an academic unit at IUPUI serves thousands of incoming students, most of who have less than 17 credits, and have not yet been directly admitted to a department or program. They also coordinate the early assistance programs such as Summer Success Academy, Bridge, and Themed Learning Communities. It is a unique unit, in that there is a librarian assigned as part of an instructional team, and many librarians regularly serve on academic committees such as curriculum, general education, professional development, and serve as adjunct faculty. The instructional teams are made up of a lead faculty member (from departments or schools, or from University College), a student mentor, an academic advisor, and a librarian. It is through these team efforts and collaborations that students are supported in all aspects of their first year on campus.

It was the creation and development in University College that became the driving force in the campus adopting the *Principles of Undergraduate Learning (PULs)*. This is a comprehensive list of learning outcomes in a conceptual framework relating to general education, but widely applied and adapted in the various departmental and degree requirements across the campus. In 2008, these conversations and actions lead to a committee of University Librarians (spearheaded by Polly Boruff-Jones, now at Drury University), to explore the possibility of aligning the ACRL *Information Literacy Standards for Higher Education* with the campus wide PULs, for students in their first through fourth years of study. Although most librarians can see information literacy components in any of the 6 PULs, most faculty and assessment efforts have been focused on PUL 1.e: “make effective use of information resources and technology.”⁶ Boruff-Jones also aided in the revision and expansion of the Information Literacy Strategy, with five main goals and objectives; many of these the guiding principles in a librarian’s annual review and job description, but the widespread adoption and understanding of the library’s mission was just being formulated.

This basis for instruction and assessment has helped to guide the conversation with faculty at a variety of levels, including the revision and adoption of a template for first-year seminars, which includes responsibilities and expectations for librarians involved in an instructional team. However, despite the great work and unique blend of local and national standards to guide practice, a much larger examination of the impact of library instruction, the inclusion of information literacy student learning outcomes and goals in curriculum development, and wider exposure and support from across campus.

Developing the Team

The fictionalized A-Team, a popular TV series in the 1980s, always acted on the side of good and helped the oppressed. Made up of mercenaries and ex-military personnel, the team engaged in dangerous and covert missions through jungles, forests, mean city streets, and employed many forms of weaponry and superior intelligence tactics. Rarely was anyone killed or even seriously injured, and most episodes had predictable plot lines and outcomes. Librarians at IUPUI generally

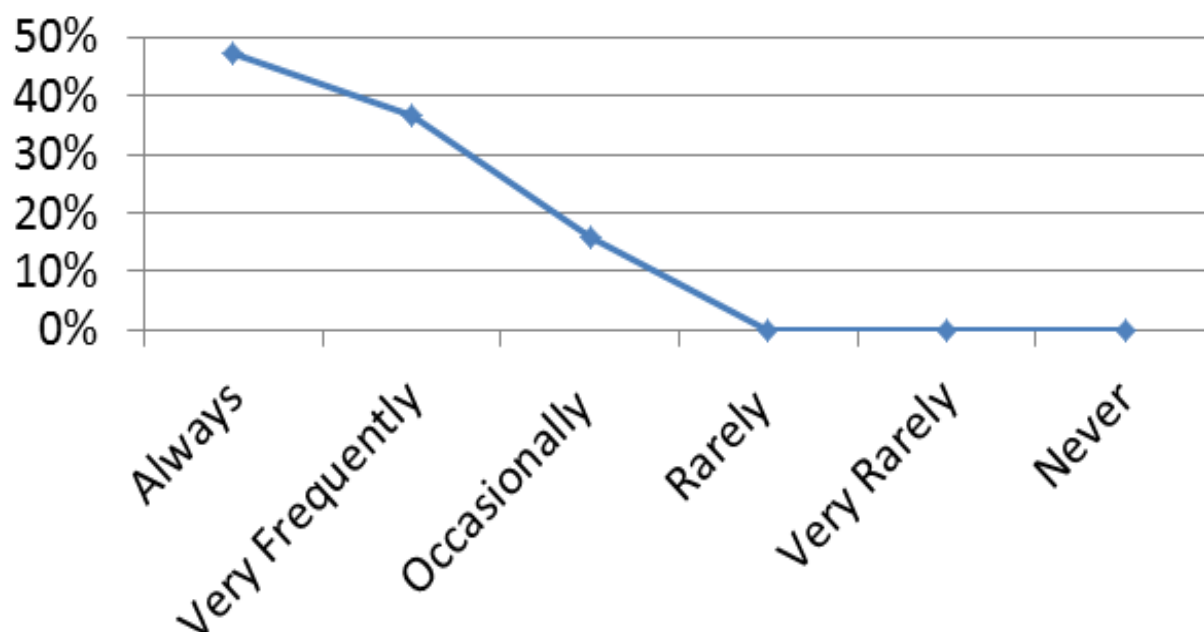
approached instruction and assessment in the same way—predictable methods (one-shot, 50-minutes, in a computer lab) with predictable outcomes (nothing too noteworthy or even based on real-life scenarios). No one was injured, and high tech “weaponry” made the rounds through various initiatives and internal team planning sessions, e.g. narrated tutorials, online simplistic quizzes, or iterations of library scavenger hunts. What was missing was the element of assessment and curriculum engagement, which ultimately could lead to a correlation of library instruction=student success. If librarians were fortunate enough to meet with faculty on assignments and instruction sessions, did they see their efforts come to fruition?

Despite all of the opportunities that University College offers for a deeper collaboration between faculty and librarians, there was still a need to understand what exactly constituted effective library instruction in a measured, data-driven model. There was little doubt that librarians wanted to be part of the success of students, but how much of that was based on teaching and assessment? Megan Oakleaf asserted that librarians may not be committed to the task of teaching, nor do most mission statements reflect teaching and learning, and many librarians “cede instructional territory to disciplinary units and provide only secondary, supplemental support.”⁷

We’re on a Mission

In the fall of 2011, I was accepted to participate in the ACRL Assessment Immersion track in Nashville, TN. Through the preliminary reading and researching that is required prior to attending, and the addition of a newly formed team at the library (Instructional Services Council), I developed a plan to utilize the ACRL’s *Analyzing Your Instruction Environment: A Workbook*⁸ as the basis for evaluating the library instruction “program.” The Instructional Services Council, made up of University Library colleagues Katie Emery, Meagan Lacy, and Sonja Staum, disseminated a needs-assessment survey to librarians in the fall, gathering information about what they did to prepare for instruction, their assessment activities, and how they collaborated with faculty prior to teaching. 31.6% of librarians who responded said they felt confident in explaining information literacy competencies to faculty, and 47% said they “always” had learning outcomes in mind with doing classroom instruction.

Figure 1. Learning Outcomes and Classroom Instruction



The top three obstacles in carrying out an instructional or assessment plan included time, teaching/method and roles, and faculty. Even though almost half of the librarians in our survey indicated that they thought about outcomes before instruction, Bowlby cited that only 20% ARL libraries linked assessment with planning.⁹ Through this needs assessment, an exhaustive review of the literature on the evolution of measurement and evaluation (Kyrillidou, Cook, Sobel, and others), and pressures from the campus concerning the upcoming 2012 accreditation, it was becoming evident that a more concentrated, determined effort begin to shape around a larger-scale analysis project.

Accreditation, in the very best case scenarios, can yield stronger connections across campus entities, point out opportunities for collaborative efforts, and ultimately benefit the students, faculty, administration, and campus as a whole. Anyone who has been through the process can attest that it can be a scrambled, uncoordinated, data collection nightmare, with units, departments, organizations, and personnel feeling left out or marginalized. The IUPUI campus is fortunate to have some of the most qualified and thorough evaluators, assessment faculty, and accreditation coordinators, particularly Trudy Banta. Dr.

Banta has received numerous awards, serves as a consultant on an international scale, and has written or contributed to copious books, articles, and reports on assessment. She played an integral role in the development of this project, and agreed that the campus needed to have further discussions on what role information literacy has in student success, as well as in our accreditation process.

Our campus accreditation efforts were led by her and a team of faculty and administrators from the *Programmatic Review and Assessment Committee (PRAC)*. After my attendance at in the Immersion program, we met with Trudy and the chair of the PRAC committee, to discuss how we were going to include information literacy, assessment of library instruction, and library impact in the final report in November of 2012. Through the support of the library administration and the Instructional Services Council, we wrote a proposal to the PRAC committee for grant funds to carry out the project of using the "Analyzing Your Instruction. . ." as the basis for the environmental scan. According to conversations with various library administrators, no project of this scale had ever been conducted at University Library.

Purpose of the project: To engage both University Library faculty and staff in the responsibility,

development, and accountability for the information literacy program and instructional/outreach activities, as well as to involve other campus entities in the understanding of the University Library mission and instructional goals, including the relevant PULs, and exposure to the professional information literacy standards at the national level.

Intended Outcomes:

1. University Library faculty, staff, and administrators will contribute to the evaluation instrument to provide for better understanding of the instructional environment.
2. Focus groups will categorize and describe andragogical approaches, goals, emphases, or common themes that are included in the instructional environment or information literacy program which will allow the library to evaluate their current structure, mission, or focus. This would be substantiated with data collection, including faculty participation/interviews, [and] student participation in focus groups and surveys.

Also playing a big role in the understanding of information literacy was the newly energized Information Literacy Community of Practice. Originally formed in 2009, the group was dormant for several years, but as campus conversations began to heat up around the chapters being authored for accreditation, as well as hearing about information literacy in subject literature and discourse (outside of the typical library literature), the group was reformed in 2011. Made up of 8–10 members from various disciplines (with a majority from writing/communication studies), this group would serve as a sounding board for our activities during the project, piloting surveys, and sharing their own stories and experiences with information literacy. Despite the name of the group and the well-meaning intentions of its members, it was evident in our first meeting that the definition of information literacy was up for

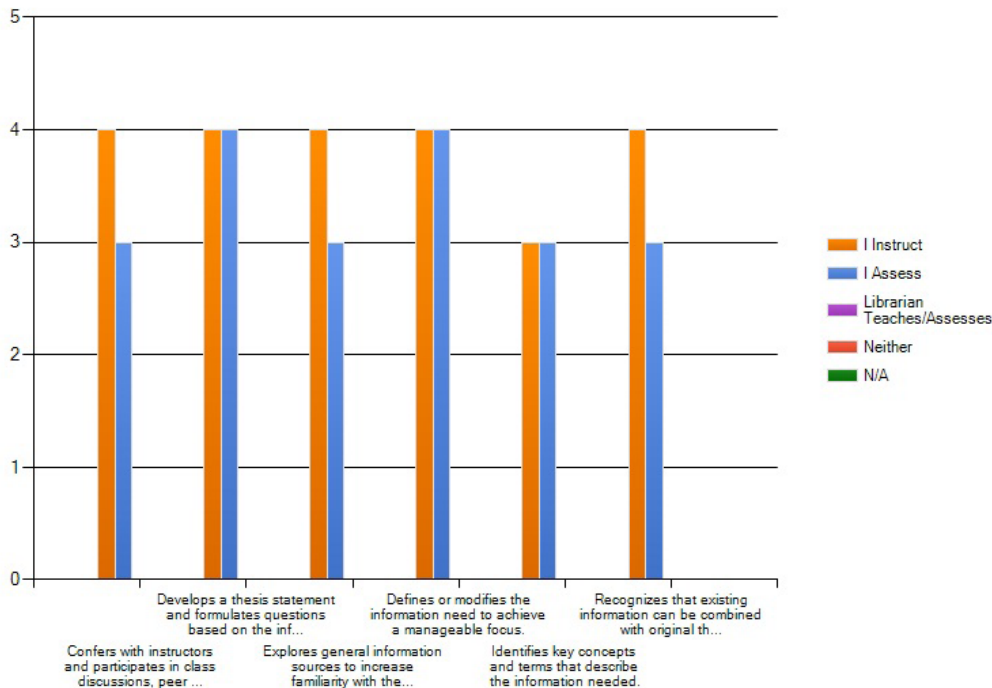
debate; what many considered to be information literacy was more in line with traditional, reading-based literacy (such as comprehension, reading levels and skills, and basic writing abilities). However, after several discussions and sharing of standards and assignments in addition to showing examples of other information literacy programs at libraries and institutions, and piloting the faculty survey with the group, we began to embark on a wider-scale implementation of the survey, scheduling focus groups and interviews, and even making arrangements for an information literacy symposium, to be held in the spring of 2013.

Preliminary pilot data from the community of practice faculty members (n=6) in the group indicated:

- 50% reported that they encouraged students to contact the librarian for help prior to class beginning, as well as follow up with a librarian or seek help in the library
- 30% reported that they only did in person, one-shot sessions (more than 1 hour) with the librarian from their department

The faculty were also asked to record the activities that they taught and/or assessed, or the librarian taught and/or assessed, based on the five standards as outlined by the ACRL “Information Literacy Competency Standards for Higher Education” (Section III of the “Analyzing Your Instruction Environment” workbook). This was a slight variation from the original format, which asked for recording of particular course numbers or names; instead, online surveys were created to reflect each course level (100, 200, etc.); all student learning outcomes were included under each performance indicator. A skip-logic question was used when faculty indicated which level of course that they would be recording their activities, to correlate the data with outcomes for that level. Examples of both teaching and assessment activities were presented to the faculty in the instructions.

Figure 2: (Standard One, Performance Indicator One): The information literate student defines and articulates the need for information.



Preliminary results from the standards and learning outcomes section revealed that the majority of teaching and assessing of information literacy skills was being conducted by the faculty, and very little was part of the librarian's role in the class. In fact, in several instances, there was no indication that a librarian was included in any of the performance indicators.

Librarian Surveys

Instruction librarians were asked to fill out one survey for one class (per level), recalling their experience for the fall 2012 semester only. University Library employed 23 subject liaisons at the time of this survey, who cover 62 areas of study (departments and schools) across the IUPUI campus. Because many liaisons cover multiple subject areas, our return rate varies depending on level of instruction (e.g. 100 Level courses, N=20 (86%), 300/400 Level Courses, N=16 (69%), etc.). Additionally, not all liaisons answered surveys for each level of instruction, as they may not participate in teaching a graduate course, but may focus more heavily on first year or capstone (300–400 level courses). Therefore, our return rate was approximately 41.8%, which is significantly higher than typical survey response rate expectations. But,

because not all liaisons were considered eligible for each survey, nor were they required to answer surveys for each course level, it is difficult if not impossible to give a definitive number in terms of teaching and assessing activities. Most surveys returned were at the 100 level, due to the inclusion of subject liaisons in the University College courses (UCOL) and Themed Learning Communities (TLCs), as well as school or department learning communities. This also represented the highest numbers of multiple class visits (78.9%), as well as the highest percentage of teaching and assessing all of the performance indicators, across all standards.¹⁰

Student Surveys

Finally, in the spring of 2013 the campus institutional research office agreed to pilot a set of questions in the student year-end survey. Through our collaborative efforts with this office, it was determined that only a limited number of questions on the current survey reflected any kind of information literacy, library resources, library visit, or librarian instructional activities. We looked at the alignment of the ACRL standards with our own campus-wide undergraduate outcomes, and utilized a self-ratings scale of the students'

effectiveness with regard to information literacy skills.

- Approximately nine out of ten respondents (n=952, response rate 22%) rated themselves as effective or very effective with regard to their ability to identify sources of information that are most appropriate for a project or recognize which ideas or materials need to be fully acknowledged to avoid plagiarizing.¹¹
- However, additional data collected from the survey indicated that many of the students considered themselves as the most common method or way that they gain information literacy skills, with librarians falling into fourth place behind peers and faculty.¹²

Our assertion is that because of the population sampled (the majority of students were in their third and fourth years of study) and through additional psychometric analysis, we will need to consider revising our questions to correlate with the outcomes related to gains and skills levels versus self-perception, as well as modify some questions for ease of understanding. Our biggest victory in this part of the project was gaining the understanding and support of the institutional research office, establishing collaborative relationships in assessment of information literacy skills, and further diffusing the idea that information literacy is a basic building block of student learning and success, which are well beyond the initial survey results.

Collecting Data

Through these surveys and other data points across campus, it is apparent that utilizing the entire workbook was a vast undertaking, and the project is still in process. After the grant was approved, we began the arduous task of thoroughly reviewing each section of the workbook, and determining how best to either a) assign roles, b) skip and return at a later date or c) prioritize what needed to happen first. Part of the grant funding included being able to hire a graduate assistant, which then eased the load for many of the simple data collection pieces. Many campus departments and offices have the data housed in reports, repositories, and databases, but they had never been collated in a way to reflect the experience of the learner (from the library perspective); the methods and modes of instruction (from the student perspective), or how

the librarians teach and assess their instruction sessions (from the faculty perspective). One of our early activities was to divide out each section in terms of “responsibilities,” “resources” and “implementation.” We had to give periodic updates to library administration as well as the PRAC committee, and file for IRB approval for the faculty and student surveys. In the beginning of the workbook, it states that this is not an easy process, and perhaps to warn those who are ambitious or crazy enough to attempt this project, to allow for enough time to thoroughly utilize each piece (or abandon those that don’t apply). We have made many adjustments to formats and data collection activities, graduate student responsibilities, and numerous other activities too onerous to share here.

One considerable bright side to the collection of this data is that we will have a place to start when the time comes to re-evaluate, and a place to point to when having discussions with various faculty and administrative constituents across campus. It is worth noting that in our proposal, we suggested a 3 to 5 year re-examination schedule, to remain in line with current strategic plans and goals being discussed across our campus. The final report will point to competencies and deficiencies, and possibly put structures in place that support and mobilize the information literacy program, in addition to suggestions for improvement strategies for instruction, assessment, professional development, or administrative support.

One semi-successful attempt at gathering input from faculty, students, and librarians through focus group “conversations” forced us to abandon the idea of further qualitative data; this was unfortunate, in that the small number of participants that attended yielded answers that would have been valuable in learning more about attitudes and perceptions in relation to library and information literacy. One participant indicated that prior to one of the librarians coming to her class, she wasn’t aware of the services we provided, and she didn’t think that the preliminary tutorials offered in her class were enough—she wanted more to support her during the in-depth research process; she wanted librarians to be “walking encyclopedias.” We are considering using the responses to our questions in a case study article, and possibly gather further interviews in the upcoming year.

Reporting the Results

One of the goals that was first planned was to refocus attention to the 2009 projects and strategies on our library home page; through early discussions with the Information Literacy Community of Practice, it was evident that many of them did not realize that we had made great strides in aligning the national and local information literacy standards, as well as examples of assignments and documents supporting information literacy instruction. However, it was also quite clear that our efforts need to be ramped up significantly in order to be more visible across the campus, and allow us to enter into the national discourse about transparency and visibility of instruction and assessment efforts.

The NILOA (*National Institute for Learning Outcomes Assessment*) offered the necessary structure

and background needed to collect our project's data, documentation, standards, mission, and assessment evidence.

Established in 2008, the mission of the **National Institute for Learning Outcomes Assessment (NILOA)** is to discover and disseminate ways that academic programs and institutions can productively use assessment data internally to inform and strengthen undergraduate education, and externally to communicate with policy makers, families and other stakeholders. NILOA assists institutions and others in discovering and adopting promising practices in the assessment of college student learning outcomes. Documenting what students learn, know and can do is of growing interest to colleges and universities, accrediting groups, higher education associations, foundations and others beyond campus, including students, their families, employers, and policy makers.¹³

Figure 3: IUPUI University Library NILOA Framework



While our former information literacy site held valuable information, it was indistinguishable from lists and links on our homepage, and offered little in terms of connections with curricular literature, teaching methodology, or competencies. The framework now includes documentation from the environmental scan/self-study, as well as

professional literature and standards, examples of assignments and assessment activities, and other cross-disciplinary and campus initiatives. Our hope is that this format is much more engaging and accessible not only to our campus community, but is recognizable in the larger academic discourse as a dynamic way to disseminate assessment

documentation, information literacy standards, connections to library resources, and ultimately, the value of our services to faculty and students.

Aiming to the Future

Start conversations with campus administrators, what accreditation teams are looking for as evidence of student learning/engagement with library services early, and what information literacy means to faculty and administrators across campuses. More visible information literacy material, including assessment practices and assignments, as well as communication about our curricular approach to instruction, are comprised in the following outcomes:

- Revision/re-visit data and surveys in 3–5 years, depending on final recommendation from PRAC, as well as yearly or semi-yearly reporting like other academic units
- A centralized location for documenting statistics, reports, and activities
- Determine who is responsible for representing how the library contributes to student learning, and how to track, record, display, and make decisions, based on learning outcomes, appropriate qualitative and quantitative research, and flexibility to revise, plan, and allocate according to needs.¹⁴

Through these efforts, our focus will be not on issues of data collection, transparency in documentation, and better practices for collaborating and communicating with faculty, as we have begun to establish these relationships and avenues to support these processes. The potential results of this project include refining the marketing, programming, and services around demonstration, data, and discussion, rather than around speculative and anecdotal information. Our mission as the A-Team is far from complete; we just hope that we get picked up for another season.

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Conversations with Students: Assessment Leads to Adjustment

Amalia Monroe-Gulick and Julie Petr
The University of Kansas, USA

Abstract

In 2010, the authors conducted a pilot research project intended to identify the information literacy strengths and deficits of incoming graduate students in the social sciences. The results of the research suggested that the students entered with adequate skills but would benefit from information literacy instruction delivered in a discussion group format which would focus more on the scope of the research process, rather than the development of individual research skills. The authors offered this type of programming for graduate students entering a social sciences discipline in the fall of 2011 at the University of Kansas (KU). The authors found that the first-year graduate students were primarily concerned with the academic rigors of graduate school and were not prepared to consider their own "research arcs." The authors also discuss the value of self-evaluation and reflection in the provision of information literacy instruction. This paper describes the research project, the results, and the implications for future programming.

Introduction

In 2010, the authors conducted a pilot research project intended to identify the information literacy strengths and deficits of incoming graduate students in the social sciences.¹ The authors administered semi-structured interviews with 15 incoming graduate students in the social science disciplines of anthropology, political science, psychology, and sociology. The interviews were coded against the Association of College and Research Libraries' Information Literacy Competency Standards for Higher Education (ACRL Standards)² to determine the level of research skills the incoming students had demonstrated in a previous undergraduate project. The results of the research suggested that the students entered with adequate skills but would benefit from information literacy instruction delivered in a discussion group format which would focus more on the scope of the research process, rather than the development of individual research skills. The authors offered this type of

programming for graduate students entering a social sciences discipline in the fall of 2011 at the University of Kansas (KU). The purpose of the project was twofold: (1) to implement information literacy programming for incoming graduate students that emphasized a user-centered approach and (2) to utilize assessment techniques throughout the course of the programming that allowed for a greater agility and responsive to the dynamics of the group.

The goals of the program:

1. Create user-centered Library Instruction to allow the format to be more "student directed." The authors implemented a discussion group format because it creates a more relaxed atmosphere and supports the academic socialization of the students.
2. Increase flexibility and agility in instruction programming by utilizing different assessment techniques to adjust the plans for the next session, as well as during the session by actively listening to the students and deliberately asking for their feedback.
3. More closely align library involvement with the needs of new graduate students because the authors theorized that traditional library instruction was not the most effective format to assist new graduate students adjust to the different needs and challenges of research at the graduate level.

This paper describes the research project, the results, and the implications for future programming.

Methodology

The authors, two librarians with liaison responsibilities in the social sciences, applied for and received approval from the University's Human Subjects Committee to conduct research with the graduate students. The students were selected based upon the discipline they

were entering because this field of study is representative of the social sciences. The department cannot be identified for reasons of confidentiality. Nine students participated in the study. Eight of the students were just beginning the MA program; one of the students was entering the program as a PhD student.

In the summer of 2011, the authors contacted the department's Director of Graduate Studies with the programming proposal, describing the findings of the previous research project, the goals of the proposed program, and the scheduled discussion topics. The authors planned four sessions, in which these discussion topics were to be addressed: the students' research processes, the research lifecycle and an orientation to KU Libraries' resources, expectations of graduate school, and one follow-up session to assess the usefulness of the program.

Three sessions were held in a Departmental classroom, following a pro-seminar class in which each student was enrolled, with one session held in the library. Each session lasted approximately one hour. The discussion groups met once during the months of September, October, and November of 2011. A wrap-up session was held in February, 2012. The sessions were recorded and transcribed by a professional transcriptionist. The authors jointly coded and analyzed the transcripts using Atlas-ti, a qualitative analysis software program.

Limitations

The small number of participants in the study and the nature of qualitative assessment methods are limitations because they do not allow for strong generalizability of the results. The size of the group, however, was adequate for the purposes of this pilot study, which was to implement small group discussion with an incoming graduate cohort in order to meet the information literacy needs of this group. The program design utilized elements of qualitative research methodology that allow for a deeper and richer understanding through in-depth discussion, and yielded results that can certainly be implemented in one's own practice of librarianship.

An additional limitation was the lack of formal assessment following each discussion group meeting. The authors assessed each session

informally through reflection of the group meeting, but did not develop a more formal assessment tool. Finally, because of technology constraints, the authors coded the transcripts together so inter-coder reliability was not possible. Jointly coding the transcripts, however, was beneficial because it allowed the authors to creatively brainstorm and generate free-codes that might otherwise have been missed.

Plan

The authors speculated that a discussion group format in library programming for new graduate students could be more effective than traditional orientation and/or one-shot library sessions. The original plan was to run a series of discussion groups that focused on three major topic areas:

1. Expectations of graduate work
2. Assist with students identifying their own approach to research in order to develop personalized instruction and research assistance
3. Assist with the academic socialization process—helping students adjust to graduate school

Assessment of Sessions

The basic structure of each session was outlined before any discussion groups were conducted and more detailed plans were designed after each previous session. This approach allowed the authors to adjust the content based upon the results of the previous session, including what topics the students focused upon and their stronger areas of interest. The coding process also helped to assess how effectively the authors made adjustment during each session.

Session 1

The content of session 1 was based solely on the results of previous research, as the authors had not yet met the group. The session outline was adapted from the interview questions from the first project that focused on understanding the students' current approaches to the research process. The authors implemented this approach because of positive feedback they received from participants in the first phase of this research project. Several of these graduate students indicated that they had gained insight into their research processes by answering the semi-structured interview questions.

Original Session Outline

Graduate Discussion Group, Session 1

1. Describe a recent research paper you wrote.
 - What was the assignment?
 - What were the requirements of the paper?
 - Amount of guidance from the instructor?
2. How did you start?
 - Why did you choose to start that way?
 - What was your next step?
3. Did you use an outline?
4. Did you begin with a defined research question? If not, how did you define the question?
5. What kinds of resources did you need to find (scholarly, statistics, etc.)
 - How did you determine this?
6. Where do you go (electronically or physically) to collect information?
 - How did you choose the sources?
 - How did you decide whether a source was useful? Appropriate?
 - Why did you choose that source over another one?
 - Did availability affect your decision to use a source?
 - Was it important to find only full-text articles?
7. How did you know when you were done with the research?
8. Did you ask for assistance? Discuss the project with anyone?
 - From whom? How did you decide who to ask?
 - What kind of assistance did you request?
9. Anything especially challenging with the assignment? Did anything make you nervous or anxious during the research?
10. Did you find the assignment personally interesting? Why or why not? (Did you get to choose the topic or was it assigned?)
11. How do you think graduate work differs from undergraduate work?
12. Have you ever had a library session in your academic career?
13. Did you receive library instruction for the paper you described?
 - If you have had a library session, how has it prepared you for graduate school?
14. Do you have any final thoughts or comments about the research process you would like to add?

differently with the group of students than in the previous individual interviews. These observations, which were noted after conducting the first session, were used in the development of the content/outline for the second session. The authors had three main observations following the first session.

First, the students' descriptions of their research processes were similar to that of the students in the original research project. They demonstrated similar understanding of the research process. Second, though the students did discuss their research processes when asked by the authors, the students were more focused on the academic workload and not their research. The students kept leading the discussion toward current questions and anxieties related to graduate school, and not about their current or future research. This led to the third observation noted by the authors: the important interaction between the students.

The group dynamic was that of "cohort as teacher." The students helped one another in multiple ways, including basic program orientation (what classes to take, degree requirements, etc.), and sharing similar anxieties and struggles regarding the academic expectations they were all facing during the first few weeks of the semester. The students themselves were helping each other acclimate to graduate school, and the authors only facilitated this type of interaction. This emergent role of librarians as "facilitator" differed from the original plan to more overtly assist with the acclimation process.

Session 2

The second session was held in a library meeting room with the library web site projected. Following an informal assessment of Session 1, the authors began to structure sessions in such a way that emphasized the role of the cohort in learning and teaching rather than the emphasis being entirely on the librarian as teacher.

Original Session Outline

Graduate Discussion Group, Session 2

Discussion of Research Lifecycle and KU Library Resources Orientation

The actual group discussion ended up much

Students will be asked before the session to submit

questions related to the research lifecycle and library resources so this meeting can be tailored to their needs.

Revised Session Outline

Graduate Discussion Group, Session 2

Discussion points

1. How do you use the library?
2. What databases do you use?
 - How do you choose (or always use the same ones)?
 - Search strategies?
 - i. Boolean
 - ii. Pre-plan?
3. What types of library services do you use?
 - ILL
 - Document delivery
4. Less likely to use a resource if it is not full text?
5. How do you learn about new databases, etc.?
6. What do you want to know about the library?

The major shift from the original plan was that it was less structured than the first session in order to facilitate the goal of “student directed” session. The need to ensure that the librarians running the discussion group fully utilized this approach became increasingly apparent after the first session because of the way the students themselves changed the topic of conversation indicating what was important to them, and the valuable mechanism of “cohort as teacher.” Another shift that took place was the elimination of the formal discussion points related to the research lifecycle. This was originally planned as a major theme but after the first session it seemed outside of the scope of the interest and focus of the students. Finally, the authors had solicited questions from the group prior to the session, but received none, which hindered the implementation of the original plan; therefore, the authors identified initial library topics to be covered.

Some of the questions raised by students during the session were unexpected, and might not have been asked during a more traditional session. This observation helped to illuminate specific topics that librarians do not always consider covering. One student asked clarification questions about how the subject guides were arranged because they were conducting inter-disciplinary research and found it challenging to find all of the relevant resources. This was an area that the authors had not planned

to discuss, but was insightful and would most likely not have come out during a traditional one-shot session. In addition, this information has broader implications on how libraries develop subject taxonomies of their web based subject guides.

The authors did not cover basic searching skills because of comments made during the first session, as well as the lack of questions from the students about searching. It is possible that students who did not feel comfortable with search skills did not ask questions. Citation searching and other advanced topics, which were deviations from the original plan, were discussed because of the direction of student discussion. This demonstrates the capability of librarians to achieve agility and flexibility during library instruction sessions by listening to students. This is a difficult task to achieve and will be further discussed in the post-session assessment section.

Session 3

The original plan for Session 3 was not significantly altered based upon the outcome of the second session. The planned content aligned with the course of student conversation in the previous session. In many aspects, the students reflected “conscious incompetence” as described by Beeler, in which first-year graduate students question their abilities to be successful.³ The authors knew that students at this stage in their graduate careers had anxieties and they chose to focus on this during session three. But, it was unexpected that this would be a dominant theme throughout all the sessions.

Original Session Outline

Graduate Student Discussion Group, Session 3

Discussion of Graduate School Expectations and Research Anxiety

- Rigors of graduate work
- Identifying faculty mentors
- Peer-support

Revised Session Outline

Graduate School Expectations and Research Anxiety

1. Rigors of graduate work
 - Identified differences yet?
 - Has your approach to research already changed? If so, how?

- Struggles with research?
 - Struggles with coursework?
 - What support mechanisms would you like? How are you currently supported by your department?
2. What are you most anxious about regarding graduate school?
 3. What are you most comfortable with?
 4. Are you planning your research trajectory (beyond individual class papers)?
 5. Identifying faculty mentors
 - Have you identified? Met with? What was your process?
 6. Do you have questions about academia?
 7. Peer-support
 - Do you feel a part of a cohort?
 - Important?

The course of the discussion followed the above plan fairly closely. The students were definitely willing to discuss their anxieties, and were still not focused on their overall research trajectories. Rather, it was at the point of the semester that they were mainly focused on the reading and the papers they had due at the end of the semester.

Follow-up/Post-Session Assessment

The use of qualitative assessment methods after the final session proved to be insightful and useful for making continued adjustments to programming for new graduate students in the social sciences. The process also provided significant insight and broader implications into types of assessment librarians can conduct to improve their overall teaching skills for all user populations.

Session 4

Session 4 was an opportunity for the authors to receive feedback from the students about the previous semester's sessions, as well as to hear the students' general reflections on graduate school. During this session, the authors still attempted to focus on the students' approaches to research. But, the detailed plan conceived after the first three sessions reflects the shift in understanding about the significance of the anxieties related to graduate school.

Original Session Outline

Graduate Student Discussion Group, Session 4

Wrap-up Discussion, how/if research processes changed, what/how changed, what would they

have like to have known earlier

Final session with Sociology graduate students – February 21, 2012

1. Has your approach to research changed? How?
2. Was there anything that your faculty expects you to know how to do that you didn't know?
 - Skills?
 - Knowledge?
3. Are you planning your (program of research)?
 - What was the process for doing this?
 - What support mechanisms are in place? (seminar, etc)?
 - Would there be a point of time when it would be beneficial to talk with a librarian about resources you might need?
4. What have been the most useful supports for your transition into graduate school?
5. Anything lacking?
6. What kind of library session or programming would be most beneficial? (one-shot, or discussion groups)
7. Is it important to feel a part of a cohort?

One of the most significant trends identified during the follow-up session was the shift in the students' perceptions of librarians. During the first session, the students did not have many positive comments about their past experiences with librarians and the assistance that libraries can provide. One student described⁴ an interaction with a librarian he had had as an undergraduate.

I was required to meet with a reference librarian for my project. I don't know, I don't think it was especially helpful though. That's part of the reason I spent 30 hours . . . in the wrong area. (Session 1, 156)

Another student commented on the lack of usefulness of librarian assistance.

I don't use it [librarians]. The knowledge held by librarians is far too general and too broad to be able to pinpoint . . . the specific point . . . that your question is trying to get to. (Session 1, 162)

However, during the follow-up sessions the students' perceptions had changed for the positive. One participant discussed the role of the librarian,

Like with me it's how the hell do I start this

research? What do I do? I know to get sources. I know I have that librarian available to me, so that's very comforting in that regard. I mean as far as . . . classes to get you started in research . . . that's good if it's broad but. . . when you get specific in the discipline you kind of need your own thing and that's where the department's got to come in and help out with that. (Session 4, 212)

This quote is significant because it demonstrates the role the librarian can play in a student's academic career compared with the faculty. Graduate students' relationships with faculty are the most significant in their careers, but the library can play a role that does not conflict or overshadow the faculty role.

Emergent Trends

First Semester—Anxiety Not Research

One of the most striking results from assessing the discussion group was the lack of focus by the students on their own research agenda during their first semester. The original plan for the discussion groups was to create a forum for students to discuss their research, including their areas of focus, and their individual research processes, and to help them understand the entire research lifecycle. However, the students were not concentrating on their own research during their first semester; rather, they were predominantly focused on adjusting to the rigors of graduate school. In his research, Alexander noted that "adjusting to graduate-level academic demands" was of primary concern to students transitioning to graduate school.⁵ When analyzing the aggregated coding results, the code "approach to research" was used 19 times, but two different anxiety codes were used a total of 27 times, indicating the prevalence of this theme, which was not anticipated to be a major discussion topic during all of the sessions. In fact, the specific code of "reading" was a free-code (not pre-coding identified), indicating the surprising inclusion of this topic.

What was surprising from the first session on was the concern the students had regarding the reading assigned in graduate school, both the amount of reading and the ability to fully comprehend the material. There was much discussion among the

students during the first session about the amount and content of the reading. One student described the struggles he was having:

It's not the next step after undergrad, at least from what I've experienced so far. It's just completely different. There's at least ten times more reading and half the amount of classes and no one really sits down and says oh, this is how you read critically. (Session 1, 240)

The discussion of the struggles with the course content continued into the third session, which was held in November of the first semester. One student stated:

Well, I'd say that's exactly right. We have a lot to read and it is hard, and then you're expected to understand it before you come to class. And I think that's just the most rigorous part of graduate school right now. (Session 3, 38)

The third session was also where the students more clearly stated where they were presently in their academic careers:

In a lot of ways I feel like it's kind of a caught between, so especially at the MA level, a lot of the professors have said don't be afraid to branch out from what you think you're interested in because you may discover something new. But I do have an idea of what I'm interested in, but I do want to branch out, but there's only so many hours in the day and I'm not immortal and so it's difficult. It's difficult to balance those two. (Session 3, 114)

Another student added:

I'm still not thinking long term. I'm still trying to figure out my classes for next semester. I mean it's, you know, the light at the end of the tunnel is . . . very far off. It's not something that I focus on day to day. (Session 3, 104)

Another student commented:

. . . I definitely wasn't prepared for . . . what was expected of me and. . . I'm not entirely sure of what is expected. But being with a cohort and people in a similar situation helps. But I do feel like I am an imposter sometimes, even among the cohort. I look at other people around me and I'm like holy crap. You're really smart and I have no idea what's going on. (Session 3, 149)

The students' anxieties continued into the second semester during the fourth session, which was held in February 2012. They spent little time focusing on the questions regarding their own programs of research, even though they all were taking a course that was designed for them to be working on their MA theses, with the end result being a proposal. This is not to say that the students were not aware of the scholarly expectations of them in graduate school. One student stated in the fourth session:

Well, it goes back to the article we read a couple weeks ago . . . This is what you're learning ostensibly. This is what we're teaching you. Well, it's about these theories, but what you're also learning that's not said usually is how to do research, that you are expected to do research. That's it. That's like why you're here. You're here to go in and to become a scholar. And this is, you know, I think that's a feature or one that maybe you wouldn't get elsewhere. If we were at a smaller school, maybe it would be different but you do in and you are training to become someone who does research.
(Session 4, 39)

Another possible way to understand the students' mindsets during this beginning phase of their careers, and why "forcing" library research may not be that effective, is because they are not just figuring how to get through the academic expectations of graduate school, but also being exposed to new ideas, expanding their interests, and more.

Librarian Self-Evaluation

Another surprising and valuable result of utilizing qualitative assessment methods was the authors' ability to assess their interactions with the students in a very detailed way. Library assessment projects often focus on the learning outcomes of students, i.e., did they learn what we wanted them to learn? Or, are users satisfied with library services? These assessments are important, but do not necessarily fully assess the librarian's delivery of instruction. Librarians willing to engage in this type of self-reflection demonstrate a dedication to their own learning⁶ and implement a method of identifying unproductive teaching practices.⁷ To assess librarian performance in the classroom setting there are other mechanisms for assessment, such as class evaluation forms and peer observation feedback. Recording, transcribing, and coding transcripts from four sessions with students allowed the

authors to take a close, and often uncomfortable, look at their interactions with students in a way they had not previously had the opportunity to do. One of the fundamental goals of the discussion groups was to make them user-centered and user-directed. Yet it became clear from the initial review of the transcripts from the first session, that the authors did not always actively listen or adjust the content they wanted to cover during a session based on what the students were discussing or how they were answering questions. To evaluate the effectiveness of listening to the students, and therefore making adjustments during the sessions, librarian questions and responses were coded as "librarian responsiveness" or "librarian unresponsiveness."

With the awareness of librarian unresponsiveness, or "one-track librarian mind," a predicament is present: content versus connection. When coding the transcripts, the authors noted several points where they interrupted the students, which is the opposite of listening to them. This demonstrates the dilemma and balance of library instruction faced by librarians. While it is important to listen to the students, librarians do have important knowledge and information to share. For example, during the second, library orientation session, the students were in the middle of discussing interlibrary loan services, when an author brought up citation software. This topic was unplanned and random. This demonstrated the struggle the authors faced. Even when trying to listen to the students and conduct a session in a user-focused format, the tendency was to attempt to deliver content deemed essential. When these instances occurred, students did demonstrate interest but it is possible that the authors cut off an even more useful and/or interesting topic for the students.

Another example of the dilemma of content versus connection was during the library session, when the authors discussed cited reference searching. This topic was not planned, nor necessarily a smooth transition but it ended up being fairly successful because the students were interested. This "magic trick" enabled the authors to demonstrate the value of librarians in their academic careers and probably contributed to the students' shift in perception of librarian assistance. These sessions are not and should not be purely about imparting all available library knowledge. They must also focus on the building

of relationships with students.

Implications

The overarching goal of the research project was to understand the information literacy needs of the incoming graduate students based upon *their own words* and to utilize various assessment techniques to increase flexibility and agility in programming. By carefully listening to the students, the authors were able to successfully identify when and what type of instruction could be most useful to the students, as well as areas for further adjustment and assessment.

One of the most important findings of this study was the discovery that the graduate students, within the first semester of their graduate program, were far more concerned with keeping up with a rigorous reading load and understanding the pressures of graduate school than they were in strengthening their research skills and developing a “research arc.” One possible implication is that a library session at this point is most likely not relevant to the students. It may actually lead to overload and be lost on the students. The authors concluded that the concept of “point of need” should be applied to graduate students, as well as undergraduate students. The first semester, especially in the beginning months, is not the optimal time to introduce students to the library. Librarians can make assumptions that brand new graduate students will want to start their own research right when entering graduate school, but, at least with this cohort, this was not the case. Rather, academic librarians may want to consider conducting *one* group session utilizing a conversation format to build rapport during the beginning of the second semester. Librarians could then schedule individual sessions with the students at the beginning of the second semester, as they begin to focus more on developing a program of research. This would allow the librarian to tailor the instruction specifically to the individual student’s research need. The students gave very helpful feedback suggesting just such an approach:

Participant 1: Yeah. I think if it was incorporated into the . . . course . . . you’re required to meet with the library.

Participant 2: Contact a librarian that you think would be useful for your project.

Participant 1: Yeah. That would be helpful.
(Session 4, 117)

Another student commented,

I think kind of a casual [library session], I mean it may be formal in itself but it has that casual feel to it, I think, is what helps. And I liked what you did. Give me a suggestion and. . . ask a few people their topics and you could do this and this and this. I found that helpful. (Session 4, 191)

Another strategy for providing instruction at the “point of need” is for the librarian to meet with the departmental director of graduate education and ask about the sequence within the program to determine when the students would most benefit from instruction, based upon their course requirements.

In addition, the observation of the authors’ struggle regarding content versus connection brought up the question: what if librarians stopped designing sessions with the mindset that this will be the only time the students will ever meet a librarian? One benefit to scheduling multiple sessions was that the authors knew that they would see these students again, though they did fall into the trap of attempting to teach the students everything. A concept for further review is the internalization of “one shot” instruction sessions by librarians, especially with graduate students. Librarians feel the pressure to make a session valuable to students because of the students’ time constraints.

The authors also noted that the cohort itself took on an important educational role. Educators have long recognized the importance of a strong cohort in helping students negotiate the difficulties of graduate school, particularly in the beginning months. This was also evident with the participants in this research study, and led the authors to consider library programming that strengthened this process. The Libraries could develop opportunities for students within a cohort to attend colloquia in which students further along in their graduate careers present and discuss their research. These colloquia could be hosted within the Libraries.

Finally, the authors recognized the essential role

of assessment, both quantitative and qualitative, within the practice of librarianship. Certainly, conducting pre- and post-tests to assess the effectiveness of information literacy instruction is valuable in the development of instructional practices. Incorporating qualitative assessment into instruction also yields important information to the practitioner. A qualitative design that incorporates looking at video or reading transcripts allows librarians to assess the implementation of their own work and could be an enlightening and valuable form of assessment.

Conclusion

The goals of this project were to create user-centered and agile library programming that more closely aligned with the specific needs of incoming graduate students in the social sciences. After utilizing both formal and informal assessment techniques the authors conclude that all of these goals were at least partially achieved but have identified areas for adjustment.

While the exact program that was piloted for this cohort of students will not be completely replicated, the authors believe that they achieved one step closer to meeting the information literacy needs of this population. The students enjoyed the less formal, discussion-based library session over previous experiences, indicating that this approach should be further conducted. The students seemed to connect more with the library and several students indicated during the fourth session that they planned to meet with their subject librarian. They did not see the value in meeting several times and would like more individual meetings.

The authors considered this pilot program a success because of the direct positive feedback from the students, as well as the observed change in the perception of the library and librarians over the course of the semester. In addition, the assessment techniques utilized by the authors provided valuable information that will be used to further adjust and improve the services provided to this user population.

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Notes

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Assessing Assessment: A Framework to Evaluate Assessment Practices and Progress for Library Collections and Services

Nisa Bakkalbasi
Columbia University, USA

Donna Sundre and Keston Fulcher
James Madison University, USA

Introduction

The purpose of this framework is to provide a toolkit to evaluate the quality and methodological rigor of Library Services and Collections assessment plans and reports. Recently, library performance measurement and assessment have seen expanding interest to provide evidence and context for library priority setting and decision making. In order to evaluate the quality and effectiveness of services and collections, the number of library assessment activities has grown exponentially. Previously, the occasional assessment task was assigned to a library staff member who had interest or a specific area of expertise. However, the demand for assessment and evaluation expertise has led to full-time positions, and sometimes evaluation units, charged with sole responsibility for library assessment and planning. Although this growing area of library management has become recognized as a legitimate use of limited resources, there is not yet a framework to evaluate the quality and rigor of the assessment plans implemented.

A fundamental challenge is that responsibility and authority for assessment activities are distributed across units, while coordination of these tasks rests with a single full-time librarian or committee. Libraries use a wide variety of methods in their assessment endeavors ranging from surveys to usability studies. Further, the areas being assessed are as varied as the methodologies used. In such a decentralized environment with diverse projects and methodologies, staff members who shepherd assessment activities may not have the attendant skills and competencies to effectively employ basic statistics, diverse methodologies, survey construction, data analysis and interpretation, and report presentation. To support, advance, and

sustain these efforts an effective structure must be put in place to assess assessment processes to ensure that libraries gather appropriate, valid, and accurate evidence to support data-driven decisions and accountability frameworks.

Approach

This toolkit provides a standardized, step-by-step mechanism to create and evaluate assessment plans and reports generated by units across the organization. The toolkit includes: (1) Elements of an Assessment Cycle; (2) an Assessment Progress Template (see Appendix A) to provide annual assessment-related information; and (3) an Assessment Progress Evaluation Rubric (see Appendix B) to be used by central entities (e.g. Assessment Coordinators or Committees) to review assessment activities. These assessment plans and reports are expected to include four key elements: (1) well-formulated assessment objectives; (2) appropriate methods and data collection process; (3) meaningful analysis, interpretation, and validity evidence; and (4) dissemination and use of results for improvement of services, collections, and the assessment process.

We have provided a general framework of assessment practice that takes you from the early stages of assessment—specification of objectives—through the later stages of assessment—maintenance of assessment practice. Assessment is a continuous cycle that begins with establishing clearly defined objectives, as the graphic below illustrates.

An important and useful place to begin the assessment process is to consider the context

within which a library system functions and operates. For example, a research library may have several locations within a large university, various libraries may reside within departments or a school, and region-specific collections may be distributed throughout various libraries. Some library programs may also maintain strong relationships with agencies external to the university. The congruence of a library's mission with that of each of the units represents an important linkage by which the maintenance and support for programs can be assured or jeopardized.

The phases of the assessment process include (1) Establishing assessment objectives, (2) Selecting and designing methodologies and collecting data, (3) Analyzing and interpreting data, and (4) Using results. Once the initial cycle has been completed, the knowledge and information that has been gained through the implementation process can be used to improve the assessment plan prior to the next cycle.

1. Objectives

The development of a design for assessment requires that we have a clear and shared idea of what it is we are trying to achieve. This is one of the most difficult but also one of the most important and rewarding stages of the assessment process. We begin by delineating the objectives of the library or unit. We find that when objectives are clearly described, the appropriate assessment methods often become readily apparent. Fortunately, in our professional world, we can find many frameworks and guidelines for best practice. We do not need to reinvent the wheel; we need to take advantage of much of the good work that has come before us. Look for established statements of goals and objectives for different units. Available standards can be identified through the ACRL, ARL, and ALA. Comparing the objectives we have crafted prior to review of established frameworks allows us to appreciate both our professional community as well as celebrate our uniqueness. Good objectives are the engine that drives the assessment process. Once the objectives are drafted and agreed upon, we encourage you to revisit them frequently to ensure that they remain aligned with actual service and resource delivery goals.

Many goals and objectives may not be easily

measured. It is very important at this stage to respect the complexity of our professional demands and aspirations. There are many important goals that are difficult to describe, let alone measure. An important program objective should not be abandoned simply because we cannot think of an easy way to measure it. The robustness of our objectives must exhibit fidelity to the meaningfulness of our professional lives.

2. Methods and Data Collection

Armed with outlined assessment objectives library staff can then attempt to identify appropriate assessment methods. As stated earlier, well-written objectives tend to clarify which assessment methods are best for assessment use. Strong, mature assessment plans are characterized by multiple and mixed methods of assessment. They do not rely on one single assessment tool to provide them the information they need about their many goals and objectives. Libraries with newer assessment plans, with little assessment experience, often begin the process with selected response user satisfaction surveys. Some libraries find that there are methods available that can meet their needs, such as the ISO performance indicators for activities commonly undertaken or provided in libraries. Or there may be instruments (e.g. LibQUAL+®) that have been offered by a national association, such as the Association of Research Libraries (ARL). However, many libraries have a strong tradition of using "home-grown" assessment methods, which may include focus groups, suggestion boxes, observation, interviews, and usability studies. What is currently available on the marketplace should not influence the specification of assessment objectives or the selection of what method is best. It is not necessary to develop a different method for each objective. For example, LibQUAL+® is designed to assess a variety of objectives, and a performance task can be designed to address several objectives. Some objectives are simply not amenable to measurement with a multiple-choice or selected-response instrument. At this stage, it is prudent to consider what type of evidence would be most valued and meaningful to those we hope will actually use the results. There are many assessment methods from which to choose: usability tests, way finder studies, performance tasks, surveys of different groups, focus groups, or interviews. It may not be possible to develop methods to assess all of your objectives right away. The important

thing is to get started and to develop a plan to do so. In addition, it may not be feasible to assess all goals each year. However, it is important to create a systematic plan to meaningfully assess all goals on a reasonable schedule.

We often find that commercially available instruments are not appropriate for assessment of our services and collections. By creating our own instruments, we can tailor them specifically to the goals and objectives of each library activity. We can also pilot and revise the instruments to assure they have sufficient reliability and validity to meet our needs. There are many available resources to learn about reliability and validity (e.g. Crocker & Algina, 1986); however for the purposes of our discussion, reliability provides evidence of score stability and consistency over time, items, raters, etc. Validity estimates provide evidence that our scores are meaningful—that we are actually measuring what we intend. Being able to develop and modify our own assessment instruments helps us to maintain the flexibility we need to have vigorous programs that can respond effectively and efficiently to changing demands and developments.

Assessment coordinators should assist staff with the selection and development of all assessment methods to assure that the methods used for service and resources assessment are sufficient to the task. The purpose of assessment is to provide information to facilitate improvement of services and collections. Central assessment entities should work with staff to achieve sufficient reliability and validity of assessment methods, as it is essential to achieve a high standard of measurement quality to allow for confident inferences and actions based on these methods.

A helpful clue at this stage, is to ask our colleagues when considering the potential findings, what result would you find acceptable? What result would you consider to be a danger signal? By establishing community expectations in advance of data collection, we will find much greater interest in the results and a much more meaningful framework for interpreting those results.

Once assessment methods have been selected, it is necessary to decide when it would be most advantageous to administer them. Data collection

occasions should be decided after a careful review of all events listed on the campus calendar(s) (i.e. academic and events calendars). For many assessment objectives it may be useful to collect data during a typical week in the fall.

A well designed data collection plan enables those involved in the research to more accurately analyze and assess their work. In addition, assurance that your sampling plan can withstand the critical scrutiny of your stakeholders, and particularly by potential data users, is critical. Failure to achieve quality through each of these assessment process elements will allow your stakeholders to legitimately dismiss the assessment process, your data, and results that emanate from them. We cannot afford to waste the time, energy, and resources we will invest in this important work. It is important to make a commitment to quality in everything that we do.

3. Analysis and Interpretation of Data

After data collection is completed, data is analyzed and prepared for reporting. This phase of assessment concerns how data is evaluated and interpreted into meaningful and significant conclusions that stakeholders can understand and use. It is important to emphasize that libraries should use results to make inferences about their objectives. Without a clear link between the results and the objectives, these inferences become much more difficult. Ensuring reliability and validity of the data are equally important during analysis and interpretation as it was during data collection. When there is strong evidence of validity, stakeholders will be able to accurately assess, replicate, and disseminate their results. We will be able show corroboration of findings across methodologies and/or with existing data and observations of others. Assessment coordinators are primarily responsible for ensuring comprehensive, appropriate, and accurate data analysis.

Interpretation of data should be a shared responsibility of the assessment coordinator with our community of practice; this will enhance the potential use of our findings to influence improvements in service delivery and collections. At this stage, it is important to be honest about limitations. If the administrative procedures or assessment tools did not operate as planned, now

is time to clarify and take action to address these weaknesses. These “problems” lead directly to improvements in our instrumentation and the quality of our procedures. We may also discover that we were experiencing great difficulty because we were targeting a poorly specified objective. Greater clarity in specifying our objectives is an outstanding outcome for a beginning assessment cycle. We should not be discouraged; this is an important and highly valued assessment outcome.

4. Use of Results

It is not enough to lay the groundwork for methods and data collection, and employ appropriate statistical analysis and interpretation, then expect everything to improve without any further work. A communications plan should be developed and implemented to share assessment results with all stakeholders, particularly those who are charged with library programs and resources.

There is little point in having an assessment program unless the results are used to make improvements in services. The final stage of assessment is to incorporate results in the planning and governance structure of your library. It is necessary to demonstrate how the library’s assessment results have been used to contribute to service and collections improvement and enhanced user experience. Examples of actions taken by the library might include modification and/or additions to collection areas, library hours, learning commons models, delivery of services, or instructional changes. As stated earlier, assessment results should also be used for improvements to the objectives, assessment plan, and its implementation. However, we must also note that assessment is a continuing cycle; we rarely achieve true excellence in our assessment design in the first iteration. Our usage of our findings should be weighed with our confidence in the soundness of our objectives, methods, data collection, analyses, and results. Are our methods and results of sufficient quality to warrant the inferences we wish to make? This is a community judgment and a most important component of our assessment process and the development of a true assessment culture.

Conclusion

Assessment practice is rather like gardening; there are seasonal planning, maintenance, and other

vital activities that are prerequisite to success. If we wish to see a bountiful harvest, we will need to expect and plan for the inevitable weeds, insects, and creatures that hope to feast on our plantings and growing crops. We will need to be vigilant and protective to sustain healthy growth. A good garden becomes more established over several growing cycles.

Once the assessment design has been developed, implemented, and refined, the maintenance of practice must be addressed. There are many components of this maintenance procedure that assessment coordinators could assist with, such as archiving methods, instruments, and data. Developing a tradition of reporting both in written and oral forms can build our assessment culture and sustain our practice. We need to remember that quality assessment is a highly valued form of scholarship. We can and should present and publish our practice, process and results to contribute to our professional scholarly communities. This is also an important means by which we can recruit and retain assessment partners across our libraries and spanning our campuses.

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Appendix A: Assessment Progress Template

Contact Person:

Contact for this library or unit (e.g., assessment person for the library or unit)

Year:

Year in which you anticipate implementation of this assessment plan.

Library or Unit:

Name of the library or unit being discussed in this assessment plan.

Library or Unit Description:

This should include a summary of the library or unit that is being assessed (a paragraph or two). This section should provide a general understanding of the services, collections, spaces, and other activities (e.g. unit acquires scholarly content, manages digitization efforts, organizes and supports physical library collections, and is responsible for the system-wide negotiation and licensing of digital materials) and how it is implemented.

Description of Target Population:

Describe the general population that uses the services and collections (e.g., faculty, students, staff, external users, etc.) of this population, how many are anticipated to take part in the assessment? Provide any relevant information regarding this population that may influence assessment results.

Objectives:

All of the objectives of the library or unit should be listed in this section. The stakeholders of the services and collections should agree upon these objectives.

Examples:

Objective 1: The users are satisfied with the library services as a whole and/or with different services of the library/unit.
Objective 2: The special collection unit strives to best fit the collection to the requirements of their intended users.
Objective 3: The University Library provides open hours that correspond well to users' need.

Which Objectives are to be Assessed This Year and Why?

Typically, libraries or units have several objectives. It is not necessary to assess each objective every year. In fact, it is best to prioritize the objectives and assess only a few each year. Given that, provide a brief explanation of why particular objectives are being assessed this year.

Methods:

Performance Measure	Corresponds to which objectives	Type of Measure	Data Sources and Data Collection Process	Targets for Measures
LibQUAL+ Survey	Objective 1	Indirect	Census of faculty, students, and staff	% survey participation rate 85% will report being satisfied or very satisfied

Performance Measure	Corresponds to which objectives	Type of Measure	Data Sources and Data Collection Process	Targets for Measures
Percentage of Required Titles in the Collection (ISO 1.1.2)	Objective 2	Direct	Random sample of titles required by at least one user	
Hours Open Compared to Demand (ISO 1.3.5)	Objective 3	Direct	Random sample of users	

If an assessment method is administered, a detailed description of it should be provided, including:

- What is the name of the instrument/task/method (e.g., LibQUAL,)?
- Is the instrument commercially or non-commercially available (i.e., pay for it or free)?
- Will the participants take a paper-and-pencil version or a computer-based version?
- What is the instrument measuring (e.g., user satisfaction, library's contributions to teaching, learning, and research)?
- How many items are on the instrument?
- How is the instrument scored (e.g., total score, subscales)? Are you interested in all subscales or just selected ones?
- What type(s) of items compose the instrument (e.g., multiple choice, matching, true/false, open-ended)?
- What is a desirable target, as agreed upon by the stakeholder?

What is the name of the instrument?	
Is the instrument commercially or non-commercially available?	Commercially available Not commercially available
Will the participants take a paper-and-pencil version or a computer-based version?	Paper-and-pencil version Computer-based version Other, please explain:
What is the instrument measuring?	
How many items/tasks are on the instrument?	
How is the instrument scored?	
What type(s) of items compose the instrument?	
What is a desirable score, as agreed upon by the program coordinators?	

Note: This table should be copied, pasted and completed for EACH instrument that is being used for this assessment endeavor.

Data Collection:

1. When? What is the time frame of data collection? A tentative schedule of events should be devised so that all involved are aware of deadlines. When will the objective be measured? Will it be measured on multiple occasions?

DATE	ACTION

DATE	ACTION

2. *Where and How? This part of the plan should describe where and how the data will be collected from the desired population. Will data be collected from material already in existence (e.g. COUNTER-compliant usage data, gate counts, surveys)? Where will the data be collected? Will it be collected at the respondents' convenience or at a scheduled time? Details surrounding the environment in which the data will be collected should be included here.*

Will data be collected from material already in existence?	
Where will the data be collected?	
Will data be collected at the respondents' convenience or at a scheduled time?	
Other details:	

3. *Who is Involved in Data Gathering? This section should include a preliminary list of everyone who needs to be involved in the assessment process. Who will help plan and organize the gathering of the data? Who will analyze and write up the results for the assessment? Who will be in charge of writing up the final report? This section will help to reveal the scope of the assessment and facilitate realistic expectations.*

Who will help plan and organize the gathering of the data?	
Who will analyze the data?	
Who will write up the results of the data analysis?	
Who will be in charge of writing up the final report?	

Results:

This is the section that contains all tables, figures, and interpretations of statistical analyses.

Communication:

This is the section that contains methods of distributing assessment results.

Improvement of Services, Collections, or Spaces:

This is the section of the report that illustrates how the assessment process was used to make service changes. There is little point in having an assessment program unless the results are used to make improvements in services. List outcomes (or informed decisions) that were attributable to above assessment activities. These informed decisions should be clearly stated.

Improvement of Assessment Process:

This is the section of the report that illustrates how the assessment program has been improved.

Appendix B: Assessment Progress Evaluation Rubric

I. How are assessment objectives formulated?

	Beginning 1	Developing 2	Good 3	Exemplary 4	Score
A. Clarity and specificity	No objectives stated.	Objectives are present but they include imprecise verbs and poor description of the service, collections or space.	Most objectives are stated with clarity and specificity using precise verbs and rich description of the service or collection (e.g., “The University Library will provide open hours that correspond well to users’ need.”)	All objectives are stated with clarity and specificity using precise verbs and rich description of the service or collection or space (e.g., “The University Library will provide open hours that correspond well to users’ need.”)	
B. Target users	No specification of target users (e.g., “undergraduate students.”)	Some objectives include specification of target users.	Most objectives include specification of target users.	All objectives include specification of target users.	

II. How is success in achieving the objectives measured and tracked?

	Beginning 1	Developing 2	Good 3	Exemplary 4	Score
A. The relationship between objective and measures	Seemingly no relationship between objectives and measures.	At a superficial level, it appears that the measures capture desired performance, but no explanation is provided.	General detail about how objectives relate to measures is provided.	Detail is provided regarding objective-to-measure match (e.g., specific items on the instrument are linked to objectives).	
B. Types of measures	No measures indicated.	Most objectives are assessed primarily via indirect (e.g., surveys) measures.	Most objectives are assessed primarily via direct measures.	All objectives are assessed using at least one direct measure.	
C. Targets for measures	No a priori targets for desired level of performance or rate of improvements for objectives.	There is a statement of desired level of performance or rate of improvement needed, but desired target for measures is not specified (e.g., “the library’s success in attracting users of all its services will increase.”)	Targets are defined to indicate desired level of performance or rate of improvement. (e.g., user satisfaction scores will increase 1-point from last year). “Gathering baseline data” is acceptable for this rating.	Desired targets are specified and justified (e.g., “we changed our service model and the number of turnaround time for user requests dropped 20 %.”)	

	Beginning 1	Developing 2	Good 3	Exemplary 4	Score
D. Data sources and data collection process	No information is provided about data collection process or data is not collected.	Limited information is provided about data collection such as who and how many participated in the survey but not enough to judge the veracity of the process (e.g., thirty-five users participated in the survey).	There is enough information to understand data collection process, such as a description of the sample, research protocol, and participant motivation. Nevertheless, several methodological flaws are evident such as unrepresentative sampling, research protocol for survey administration,, or mismatch with specification of desired results.	The data collection process is clearly explained and is appropriate to the specification of desired results (e.g., representative sampling, adequate motivation, two or more trained raters for performance assessment, pre-post design to measure gain, cutoff defended for performance vs. a criterion).	
E. Evidence of validity	No evidence to support validity of the assessment instrument or research methodology.	Research methodologies are weak in at least one of the areas: <i>construct validity</i> ¹ , <i>external validity</i> ² , and <i>statistical conclusion validity</i> ³ .	Most research methodologies have strength in all of the areas: <i>construct validity</i> ¹ , <i>external validity</i> ² , and <i>statistical conclusion validity</i> ³ .	All research methodologies have strength in all of the areas: <i>construct validity</i> ¹ , <i>external validity</i> ² , and <i>statistical conclusion validity</i> ³ .	

¹ *Construct validity* involves making a systematic evaluation of the accuracy and strength of the constructs (aka variables) used in the study.

² *External validity* involves making a systematic evaluation of the accuracy and strength of the ability to generalize the results beyond the study.

³ *Statistical validity* evaluates the accuracy and strength of the data analyses and statistical conclusions drawn from the study. Note that having some background in statistics is necessary before you can begin to critique statistics of a study.

II. How are results presented and interpreted?

	Beginning 1	Developing 2	Good 3	Exemplary 4	Score
A. Presentation of results	No results presented.	Results are present but it is unclear how they relate to the objectives or targets for measures.	Results are present and they directly relate to the objectives and targets but presentation is sloppy or difficult to follow. Statistical analysis may or may not be present.	Results are present and they directly relate to objectives targets. Results are clearly presented and they were derived by appropriate statistical analyses.	

	Beginning 1	Developing 2	Good 3	Exemplary 4	Score
B. History of results	No results presented.	Only current year's results are provided.	Past iteration(s) of results (e.g., last year's) are provided for some assessments in addition to current year's.	Past iteration(s) of results (e.g., last year's) provided for majority of assessments in addition to current year's.	
C. Interpretation of results	No interpretation attempted.	Interpretation attempted but the interpretation does not refer back to the objectives or desired targets. The interpretations are not clearly supported by the methodology and/or results.	Interpretations of results seem to be reasonable inferences given the objectives, desired targets and research methodology.	Interpretations of results seem to be reasonable given the objectives, desired targets and research methodology. Interpretations include how major activities (e.g. implementation of a new discovery layer) might have affected results.	

IV. How are results shared and used in improvement of the libraries and assessment plan?

	Beginning 1	Developing 2	Good 3	Exemplary 4	Score
A. Communication with library staff and stakeholders	No evidence of communication.	Information provided to limited number of library staff or communication process unclear.	Information provided to all library staff. Mode and details of communication are clear.	Information provided to all library staff. Mode and details of communication are clear. In addition, information shared with others such as library advisory committees, University administration, and other stakeholders.	
B. Improvement of services, collections, or spaces	No mention of any improvements.	Examples of improvements documented but the link between them and the assessment findings is not clear.	Examples of improvements (or plans to improve) documented and directly related to findings of assessment. However, the improvements lack specificity.	Examples or plans of improvements are documented and directly related to findings of assessment. These improvements are very specific (e.g., approximate dates of implementation and where in the library they will occur).	

C. Improvement of assessment process	No mention of how this iteration of assessment is improved from past administrations.	Some critical evaluation of past and current assessment, including acknowledgement of flaws, but no evidence of improving upon past assessment or making plans to improve assessment in future iterations.	Critical evaluation of past and current assessment, including acknowledgement of flaws. There is evidence of some moderate revision or general plans for improvement of assessment process.	Critical evaluation of past and current assessment, including acknowledgement of flaws. There is evidence of major improvements and intended improvements. Specific details are given for both.	

The Assessment Needs of a Data-Driven Organization

Lisa R. Horowitz, Jennie Murack, and Christine Quirion
Massachusetts Institute of Technology (MIT), USA

Abstract

Assessment, in the parlance of “data-driven decision-making,” is now part of the MIT Libraries’ “Desired Future State.” After a staff reorganization in July 2010, where the MIT Libraries moved from a structure based on a geographic footprint to one based on function, library leaders placed a new focus on system-wide assessment. As libraries nationwide shift from counting transactions to measuring impact and value, the MIT Libraries have taken a multi-pronged approach to assessment across the library system through the establishment of a Library Assessment and Business Intelligence function, as well as a User Experience group with responsibility for user needs and usability studies. While the results of the Libraries’ assessment activities are important in determining their future direction, so too are the lessons learned from analyzing the structure and activities of the assessment program from a broader perspective. This paper describes the new assessment model and evaluates it against internal assessment goals, highlighting its strengths and weaknesses.

Introduction

Over the past decade, libraries have incorporated assessment more deliberately into their strategic planning. What makes a library effective? What are the best uses of resources? How does it support its institutional goals? At the MIT Libraries, an organizational restructuring two years ago combined with a new strategic plan set the stage for establishing a formal assessment structure for the system. This paper evaluates how well this structure has achieved its goals through examining the methodology, engagement with stakeholders, outcomes and lessons learned from the assessment activities completed. At the same time, it describes how assessment activity contributes toward the continuing evolution of the organization and the effective assessment mechanisms that work in a distributed research library system.

Local Assessment Structure

In 2010, the MIT Libraries implemented a new vision, described in a 2009 strategic planning document,¹ called the “Desired Future State,” to guide the Libraries through the year 2015. It served as a call to action to transform the Libraries into a next-generation research organization by positioning them to bridge the gap between virtual services and a vast network of tangible collections, instruction, and support available from MIT’s libraries. In July 2010, the organization transitioned to a functional infrastructure, in place of a staffing structure that mirrored the MIT Libraries’ geographic locations on campus.

A key aspect of the Desired Future State lay in its emphasis on assessment in support of data-driven decision making, “We must use sound assessment practices to make strategic choices about where to place our resources in service to the community.”² To realize this vision, oversight of assessment was built into the new infrastructure. The Library Assessment and Business Intelligence (LABI) function was established, staffed by a half-time Assessment Librarian (.5 FTE), reporting to the Associate Director for Administration. LABI was charged “. . . to develop and coordinate an overall program of assessment across the Library system that meets the needs of the Library, and evolves in ways that continue to be relevant and useful in analysis, planning and resource allocation.”

A multitude of activities were embedded into LABI. Its primary work was to identify the assessment needs of this new organization, to coordinate assessment across all the newly established departments, to prevent duplication of work, and to encourage valid data gathering and analysis. In the new organization, the Assessment Librarian was also tasked with managing the triennial user survey, which previously had been managed by an Associate Director.

A Library Assessment Coordination and

Distribution Team (the Assessment Team) comprising library staff who were already tasked with assessment and/or data analysis in their own departments was set up to contribute to the central coordination of assessment by working with the Assessment Librarian. In total, the four Team members reported to about half of the Libraries' departments, thus tying together a variety of assessment threads: collections, instruction and reference, and access services.

At the same time, the User Experience (UX) group was formed under direction of the Associate Director of Research and Instruction Services. This group's purpose was to

... [bring] knowledge of design, usability and user research to. . . [improve] the user experience. . . by studying the needs of the various MIT communities through ethnographic/observational studies, in-depth interviews, surveys, usability tests, and more. Collaborating with other library units, [the UX group uses] this data to help inform the decision-making process about current and future library services.

The Assessment Librarian reports in part into

the UX group and thus participates in various studies of system-wide interest that contribute to assessment.

Project 1: The Pilot Assessment Plan Devising the Plan

The MIT Libraries had no formal assessment program prior to the reorganization, although assessment was incorporated into many new initiatives, and a variety of statistics were gathered regularly. Library leadership designated its June 2010 annual retreat to focus on how to approach assessment in the new organization. The Balanced Scorecard (BSC)³ was chosen as an appropriate assessment tool for a first year experiment, and the seven strategic directions defined by the Desired Future State were aligned with the four perspectives of the BSC.

Through the next few months Library Council, the management leadership group, grappled with the best way to identify objectives according to the BSC. It was challenging to develop objectives aimed at system-wide achievements within the strategic directions, while remaining within the context of work that was already planned, so that "assessment" was not seen as a project in and of itself. (Figures 1 and 2)

Figure 1— Key Strategic Directions categorized by BSC perspective



Figure 2—System-wide Objectives developed from Strategic Directions and local objectives

Strategic Direction	System-wide Objective
1. Build and strengthen relationships with faculty, students and the MIT community	1.1 Understand our users 1.2 Improve customer service 1.3 Increase awareness
2. Advocate for sound information policy	2.1 Advocate for sound information policy
3. Transform library space	3.1 Transform library space
4. Collaborate with strategic partners outside the Libraries	4.1 Collaborate with strategic partners outside the Libraries
5. Improve infrastructure for digital content management and delivery	5.1 Improve infrastructure for locating and accessing digital products
6. Enhance staff capabilities	6.1 Train and instill staff competencies
7. Create the next generation research library organization	7.1 Improve staff workflows 7.2 Increase resources and balance budgets

Adding a further layer of complexity, the new departments had already begun to identify individual priorities for the first year within their startup activities. Most of these initial goals focused on team building, modifying or designing processes, or developing new services within the new organization.

As a first step to join the initial goals of the new departments, the BSC perspectives, and the strategic directions, each department head sent a list of already planned objectives for FY11 to the Assessment Librarian. These unit-specific objectives were categorized both according to the various strategic directions to which they contributed and according to the appropriate BSC perspective. An assessment plan was written in which each department head would then assign measures and targets to these previously defined objectives. Results would be summarized prior to the next Library Council Retreat, to form a basis for strategic planning.

Implementing the Plan

The pilot assessment plan ran from December 1, 2010, through November 30, 2011. The timeline was designed so that the pilot could inform strategic planning at the Library Council retreat in January of 2012. The Assessment Team worked with the various department heads to determine appropriate metrics, tools and targets to measure each objective. The first hurdle was in defining

these targets. As part of the BSC, a target is assigned that defines success in each objective. Those more familiar with assessment were comfortable with examining data and making informed decisions about targets, but this approach was new to some library leaders. At times, assigning targets for these measures was difficult and seemed arbitrary.

Once targets were assigned, library leaders maintained momentum in their projects and accompanying assessment. Assessment Team members continued to encourage and remind department heads of the assessment goals, and to advise on data collection. In fall 2011, the Team developed a template for summarizing assessment in which the department head explained how each objective contributed to the appropriate strategic direction.

Summarizing assessment activities proved challenging in some cases where department heads were concerned about the significance of targets or measures as indicators of success, especially when the unit had moved in a different direction from the original objective. The importance of illustrating how a unit's work demonstrated progress toward a strategic direction, regardless of previously determined targets, was reiterated, emphasizing that assessment in this context was to show progress toward the Desired Future State.

The Assessment Librarian compiled a summary, framed by the strategic directions, where any unit that had contributed to that direction was mentioned. Obstacles were also described, and desired progress was discussed alongside actual successes. This summary was offered as input at the 2012 Library Council Retreat. Of the 18 possible departments, 16 participated by developing objectives, measures and targets for the year, with a total of about 30 objectives. By the end of FY11, seven of these objectives had been met (the plan was to end officially five months later); by the end of the official assessment year, 14 of the 18 units submitted a summary of the assessment they had completed. About 20 of the objectives had been met, while the rest showed real progress or had been eliminated in response to a new direction or to redirect resources elsewhere.

Assessing the Pilot Assessment Plan

Assessment plans for future years would be informed by the success and challenges of this particular pilot. The pilot assessment plan was disappointing in a number of ways. Instead of providing a striking list of achieved metrics or progress in the areas considered important to the Libraries, it provided a fragmented set of smaller successes that were important but together failed to illustrate dramatic impact. To keep the assessment plan moving forward, system-wide objectives had been aggregated and defined by the Assessment Librarian rather than library administrators. The resulting bottom-up methodology was neither truly representative of the effectiveness and success of the work done by any particular unit, nor did it give a high-level view of all the progress made in any of the strategic directions. Progress was made by the library system, but this particular tool had not provided information needed for system-wide decision making.

The pilot summary was, however, successful in explicating progress and some achievements of each unit towards the strategic directions, and thus offered library leaders the opportunity to envision how they might contribute toward the system's strategic directions as a whole. Although some library leaders found it awkward to develop measurable goals and to assign target achievements to ideas that seemed abstract, the pilot did effectively engage library leaders in assessment practices new to them, and introduced them to assessment tools. It highlighted some

gaps and/or obstacles to progress that might be considered for the future, and enabled the Libraries to try the Balanced Scorecard as an assessment tool. Even when tools are ineffective or assessment practices prove hard for individuals to absorb, implementing these tools and practices increases an organization's assessment knowledge.

The practice of uniting a group of library staff tasked with assessment responsibilities to support an assessment coordinator is fairly common in academic libraries, and proved successful at MIT. It allows assignment of a very small group of dedicated assessment staff, while enabling coordinated assessment at both the unit and system levels. The team approach provides expertise at a variety of levels, lessening some of the burden for library leadership.

Project 2: User Needs Studies

Complementing the Assessment Plan, the second major assessment initiative of the new organization was a set of user needs studies handled by the User Experience (UX) group. The Digital Scholarship Study explored how new technologies and formats impact the ways MIT scholars find, use, and share information in their study, research, and publishing. Separately, a space study was launched to learn how library spaces are utilized in real time, and how spaces, collections and technology support MIT scholars and researchers. In contrast to the pilot assessment project, these studies were intended to study MIT users to inform improvements to library services and products that support them.

Digital Scholarship Study

"Digital Scholarship at MIT" used an ethnographic method referred to as a "cultural probe." Volunteers from the MIT community were recruited by library staff and asked to record their own research behavior over the period of a week, using a digital camera and taking notes in any fashion they chose. In-depth interviews were conducted, using the images and notes.

Different segments of the MIT community were targeted as study participants. Undergraduates focused on completing coursework assignments in each of the three main disciplines at MIT (Science and Engineering, Arts and Humanities, and Social Sciences and Management) were invited to

participate. To get information on the activity and behavioral patterns of researchers at MIT, a cohort of graduate students, faculty and researchers from several departments and labs, spanning MIT's disciplines, were also asked to participate. Interview questions were framed in the context of a relevant undergraduate class or specific research project, with emphasis not only on how information is found, but also on how they might use, share, and publish information. Seventeen students and researchers were interviewed.

Liaisons to the various classes and labs, along with three members of the UX group and the Assessment Librarian participated in the execution of the Digital Scholarship study. A variety of tools were used to synthesize and analyze the recorded interviews and notes.

Space Study

The 2011 Space Study was a collaboration between the UX and Information Delivery and Library Access (ID&LA) departments. The study aimed generally to learn how the MIT Libraries were used in real time, and how library spaces, tangible collections, and equipment support MIT scholars and researchers. UX endeavored to establish benchmarks about library spaces to allow comparisons between library facilities dispersed across the MIT campus, and to permit comparisons with study areas elsewhere at MIT and at peer libraries. ID&LA gathered data to inform the best possible alignment of MIT Libraries hours of operation and allocation of space with the diverse needs of the MIT community within the framework of limited space and resources.

Data was gathered through observations of users tracked on maps and entered into GIS software, a short task inventory survey completed by library visitors during sample periods, and informal feedback collected through open-ended flip chart questions during extended sample periods. The combination of the observations, the task inventory and the informal feedback was triangulated against hourly gate count and circulation data, information about usage of e-mail help services, and ACRL Metrics for peer comparisons. Staff across the Libraries spent time designing the study instruments and tools, including consistent observation and counting methods, and practices for dissemination and collection of task inventory

surveys and flip chart observations.

Learnings, Themes and Insights

The Digital Scholarship Study and the Space Studies led to a number of actions. Themes mined from the Digital Scholarship Study led to an understanding of challenges to workflows for research, which was incorporated into strategies to promote use of citation management software like EndNote or Zotero and to establish library services that support data management and publishing. The library instruction program evolved to incorporate teaching strategies for personal information management and use of apps for academic work.

Data gathered from the space studies were also analyzed. A universal desire for longer hours resulted in the allocation of special MIT funds to restore previously cut library hours. The space study observations and GIS-based "heat map" images showed areas of high activity within library spaces, which allowed library staff to think strategically about how library spaces might be better utilized, and to prioritize space improvements. Several of the data products were shared with an architectural firm, as the MIT Libraries' administration began to develop a vision for its spaces for the next decade and beyond.

UX identified four themes based on data from all of the user needs studies. The themes were presented to all library staff, and were used to generate a set of eight "idea seeds" that were then shared at the January 2012 Library Council Retreat as part of the assessment input for strategic planning. Additionally, UX identified certain areas where further research would be helpful, adding questions to the 2011 Library Survey (see below) to corroborate and expand on findings.

Assessing the User Needs Studies

Overall, the user needs studies were successful. The results led to immediate and noticeable actions as described above. A more thorough understanding of how MIT Libraries spaces are utilized by the MIT community was developed based on the studies, and library staff expanded their grasp of the context for how or where research and publishing activities take place, as participants shared photos of their workspaces and stories about where and how they like to work. Qualitative data that described why users

prefer working in certain spaces, such as access to creature comforts like food or drink and natural light, will lead to other space improvements as well as more meaningful marketing. Learning more about research workflows and scholarly publication processes has been valuable as one of the MIT Libraries' key strategic objectives lay in improving and transforming the scholarly publishing environment. Information gained from these studies has complemented and contextualized the planning of new services.

In the future, the execution of these studies must be improved to ensure the sustainability of this kind of assessment, and for studies to be repeatable. The "cultural probe" technique and the observational methods used in the space study were highly resource intensive. The large corpus of qualitative data was hard to analyze, and the findings of the Digital Scholarship study still have not been fully summarized. The Idea Seeds document never gained traction with library leadership. User needs study planning must take into account the overall staffing cost of executing user studies, analyzing the data, and sharing results appropriately across the organization to foster service improvements.

Project 3: The MIT Libraries Survey Designing a User Survey

The MIT Libraries has surveyed the MIT community regularly since 2005 to learn about users at a broad level. The third triennial survey was developed by staff of the MIT Libraries and distributed in the fall of 2011 by MIT's Office of Institutional Research (IR) to students, faculty, and researchers at MIT. Teams made up of the Assessment Librarian, the Assessment Team, and other librarians, designed the survey, distributed the data, and analyzed the results.

The 2011 user survey was the first tool to link the results of previous assessments. The Survey Development team drew on results of assessment work to create the survey. The objectives defined in the pilot assessment plan were referenced, and questions to corroborate or expand on the themes from the user needs studies were added. Additionally, the survey design was informed by prior surveys, enabling comparisons over time.

Open and constant communication with a variety of departments and reliance on pre-existing

documents and research were essential to successful survey development. Staff were asked to provide feedback about survey questions through an online survey and a brainstorming lunch, and library leadership and specific groups gave input about targeted parts of the draft survey. After the survey was closed, a Survey Dissemination team cleaned up data tables and made them accessible to library staff. Three meetings were held to instruct staff in how to use the survey data.

Throughout the process, the Libraries maintained a close working relationship with IR. IR provided feedback on formatting and wording during the development process, and conducted the survey itself. IR now maintains the data, providing the Libraries with summary results and basic analysis, as well as correlations with past survey results. A librarian with an advanced mathematics degree worked with IR to get access to the raw data, allowing him to perform more complex analysis and cross-tabulations, which were then incorporated into the survey analysis.

The survey included 28 questions, some with multiple parts. Over 7,000 MIT students, faculty and research staff responded, giving an excellent overall response rate of 44%. The Library Assessment Team analyzed the data comprehensively, and wrote a survey analysis report that associated the results of the survey with the strategic directions encapsulated in the Desired Future State. To engage staff, preliminary results of this analysis were shared at the 2012 Library Council Retreat, and a fuller set of results were presented at an all-staff meeting in late spring. A final survey analysis report including over 50 graphs and figures was prepared for administration and shared with staff to encourage deeper explorations of the data.

Applying the Survey Results

The triennial survey has become the Libraries' most effective means of gathering data about MIT users. The 2011 survey results have been used to convince academic departments and MIT Administration to fund or share costs of certain electronic resources, as well as to serve as background and incentive for a major initiative to simplify discovery on the MIT Libraries web site. Several departments have included analysis of the survey results to make progress in internal departmental goals. As

other institutions that use LibQUAL+® regularly have found, surveys are a very effective means of gathering a lot of data with a small impact on participants.

Assessing the Survey

Regarding the survey process, certain practices have proven successful over the years. Eliciting feedback about survey questions from staff at different times and in different ways allowed all staff to contribute. Feedback from IR and pre-testing both by the Libraries and by IR helped identify problems with wording. Repeating certain questions over time exposes areas that have changed, while having IR confidentially maintain the data allows investigation into changes in various groups' opinions and perceptions over time.

However, despite prior experience, there were challenges with the 2011 Survey. Although the Survey Development team communicated regularly with IR and pre-tested the survey, some questions were not programmed as expected, leading to more work and data manipulation after the data had been collected. Pre-testing can never be over-emphasized, and analyzing a sample dataset to determine question effectiveness is recommended.

At times it was difficult to balance department-specific goals with goals from the library's strategic plan. A single survey cannot serve everyone's needs without growing too long. The survey met the needs of specific departments while providing only limited data to assess progress toward the Desired Future State. (On the other hand, some aspects of the Desired Future State may not be well evaluated by a survey.) Due to changes in the wording of questions or responses, less of the 2011 survey was directly comparable to previous years than might be desired. In the future, survey goals should be clearly articulated and shared with all staff involved to aid in prioritization of questions. Departments wishing to gain in-depth knowledge of specific services or activities may be better directed toward other assessment methods, such as focus groups, to allow a more cohesive set of questions at appropriate levels of depth.

Staff, such as library leaders, who were more involved in the survey development process,

may be better prepared than others to act upon the survey results. In cases where library staff are not comfortable performing quantitative data analysis, they may focus predominantly on the comments supplied by users. Although open-ended survey comments can be valuable to contextualize quantitative responses, individual responses are often not representative and may lead to misunderstanding. More targeted meetings with individual departments may be valuable in guiding staff to use the data. This leads again to the question of resource capacity, as it takes time and staff expertise to use the survey results well.

Other Assessments

Beyond these three projects, some smaller system-wide assessments were also developed in the first two years of the reorganization. The Assessment Team began a process of educating library staff and leaders about assessment by embedding assessment into more everyday activities. This included the creation of a 12-month pilot project of Monthly Metrics, a one- to two-paragraph description alongside a graph showing data of interest to the Libraries. A dashboard of metrics was developed, leading to deeper discussions about the data points that truly tell the "story" of the MIT Libraries. The Assessment Librarian and Assessment Team members contributed to assessment-focused meetings of Library Council, where discussions centered on connecting strategic planning concepts to assessment data. These smaller activities were valuable in that they engaged library leaders with assessment concepts.

Conclusion

While assessment has been the topic of many articles in recent years, few have discussed and evaluated approaches to library-wide assessment. One article that is particularly relevant to this paper is "Library Assessment Plans: Four Case Studies,"⁴ in which the authors take a case study approach to summarize and evaluate the assessment plans of four large university library systems: University of Chicago, Columbia University, University of Texas Southwestern Medical Center, and Cornell University. The authors explained each assessment plan, including the role of assessment and how assessment is supported in each library system. They then evaluated the plans and their implementations, presenting strengths/weakness, lessons learned,

and potential future directions for each library.

The MIT Libraries' experiences from 2010 to 2012, in a new organizational configuration, confirm and reiterate several of the experiences of these four libraries. These parallel experiences within the MIT Libraries illustrate continued trends that may apply broadly to academic or special libraries.

- Libraries are emphasizing the analysis of data over the collection of statistics to better understand users and the impact of the library.
- There are inherent challenges in executing thorough or thoughtful assessment plans in real-world situations with finite resources.
- Keeping assessment plans "alive" or up to date as the priorities of the library or the institution continue to evolve is a critical step to maintaining staff engagement.
- Solutions to aggregate and manage library data, spanning data silos, are sought by many libraries, whether in the form of a "data farm," "data store," or through vended solutions. This aggregated data informs libraries' understanding of user behaviors and the best use of limited resources.
- Sharing assessment findings within large or distributed organizations still remains a challenge. Libraries profiled in the case studies mentioned using web pages, wikis, or other tools and cite the challenge of keeping this information up to date and on point.
- Libraries desire to share assessment findings or data with the respective user community, but the path toward sharing data is not straightforward. Issues may include confidentiality of findings, the need to set an appropriate context for the data so that it can be easily understood, data integrity, and other organizational factors.
- Assessment is not a solo activity; supporting an Assessment Librarian or Director with a team can help develop buy-in across the organization, increase assessment expertise, and allow for appropriate coordination to reduce potentially duplicative efforts. Supporting teams may take the form of an advisory group, team members who actively contribute to or lead assessment projects, or staffing support for data collection, aggregation, or statistical analysis.

The MIT Libraries' experience does offer some unique observations about assessment programs

in research libraries. MIT Libraries continues to design and program its own survey, rather than use LibQUAL+ as many research libraries do. This has proven an effective way to learn about the unique needs of MIT users, and is a logical option for libraries hoping to get information beyond users' opinions of service quality, although such a survey does not lend itself to longitudinal comparisons with peers.

The assessment results from all of the activities in the MIT Libraries in the past two years show how important it is for library leadership to collaborate to develop shared, system-wide objectives. Many of MIT Libraries' assessment activities were based on departmental goals or feedback from individual leaders, rather than system-wide objectives set by administration. Because the pilot assessment plan was developed from the ground up, using existing priorities not originally tied to the Desired Future State, the plan illustrated a number of successes on a small scale, but failed to illustrate significant impact of the MIT Libraries on the MIT community. Similarly, the survey was largely developed based on feedback from specific departments and was not governed by system-wide objectives. Aligning assessment activities with system-wide objectives will make it easier to develop assessment activities, integrate findings from different types of study data, and demonstrate progress toward larger goals.

By regularly involving a broad selection of staff in assessment activities, staff become invested in assessment and its implications. Incorporating assessment activities into daily work educates staff about assessment and disperses the effort. However, balancing the costs and benefits of assessment activity is also critical. The data collection and analysis from the digital scholarship study was highly labor-intensive, making it difficult to carry out or to replicate easily. Some data have still not been analyzed, diminishing its potential impact. Investment of staff time should be fully considered when developing an assessment activity to ensure that assessment findings balance service improvements and further growth of the organization's capabilities with day-to-day needs of the system.

In all of the libraries described in the Tatarka article and at MIT, the full potential of utilizing

assessment data to inform decision making has yet to be realized. While the MIT Libraries' assessment program has made substantial progress within two years, the "Business Intelligence" functions still require more time to solidify as the organization's decision making patterns evolve.

Future Plans

As the MIT Libraries wrap up the evaluation of the assessment program of its first two years, plans are being made for the future. The Assessment Team will be investigating the data requirements and infrastructure available to aggregate MIT Libraries' data streams to support decision making and publishing of data to internal or external entities, and to develop tools to connect UX user needs study findings with other types of assessment. The Libraries will be implementing the ClimateQUAL® survey to support internal evaluation. Other plans for the future involve investigating methods to share assessment data with the MIT Libraries' user community, and to better market library services and products.

To be successful, system-wide assessment programs must be supported by coordination, education, and engagement of stakeholders within the library organization to share the findings appropriately and shape them into

improvements which will deliver quantifiable benefits to library users and magnify the impact of the library. Within any ambitious, future-focused organization, measures of success and impact will continue to evolve to suit the needs not only of the organization, but of library users and the institution.

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Notes

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3. "Balanced Scorecard Basics," accessed September 14, 2012, <http://www.balancedscorecard.org/BSCResources/AbouttheBalancedScorecard/tabid/55/Default.aspx>.
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Collaborative Measure Building Using the Balanced Scorecard in North American Libraries

Elizabeth Mengel

Johns Hopkins University, USA

Vivian Lewis

McMaster University, Canada

Abstract

Collaboration has been a *buzz word* in academic libraries for many years. Research libraries routinely establish relationships with other entities (both on campus and off) to enhance collections and deliver new services. Such an approach rationalizes the use of scarce resources, enhances the variety of options available to users, and makes a positive impression on both university administrators and funding agencies.

This paper seeks to determine the value of collaboration as an approach to a particular type of library assessment. Specifically, can libraries attempting to implement the Balanced Scorecard as a tool for strategic planning facilitate the difficult task of developing measures by working alongside organizations with similar interests—even when each site is building its own local scorecard? Given that the work academic research libraries do is relatively similar from institution to institution, the authors hope to determine if those libraries using the Scorecard develop similar measures and if access to a common or collective body of metrics facilitates the selection process.

Background

The Balanced Scorecard is a widely accepted organizational performance model that ties strategy to performance in four critical areas: finance, learning and growth, customers and internal processes. While originally designed for use in the for-profit sector, the Scorecard has been adopted by non-profit and government organizations, including some libraries. In 2008, the Association of Research Libraries (ARL) put out a call to its members for expressions of interest in participating in a one-year exploration of the Balanced Scorecard as a tool for use in strategic

planning. The initiative was described as “an investment in helping libraries make a stronger case for the value they deliver by developing metrics that are tied to strategy.”¹ ARL intended to accomplish two tasks: “to assist, train and facilitate the use of the Scorecard in a small number of ARL libraries; and to test the value of a collaborative model for learning about and implementing the new tool.”²

Four universities agreed to participate in the inaugural cohort: the University of Virginia, the University of Washington, Johns Hopkins University and McMaster University. The four institutions brought a wide spectrum of assessment expertise to the project. The University of Virginia Library had been making proficient use of the Scorecard for many years, but was interested in refreshing their implementation and providing assistance to the new sites. The University of Washington had a strong assessment program, but no experience with the Scorecard. Johns Hopkins and McMaster had emerging assessment programs and no past experience with the Scorecard.

Early Work

As noted in an earlier study by Mengel and Lewis, the initial slate of measures in use by the four institutions displayed a significant amount of overlap. By way of example, all four libraries included: some reference to a customer satisfaction survey (either LibQUAL+® or an in-house developed survey); a measure relating to productive user-centered space; and some reference to development and revenue generation. Three out of four included a measure associated with integrating the library into the university’s teaching and research mission.

The first cohort participants were not surprised by the high level of commonality between their measures. The strategy maps (slates of strategic directions upon which their scorecards were created) bore significant similarities. As well, the group acknowledged that they benefited greatly from sharing preliminary lists of measures. Three clear advantages were identified:

1. Seeing what other institutions were doing (or considering doing) **saved time**. The ideas they took away were “kitchen tested” in another like organization.
2. The concepts had **high credibility**. Knowing that something had been done in another institution often came in handy when persuading reluctant colleagues to accept a new idea.
3. Finally, the idea of adopting a measure similar to someone else’s laid the ground for future comparisons and **benchmarking**.³

The collaborative approach was considered invaluable, given the recognized challenges associated with effective measure development. As noted by the first cohort, the act of getting the measures “right” or at least “good enough” for initial use was fraught with difficulty. Staff and or administrators often had very different ideas about what data should be collected, how often, and how it should be reported. Measures were added and deleted repeatedly as opinions changed. Ostensibly great ideas often turned to disappointment when the first set of actual numbers was generated.

Formalizing the Collaborative Assessment Process

Following ARL’s call for a second cohort of libraries to implement Scorecard in Spring 2011, the researchers became interested in testing the concept of collaboration in scorecard development even further. Could new tools be created to assist the second group of ten libraries as they work through the measurement creation process? Could the vision of collaborative scorecard development originally proposed by ARL actually be operationalized?

Following much discussion with the other members of the first cohort and with colleagues from ARL, the researchers identified two possible approaches: a) the compilation of an inventory of all measures from which prospective scorecard

sites could choose; and b) the creation of a “common” set of standardized core measures for use by scorecard sites. A proposal was put into place to create and test the viability of both options using the second cohort of libraries as the sample population. Specifically the researchers were interested in answering three questions, the first two relating to perceived usefulness and the last one relating to actual adoption:

1. Will ARL scorecard planning teams perceive the provision of an inventory of used measures or a “common set” of standardized measures as helpful to their local implementations?
2. Of the two options, which is perceived as most helpful?
3. Were measures added, deleted or changed as a result of the set sharing activity?

In fall 2011, the researchers worked with the other members of the first cohort to build the prototype tools. The resources were admittedly primitive in nature. The purpose was to test the concept and the content—not to create a professional looking interface.

The Inventory

The inventory took the form of an Excel workbook (Table 1) including three worksheets:

1. Active and Inactive Measures
Measures were deemed “inactive” for several reasons: the institution was still in the process of establishing workflows to collect the data; data collection was scheduled for a later date (e.g., the organization’s next running of a large instrument like ClimateQUAL®); or the institution had tried the measure, but for some reason intended to put data collection on hold for the time being.
2. Data Dictionary
The data dictionary was used to define and measure themes and subthemes, which were later used in analyzing the measures for commonality.
3. Rejected Measures
Measures tried by one library that, for whatever reason, either did not work, the data was too difficult to obtain, or the time frame between one measurement and the next did not provide strategic decision-making capabilities).

The Active/Inactive slate was arranged by theme

and subtheme. Each entry included the name of the school using the measure, the year it was initially created, the Balanced Scorecard perspective (Customer, Financial, Internal Processes or Learning and Growth) associated with the measure, the measure name, the specific formula being used to build the measure, the measure status (Active/Inactive), the rating (if any) and any explanatory comments about the measure or the rating.

The themes and subthemes were developed as a

coding mechanism to establish sorting capabilities to group and analyze the various measures. The authors used the coding themes as an exploratory exercise to test their hypothesis rather than as a scientific schema that could be replicated precisely outside this exercise. A data dictionary was created to provide standardized operational definitions of the themes. Both researchers coded the entries independently. Where there were coding differences, the researchers discussed the salient points of the measure and arrived at a mutually-agreeable code.

Table 1

A	B	C	D	E	F	G	H	I	J	K
Theme	Sub Theme	Cohort	School	Year	Perspective	Measure	Formula	Active / Inactive / Development	Rating (0-5)	Comments
Collections	Volume	Cohort 1	UW	2012	Customer	Delivery services use	Number of office delivery requests	Active	3	Useful for "pilot"; will need suite ongoing
							% of annual expenditures that comes from advancement, grants and contracts and sources other than the University's direct allocation		4	
Finance	Budget	Cohort 1	UW	2012	Financial	Revenue diversification	Total library expenditures ranking for all U.S. and U.S. public universities	Active	4	Used for budget submissions
Finance	Budget	Cohort 1	UW	2012	Financial	Institutional investment	Information resources budget	Active	4	Good trend data; useful for comparisons with other ARL Libraries
Finance	Budget	Cohort 1	UW	2012	Customer	expenditures	ARL stat	Active	4	
Finance	Fundraising	Cohort 1	JHU	2012	Financial	Donors	percent increase of new donors	Active	3	have not started collecting data
Finance	Revenue Generation	Cohort 1	JHU	2012	Financial	ELP profit	2 percent increase of profit by Entrepreneurial Library Program	Active	4	combines 3 measures from previous year
Collections	Special Collections	Cohort 1	McM	2010	Internal Processes	Research Collections Backlog	number of items in the Research Collection (Special Collections) backlog processed	Active	3	Easy to calculate. Only covers the rare book collection. At some point, want to include archives.
									4	This is useful for the sub-set of the collection that it measures, but misses the growing e-book component of the collection. We may have to rethink this in future years as the "vanilla" monograph acquisition moves more to electronic and the print becomes more specialized (foreign language, non-US/UK titles, small publishers, etc.) i.e., if print acquisitions are needed in certain cases but academically accessible to a smaller portion of the user group, is circ still a valid measure of value
Collections	Use	Cohort 1	McM	2010	Internal Processes	Use of Collection	percent of new monographs that are checked out within 2 years of acquisition	Active		

Measures were logged as "rejected" for a variety of reasons. In many cases, metrics were dropped as being "operational" (i.e., focused on the organization's day-to-day business) rather than strategic (i.e., directly linked to the organization's strategy map, with a strong focus on significant change). In other cases, the metric was dropped for because it was impossible to collect without expending significant staff, financial or technical

resources. Still others were rejected as being important within the context of one project but not viable or required as an ongoing strategic measure. An example of a rejected measure from JHU is indicated in the table below. While this was an important measure during the rollout of the new course management system, it was a onetime project and therefore would not be tracked over time.

Table 2

Instruction	Volume	JHU	2011	Customer	Course Management System	number of workshop attendees	Dropped	used only during transition from WebCT to Blackboard

The authors surmised some definite strengths of the inventory approach. They anticipated clear value in pulling together multiple options from which local sites could choose and modify based on their specific environments. They saw a certain amount of administrative convenience—the inventory did not require any negotiation or compromises. The tool would also facilitate the sharing of specific information (e.g., the effectiveness rating). But at the same time, the authors anticipated some shortcomings. The model lacks the consistency required for benchmarking. Individual libraries could address a similar theme, but choose to use a completely different approach and language to capture it.

rendered as a simple table listing 11 standardized metrics under 5 themes. The set was the result of a negotiation rather than simple compilation: the final language required compromise between participating sites. The researchers surmised that this model would facilitate benchmarking: sites choosing to use the standardized measure could be assured that other adopting locations would use the same approach and language. On the other hand, libraries choosing to use the set would effectively give up the ability to customize language to meet their local environments.

Based on Cohort 1's measures the authors perceived the measures in the table below could be developed into common measures.

The "Common Set"

The "Common Set" (Table 3) was eventually

Table 3

Perceived "Common" Measure
Number of items digitized.
Number of views of digitized items (beyond the list level).
Number of downloads from the Institutional Repository.
Percentage of library budget coming from the University's direct allocation.
Percentage of library budget coming from grants.
Percentage of library budget coming from donors.
Percentage of library budget coming from other sources.

Perceived "Common" Measure

Perceived service level (as identified in LibQUAL or some other type of user survey).

Number of physical visits to the Library.

Percentage of improvement on employee satisfaction surveys.

Number of staff training development sessions offered.

Evaluating the Tools

The researchers established what they believed to be a simple, easy-to-execute plan for testing the strength of the collaboration tools. They would: a) present the two tools to the members of the second cohort at a face-to-face meeting in month five of the second cohort's scorecard training program. In month eight, the authors would conduct telephone interviews with members of the second cohort regarding the perceived usefulness of the two sets for their local work. A second set of interviews would be scheduled in month ten to determine actual measure adoption.

The research plan proved to be workable in terms of process, but overly ambitious in terms of timelines. The second cohort libraries were working diligently on the implementation of their scorecards, but encountered many issues when trying to finalize their measure slates. The movement from ideas to final slates of measures moved slower than expected at many sites.

In November 2011, the researchers met with the second cohort in Washington, D.C. as part of a pre-scheduled workshop. Copies of the inventory and common measures were distributed and explained. Four months later, in February and March of 2012, the researchers interviewed the scorecard project leads from the ten Cohort 2 sites. The interviews were conducted via telephone, e-mail or both. The participants were asked

1. How far are you along in your measure development?
2. Have you reviewed our inventory and common-language slates?

3. Have you been influenced by the items on the slates?
4. If yes, which appears to be most useful? Why?
5. Do you anticipate using any ideas you found on those slates? If yes, which components?
6. Looking into the future, do you see your organization being willing to contribute your own measures for use by other libraries?

The teams were enthusiastic about the inventory and common measures. One team had already adopted some of the measures in the inventory (institutional repository downloads, etc.). One lead noted that her site may not adopt the same wording, but would definitely be using some of the context of the measures. The concept of shared effort made sense to people. As noted by one participant, "I like the concept of common understanding as well as common metric." The concept of a standardized slate would help people avoid "reinventing the wheel" and would help the teams demonstrate their libraries worth to senior administrators.

One participant noted several similarities between the inventory measures and metrics currently being considered at her institution. Another noted, "My eyes lit up when I saw tools that we already use. That tells me we are speaking the same language."

Several participants noted in those early conversations how helpful they found the inclusion of "rejected" measures, with commentary explaining why the measure ultimately failed. "It's so reassuring to see that others are struggling

with the same issues.” Another participant noted, “We want to avoid making the same mistakes others have made (for example, focusing too much attention on operational issues”). Another team, still early in their measure development, noted that they were struck by the difficulty the first cohort experienced trying to track true outcomes.

Some participants noted aspects that they would never adopt. One team noted that, as a private university, they did not face the same financial issues that the public institutions in first cohort members had experienced. As a result, some of the financial measures would never be required or attempted.

The results of this initial set of interviews were promising, but indicated that more time was required for the second cohort to move through the measure creation process. Some institutions were struggling with the logistics of weaving the Scorecard into their regular planning cycles. One organization had rethought the membership of their planning committee and was starting the dialogue again with a broader-based group. Another group was returning to discussion with their leadership team. Another team had spent the last several months working through environmental scans with each department within

their organization and was, that week, conducting their first major staff workshop in preparation for rolling out a new strategic plan.

The researchers followed up with the second cohort sites periodically throughout the next several months. In September 2012, following a very useful teleconference call with the teams, the researchers issued a short survey to gauge the status of the implementations and get a clearer sense of both the challenges being faced and the strategies being used. Of the eight sites responding to the survey, most reported being in early- or mid-stages of measure development. Only one site reported that their measures were “fairly developed and starting to collect data on some of them.” The biggest challenges were considered to be time (6 of 8), staff understanding of measures (6), finding “measures that matter” (7) and finding measures that are “do-able with existing resources and technology” (5).

Adoption

As of October 2012, 5 of the 10 libraries have provided copies of draft measures for review. Table 4 below provides an overview of the total number of measures per cohort in each of the four scorecard perspectives.

Table 4

Measures by Perspective Cohort 1 and Cohort 2			
	Cohort 1	Cohort 2	Total
Total Measures	90	164	254
Customer	40	45	85
Finance	18	24	42
Internal Processes	16	54	70
Learning and Growth	16	41	57
Cohort 1=JHU, McMaster and U. Washington			
Cohort 2= Case Western, Florida State University, Notre Dame, U. of Buffalo, and U. of North Texas			

The authors coded the measures from Cohort 2 using the same methodology they used in coding

Cohort 1 measures. Each measure was coded and the authors sorted the slates looking for overlap.

In as much the same way that a direct comparison was difficult with the measures from Cohort 1, the measures from Cohort 2 are often similar, but slightly different. Where there are similarities, more in-depth discussions with the school to determine the intent of the measure would likely clarify some of the ambiguity of the wording.

The authors discovered that both cohort groups had the same top themes (based on the number of measures): Library Staff, Collections, and Finance. Cohort 1's next two themes were

Instruction and Space while Cohort 2's were Library Services and Assessment. One possible

explanation for this is the time difference between the development of the respective cohort's measures. What we measure is a reflection of what we think is important. Are we seeing a possible shift in focus across academic libraries as expressed through measurement development?

This time shift is also evident in the Common Set adaptation. When the common set was originally created, at least two out of three of the first cohort libraries were using that measure. By the time the authors did the analysis of the measures, changes in institutional slates of measures had changed. Table 5 below provides an overview of the use of the common measures.

Table 5

Cohort 1	Perceived "Common" Measure	Cohort 2
McM	Number of items digitized.	
UW, JHU	Number of views (beyond the list level).	
McM	Number of downloads.	1 libraries
JHU	Percentage of library budget coming from the University's direct allocation.	
UW	Percentage of library budget coming from grants.	
JHU, McM	Percentage of library budget coming from donors.	2 libraries
JHU	Percentage of library budget coming from other sources.	1 libraries
JHU, McM, UW	Perceived service level (as identified in LibQUAL or some other type of user survey).	3 libraries
McM, UW	Number of physical visits to the Library.	2 libraries
JHU, McM, UW	Percentage improvement on employee satisfaction surveys.	4 libraries
McM	Number of staff training development sessions offered.	2 libraries

Conclusion

The results of this exploratory exercise demonstrate strong interest in collaborative approaches to Scorecard development, although the specifics of the preferred tool needs further work. The following preliminary conclusions can be proposed to the initial set of questions:

1. **Will Cohort 2 teams perceive the inventory and/or the common set as useful?** Yes, both the inventory and the common set were clearly perceived as useful by all participants.
2. **Of the two options, which is perceived as most helpful?** There was no clear answer on this question. Participants felt positively about both instruments, but were not far along in their implementations to express clear preference or demonstrate clear take-up. The Cohort 2 sites expressed willingness to deposit measures themselves at a later date. Early indicators suggest that access to both tools resulted in some sharing of ideas. Knowing what didn't work appeared to be as useful as knowing what did. The concept of the common set seemed very attractive to many participants, but only time will tell if the attraction results in actual use.
3. **Did Cohort 2 teams add, delete, or change measures as a result of the set sharing activity?** More time is required to allow Cohort 2 libraries to finalize their measures before a clear sense of take-up can be determined. As well, more formal analysis is required of the finished slates to know definitively that a measure is "shared."

However ambiguous the findings may be, the

authors continue to believe that collaboration can facilitate the measure creation process. Finalizing metrics is not a straightforward process for most institutions and having established measures that can be used as benchmarks (or even conversation starters) helps facilitate the process. The authors see tremendous opportunity to build a dynamic and robust set of measures (and ultimately final data) for use by academic libraries across North America and around the world. The creation of this dataset will help individual organizations advance their strategic missions as well as generate many new research questions for the growing body of academic library Scorecard users.

—Copyright 2013 Elizabeth Mengel and Vivian Lewis

Notes

1. "E-News for Library Directors," Association of Research Libraries, January 2009, <http://www.arl.org/news/enews/enews-15jan09.shtml#32>.
2. Martha Kyrillidou, "The ARL Library Scorecard Pilot: Using the Balanced Scorecard in Research Libraries," *Research Library Issues: A Bimonthly Report from ARL, CNI, and SPARC*, no. 271 (August 2010): 36–40. <http://publications.arl.org/rli271/35>.
3. Elizabeth Mengel and Vivian Lewis, "Collaborative assessment: North American academic libraries' experiences using the Balanced Scorecard to measure performance and show value," *Library Management* 33 no. 6/7 (2012): 357–364.

Using Interlibrary Loan and Circulation Data for Cooperative Collection Building

Kathleen Bauer
Yale University, USA

Abstract

Yale University Library, a large U.S. academic research library, participates in the Borrow Direct (BD) interlibrary loan consortium along with Brown, Columbia, Cornell, Dartmouth, Harvard, MIT, Princeton, and the University of Pennsylvania. Borrow Direct is a popular service, and in many ways the library collection available to users at these institutions is the collective collection consisting of fifty million volumes held at the nine participating libraries; this reality has led to the consideration of possible collaborative-collection building, at least in targeted subject areas. To understand use of the collection, looking at internal circulation at Yale or its external interlibrary loan data in isolation is not adequate; a firm understanding of how much subject areas are in demand both internally and externally is required. In this study BD materials borrowed and loaned by Yale in 2011, and materials circulated internally, were grouped by their LC call number sub-classes so that the patterns of movement of materials could be studied. Yale's BD borrowing and lending were compared to Yale circulation patterns in 533 LC sub-classes. It was expected that most areas of high internal circulation would be matched by low to no BD borrowing activity and vice versa; however, this was not always the case. Most LC topics in high demand in Yale's collection were also in high demand through BD. In nine LC sub-classes Yale lent relatively more material through BD than it borrowed and also circulated high amounts of its own material, indicating particularly strong Yale collections; in these nine cases Yale might propose being the main collector of the subject class. In 205 LC sub-classes where low circulation was matched with low BD borrowing by Yale, Yale might consider ceasing to collect in those subject areas, allowing a partner institution to build a collection for that LC sub-class.

Introduction

The U.S. Library of Congress developed a classification scheme using letters to signify broad

topical areas, with further refinement by adding numbers.¹ For example, in Library of Congress (LC) classification, D covers all material in World History, while DS 501–937 contains World History of East Asia, Southeast Asia and the Far East. LC classification, in wide use in academic libraries, provides a useful way to look at topical groupings of circulated material both within and among multiple institutions. Examining user demand for specific topic groupings has become important as libraries seek to control costs through collaborative collection building, which requires libraries to choose collection subject areas they wish to concentrate on building, while purposefully allowing others to collect in other areas. Collaborative collection building has been desired at Yale since at least the mid-1960s,² but putting it into practice has been a challenge. This paper describes a methodology for determining what material is widely used or desired at Yale, and what material is not as desirable at Yale, through comparison of circulation and interlibrary loan use of materials grouped by LC class.

Methodology

Data for Yale activity in 2011, both as a borrower and a lender, were downloaded from Borrow Direct (BD). Unfilled BD requests were deleted as a means of deduping records (unfilled requests are automatically resubmitted and are usually filled elsewhere). Circulation data at Yale for the same year were gathered from a Voyager system. Call numbers were cleaned of extraneous information such as most punctuation and size indicators, leaving just the letters and numbers of the LC classification. Call numbers were separated by the initial letters and the numbers following them, up to the first period. A database table of LC call number ranges was prepared, including the letters and starting number and ending number portion of call number ranges. For example, the LC range HQ 1060–1064: The family; Marriage, Home, Aged, Gerontology (Social Aspects) was entered in the

LC table as letter part HQ with the starting number 1060 and the ending number 1064. An item with the call number HQ 1062.4 would be parsed as the letter part HQ, number part 1062.4. A match on both BD circulated material and Yale collection circulated material was performed from call numbers to the LC table, creating a summary of BD and circulating material by LC classification. Some call numbers could not be mapped due to non-LC classification schema such as Yale classification, in use until 1970, or material not given standard call numbers, such as dissertations and some CD format material. LC sub-classes were ranked in quartiles according to the total circulation, BD lending or BD borrowing activity as high (High), moderately high (Mod High), moderately low (Mod Low) and low (Low). The rankings for Yale circulation, Yale BD borrowing, and Yale BD

lending were matched and compared for each LC sub-class.

Results

Yale BD Activity

In 2011 86,772 BD items were loaned or borrowed at Yale; of these 82,612 items were matched to an LC class (95.2%). The average publication date of matched circulated material was 1994. Slightly more than half of the circulated material was published after 2000 (51.6%); the oldest material dated back to 1759.

Overall, Yale was a net borrower; only Columbia was a net borrower with Yale. Harvard and MIT joined BD midway in 2011, and the numbers for these two institutions are only for a partial year.

Figure 1. Number of borrowing and lending requests in 2011, per BD institution, with Yale.

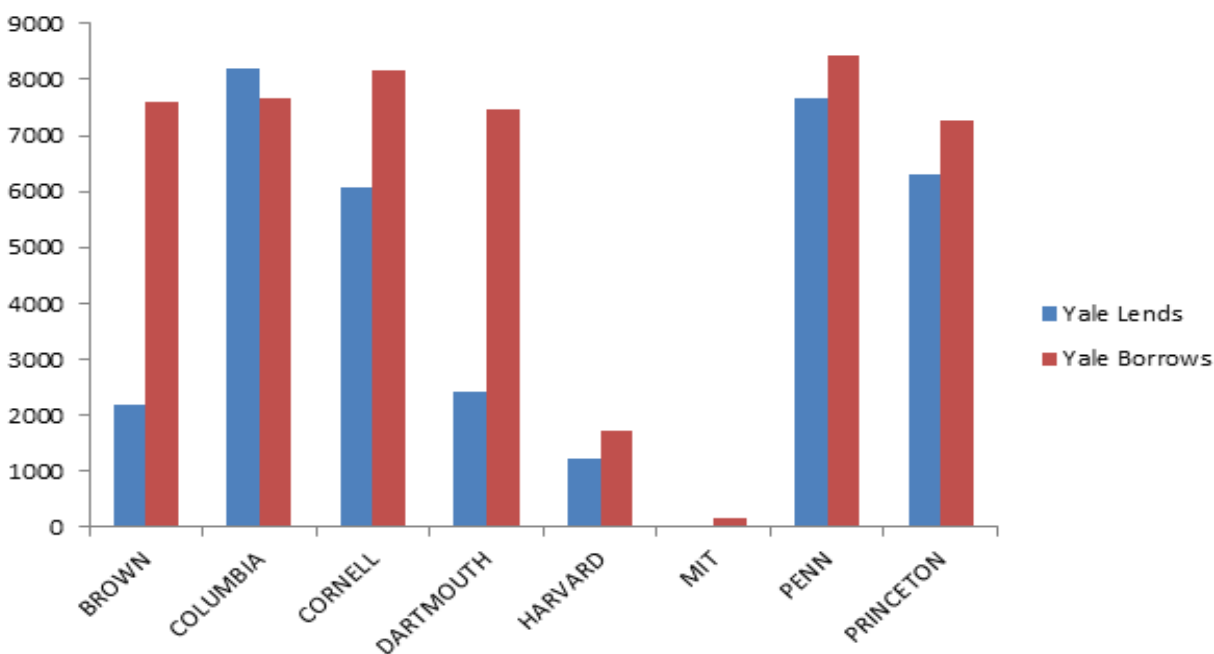


Table 1. 2011 BD activity at Yale, borrowing and lending, by LC major classification area.

LC Major Classification	Yale Borrows	Yale Lends
A General Works	44	29
B Philosophy, Psychology, Religion	2775	1833
C Auxiliary Science of History	186	93
D World History and History of Europe, Asia, Africa, Australia, New Zealand, etc.	2274	1547

LC Major Classification	Yale Borrows	Yale Lends
E History of the Americas	724	494
F History of the Americas	527	312
G Geography, Anthropology, Recreation	753	424
H Social Sciences	3541	2498
J Political Science	1167	803
K Law	619	527
L Education	343	259
M Music and Books on Music	359	235
N fine Arts	929	790
P Language and Literature	3466	2716
Q Science	1177	732
R Medicine	802	486
S Agriculture	135	72
T Technology	546	334
U Military Science	107	80
V Naval Science	13	6
Z Bibliography	189	135
Total	20,680	14,418

The material circulated from BD was matched to major LC classifications, with results below. The most active areas for borrowing and lending were in Social Sciences and Language and Literature. While showing high level trends, these results do not give the granularity needed for collection development.

Below are the top ten LC sub-classes in which Yale borrowed material from all other Borrow Direct partners, along with associated lending. The top ten sub-classes for lending and borrowing at Yale were similar but not the same. These sub-classes were in the top ten for lending but not borrowing:

B790–5739: Philosophy: History and Systems, Post Renaissance; DS41–329: History, Southwestern Asia, Ancient Orient, Near East; P: Philology, Linguistics; PN 199–1999: Motion Pictures; and BL: Religions, Mythology, Rationalism.

Once the sub-classes of greatest activity are determined, it is possible to look at the movement of material between Yale and each institution. For example, Table 3 shows the borrowing and lending activity for Yale with all other institutions in DS 501–937 History: Eastern Asia, Southeastern Asia, Far East.

Table 2. Top ten LC sub-class and associated borrowing of material by Yale from all partner institutions in 2011.

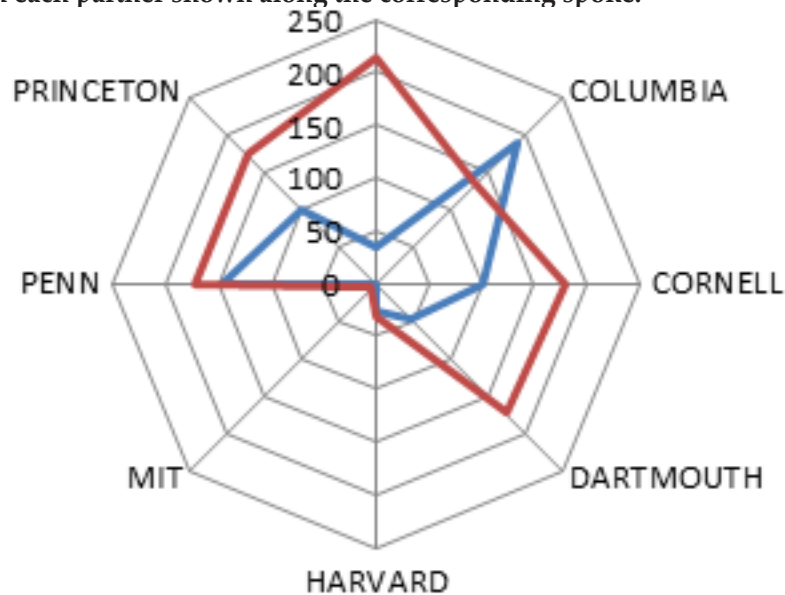
LC Sub-Class	Yale Borrows	Yale Lends
DS 501–937 : History: Eastern Asia, Southeastern Asia, Far East	806	457
PS 3550–3576 American Literature, 1961-	641	283
N Visual Arts (General)	612	480

LC Sub-Class	Yale Borrows	Yale Lends
E 140–200 : United States, Colonial, Special Topics	564	430
D 1–899: History (General)	538	324
BL : Religions, Mythology, Rationalism	538	339
JC : Political Theory	521	279
HM: Sociology: General Works, Theory	507	310
ML : Literature of Music	496	303
BS : Bible	483	302

Table 3. Borrowing and lending activity with Yale and each BD partner, in DS 501–937 History: Eastern Asia, Southeastern Asia, Far East.

	BROWN	COLUMBIA	CORNELL	DARTMOUTH	HARVARD	MIT	PENN	PRINCETON
Yale Lends	34	188	101	46	26	0	146	99
Yale Borrows	213	133	178	174	32	6	171	173

Figure 2. Sub-class DS 501-937 lending and borrowing between Yale and each BD partner, with the level of activity with each partner shown along the corresponding spoke.



It can be helpful to visualize the relationships between institutions using a chart. Figure 2 illustrates the data from Table 3; it quickly becomes apparent that in this LC sub-class most institutions loan more to Yale than they borrow, with the exception of Columbia, and the level of the disparity is also apparent.

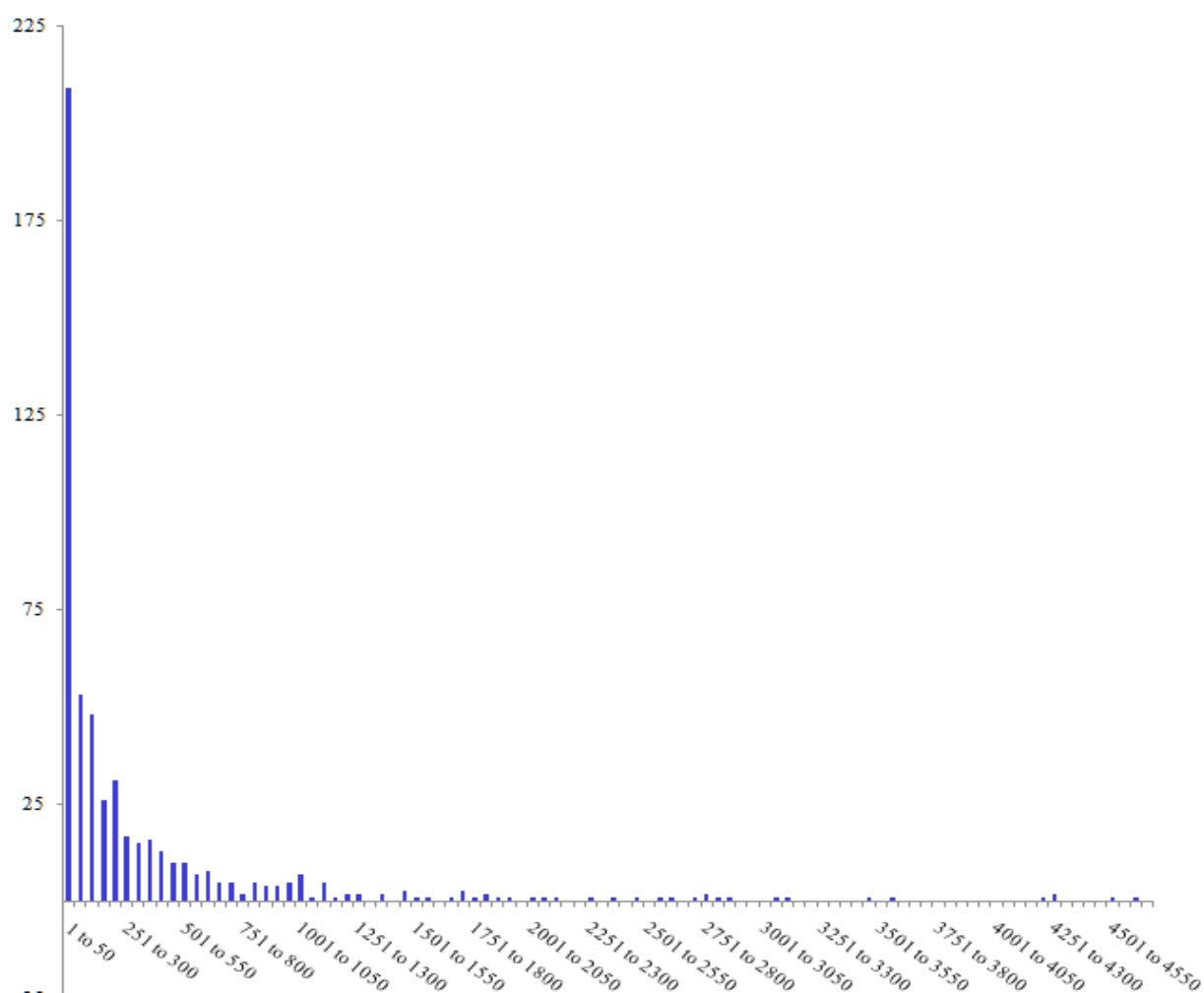
Yale Circulation

Yale's collections total more than 8 million volumes, most of which do not circulate in any

given year. In 2011, 215,162 cataloged items circulated to Yale patrons, of which 203,660 (94.7%) were classed into 546 LC sub-classes.

Most LC sub-classes received very low use as shown in Figure 3. The average number of times all items in an LC sub-class circulated was 373.0 while the median was 111.0, indicative of a long tail of a small number of classes with high circulation, while most had very low circulation.

Figure 3. Yale circulated material, by LC sub-classes, intervals of times circulated. The distribution has a long right tail.



These sub-classes received the most circulation

activity in 2011 at Yale.

Table 4. The LC sub-classes with the most Yale circulation activity in 2011

Yale Circulation by Major LC Classification	Circulation Count
BS : Bible	4627
B 790–5739 : Philosophy: History and Systems, Post Renaissance	4517
ML : Literature of Music	4266
E 140–200 : United States, Colonial, Special Topics	4251
BR : Christianity (General)	4218
PN 1993–1999 : Motion Pictures	3565
M 5–1490 : Instrumental Music, Music Before 1700	3464
P : Philology, Linguistics	3120
D 1–899 : History (General)	3070
HM : Sociology: General Works, Theory	2886

To better understand the relationship between BD activity and internal circulation the data from these two areas were combined. The discrepancy in magnitude was accounted for by arranging material into three areas: BD borrowing, BD lending and Yale circulation, and classifying activity level within each area in quartiles: low (Low), moderately low (Mod Low), moderately high (Mod High) and high (High). These were calculated for each of the three areas, and then the three areas were matched for each LC sub-class. The matches were further simplified into eight cases where low and moderately low were grouped together, as were moderate high and high.

533 LC sub-classes and their corresponding quartiles for three areas (BD Yale lending, BD Yale borrowing, and Yale circulation) were matched. Four hundred thirty-three (81.3%) corresponded in all three areas: the LC sub-class had High or Mod High circulation, High or Mod High BD borrowing, and High or Mod High BD lending; and similarly for classes that were entirely Low or Mod Low. Case 1, consisting of 196 occurrences, where all activity was low, indicated areas to examine for possible abandonment. Similarly a class with High BD lending but Low BD borrowing and Low circulation (case 7) may be a collection that Yale does not need to develop further at Yale

due to demonstrated low demand, but the need for the entire BD consortium should be considered. A subject area with High BD borrowing by Yale but Low circulation (cases 2 and 5) indicated the possibility of a collection that did not meet Yale needs in the timeframe studied. Cases 3 and 4 were LC classes of strong interest at Yale, but with low lending to partners may not be of as much interest or need elsewhere. An area with High circulation and High BD lending but Low BD borrowing (case 6) indicated a possibly strong Yale collection which Yale might develop more while a BD partner ceases collecting. Examples of cases are shown in Table 6, and a map of activity is shown for BC: Logic, in Figure 4.

While the examination of BD activity alone indicated areas of high and low activity, the addition of circulation data added another level of understanding to the analysis. For example, DS 501–937: History: Eastern Asia, Southeastern Asia, Far East was an area identified for high activity through BD, but circulation of this material internally within Yale was also quite high. Given the high level of internal and external activity, this LC sub-class may not be as useful an area to consider for collaborative collection building as other areas where internal and external activity as mismatched.

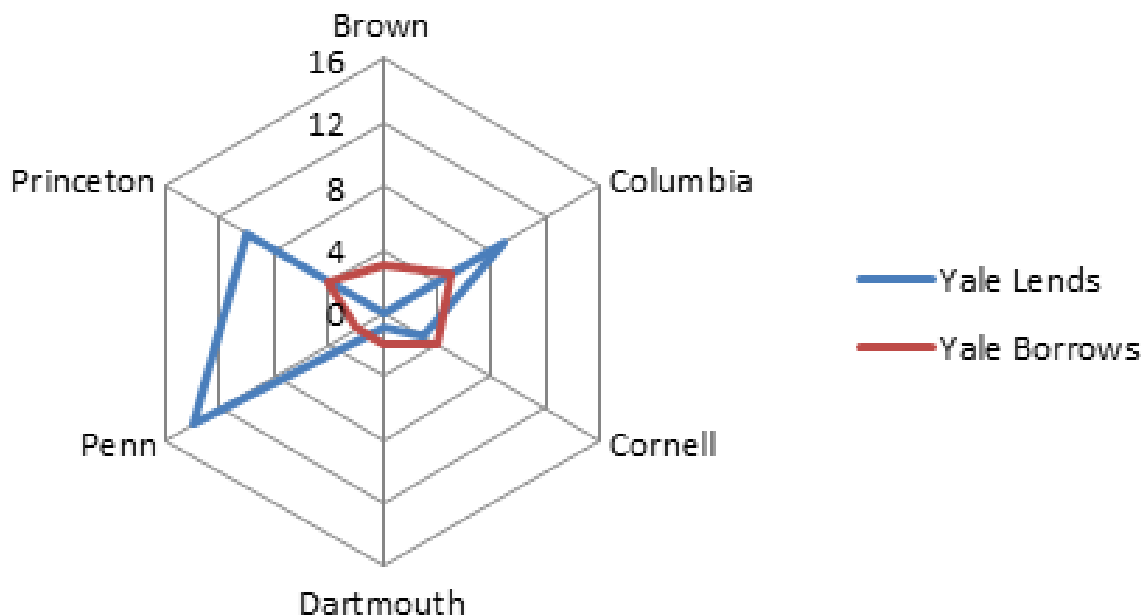
Table 5. The eight possible cases of level of activity for Yale circulation and BD lending and borrowing.

Case	BD Yale Lends	BD Yale Borrows	Yale Circulation	#LC Classes N=533
1	Low	Low	Low	196
2	Low	High	Low	24
3	Low	High	High	15
4	Low	Low	High	12
5	High	High	Low	31
6	High	Low	High	9
7	High	Low	Low	9
8	High	High	High	237

Table 6. Examples of LC sub-classes, quartile notations for activity in BD lending, borrowing, and Yale circulation.

Case #	LC Subclass	Borrow Direct Yale Lends		Borrow Direct Yale Borrows		Yale Circulation	
		Count	Quartile	Count	Quartile	Count	Quartile
2	LB 1101–1139 : Child Study	4	Low	25	Mod High	15	Low
3	E 201–299 : United States, Revolutionary Period	11	Mod Low	62	Mod High	311	Mod High
4	PN 1660–1864:Technique of Dramatic Composition, History of Drama	7	Mod Low	11	Mod Low	176	Mod High
5	PZ 5–10 : Juvenile Literature: American and English	28	Mod High	39	Mod High	9	Low
6	BC : Logic	37	Mod High	20	Mod Low	217	Mod High
7	PQ 9697–9699 : Portuguese Literature of Brazil, since 1800	26	Mod High	22	Mod Low	93	Mod Low

Figure 4. Example from case 6; the movement of material BC Logic, BD activity between Yale and each BD partner.



Conclusion

In most classes, internal and external use of LC sub-class collection material is relatively similar when considering Yale BD borrowing, BD lending, and circulation at Yale. Originally it had been assumed that when a collection was very good at Yale and enjoyed widespread use, borrowing activity through BD would be low. However, this was not the case. In reality the presence of an active department at Yale and an excellent collection at Yale led to high use of

Yale's material, but often that activity within Yale required supplement from other institutions' collections. The needs of a rigorous, academically diverse, and active academic department might always require a more expansive collection than could be found at one institution's collection, no matter how good that collection might be.

When internal circulation at Yale was low but the amount of material borrowed through BD was high or moderately high (as occurred in fifty-five LC sub-classes) Yale may consider whether they should improve the type of material purchased in that collection. When Yale lent a large amount of material to BD partners, borrowed little, and

circulated high amounts of material (occurred in nine classes) that indicated that Yale's collection was particularly strong, and Yale may be the institution tapped to collect in that area. Finally, when Yale's circulation was low and all its BD borrowing activity was low in an LC sub-class (205 classes), those areas could be considered for less purchasing, allowing another BD partner to cover that area.

In all these cases analysis will be helped by adding two pieces of information about material loaned through BD. First, a more thorough examination of the date of publication of material and format would be helpful in gaining a clearer understanding of why material is sought from BD. It could be that a strong collection currently being built would always need to be supplemented by older material at other institutions. A second area which must be explored is how much unique material is loaned through BD, versus how much is duplicated material in high demand.

This study showed that mapping data on use to LC sub-classes is helpful in showing what types of material are in demand at an academic library. Further, this study showed that patterns in the

movement of material among institutions can be revealed by mapping call numbers to LC classes and sub-classes, and these patterns may be helpful in determining collection building partners.

—Copyright 2013 Kathleen Bauer

Notes

1. J. T. Babb, "The Yale University Library," *Parliamentary History* (1966): 206–204.
2. L. Robare, S. Arakawa, and B. Trumble, "Fundamentals of Library of Congress Classification," 2012, <http://www.loc.gov/catworkshop/courses/fundamentalslcc/pdf/classify-instr-manual.pdf>.

Mining E-Resource Data to Reveal Hidden Assets—How One School Dug Deeper Into its MINES for Libraries® Results to Assess the Research Value of E-Resources

Catherine Davidson and Aaron Lupton
York University, Canada

Abstract

In 2009–10, the Ontario Council of University Libraries (OCUL) conducted a second iteration of the MINES for Libraries survey five years after the first instance in 2004–05. MINES (Measuring the Impact of Networked Electronic Services) is a five question, point-of-use web-based survey that captures user demographics and purpose of use of e-resources. Aggregate OCUL-wide results have been reported and disseminated within member institutions. This paper describes how York University went on to analyse its own institutional-level results, specifically to learn more about how faculty use e-resources for both funded and unfunded research.

This paper situates York within its consortia context (the Ontario Council of University Libraries) and describes Scholars Portal, the technology infrastructure that is shared by consortia members. A synopsis of MINES methodology and consortia-level findings is followed by a description of the York-specific institutional results and analysis that has subsequently been carried out. The following dimensions will be examined:

- How does York's use of consortia vs. local products compare to OCUL-wide results?
- Analysis of the "Research" purpose of use: what resources are cited as being used for both funded and unfunded research?
- Are there other opportunities to optimize this pool of MINES data? Are there other lenses with which we assess the data such as correlating user IDs and sessions with student success?
- E-journals vs. e-books—can similar analysis be more effectively carried out for e-book usage?

Introduction

As a member of the Ontario Council of University Libraries (OCUL) consortium, York University

participated in both the 2004–05 and 2009–10 MINES for Libraries surveys. Both aggregate consortia-wide results from these two instances of MINES as well as the institutional level reports provided by ARL have been disseminated within York University Libraries. However, the authors felt that more could be done with the data; that a more granular analysis of this available pool of results could be beneficial in addressing internal strategic objectives.

MINES for Libraries Methodology in Brief

A wealth of resources on MINES for Libraries is available on the ARL website (<http://www.arl.org/stats/initiatives/mines/index.shtml>). Furthermore, a growing body of articles and presentations documenting various implementations can be found at <http://www.arl.org/stats/initiatives/mines/minesresources.shtml>. For a general overview of how MINES originated and how it has been used in academic and medical libraries, see Franklin and Plum (2006). Coverage of the OCUL implementations of MINES is quite thorough: Kyrillidou, Plum, and Thompson (2010) examine current methodological considerations with MINES and its future developments. Kyrillidou, Olshen, Franklin, and Plum (2005, 2006) explain how MINES was used in OCUL I. Scigliano (2010) compares web-based usage to library print holdings, library acquisitions budgets and sponsored research revenue. Thomas, Davidson, Kyrillidou and Plum (2012) follow with a description of the 2009–10 OCUL implementation.

MINES for Libraries is an online, transaction-based, point of use, intercept web survey methodology, in use since 2000, which collects data on the purpose of use of electronic resources and on the demographics of users. The patron encounters the survey while en route to accessing a full-text e-resource. (Note that detailed descriptions

of technical aspects of setting up and running the MINES survey are beyond the scope of this paper but can readily be found on the websites noted above). The patron is presented with a five-question survey that asks:

Patron status:	faculty, grad, undergrad
Affiliation:	department
Location:	in library, on campus, off campus
Purpose of use:	funded/non-funded research, teaching, course-work
Why they chose:	important resources, recommended, reading list

Figure 1: Sample OCUL MINES survey, 2009-10.

Electronic Resources Library User Survey - Algoma

Your feedback matters!

- This survey has only **five questions**
- Takes **less than a minute** to complete
- Responses are anonymous and will help us better meet your needs

Thank you for your time.

Algoma University is participating in a province-wide survey of how well Ontario University libraries are meeting your needs.

For more information about this survey or if you do not wish to participate, click [here](#)

1. Patron Status

- ☐ Undergraduate Student
- ☐ Graduate/Professional Student
- ☐ Faculty
- ☐ Staff
- ☐ Library Staff
- ☐ Other:

2. What is your primary disciplinary affiliation or major field of study?

Choose one of the following answers

- ☐ Applied Science and Engineering
- ☐ Business
- ☐ Education
- ☐ Environmental Studies
- ☐ Fine Arts
- ☐ Humanities
- ☐ Law
- ☐ Medical/Health Sciences
- ☐ Sciences
- ☐ Social Sciences
- ☐ Other:

3. Location

Choose one of the following answers

- ☐ In the Library
- ☐ On-campus but not in the library
- ☐ Off-campus

4. Primary Purpose for using this electronic resource

- ☐ Sponsored (Funded) Research (For Faculty, Graduate Students, Staff)
- ☐ Other (Non-funded) Research (For Faculty, Graduate Students, Staff)
- ☐ Teaching
- ☐ Coursework/Assignment
- ☐ Patient Care
- ☐ Other Activities including General Interest

5. Why did you choose this resource?
(You may select more than one option.)

- ☐ Important resource in my field
- ☐ Recommended by a professor/colleague
- ☐ Recommended by a librarian
- ☐ Reference/citation from another source
- ☐ Course reading list
- ☐ Other:

The figure above shows what a user would see when he or she encountered the survey. The brevity of the survey is emphasized.

OCUL and Scholars Portal
OCUL (Ontario Council of University Libraries)
 OCUL (<http://www.ocul.on.ca/>) is comprised

of twenty-one member libraries that work cooperatively to enhance information services through consortial purchasing, resource sharing, document delivery and other activities and services. These members vary significantly in scope, disciplinary focus and in size (from 870 FTE (Algoma) to 68,334 FTE (University of Toronto) in 2009-10).

Scholars Portal

In 2001, OCUL established Scholars Portal (www.scholarsportal.info), which serves as an information infrastructure to deliver digital content in support of research, teaching and learning within the province's universities. In addition to digital content delivery, Scholars Portal includes a number of core services that are shared by all members, including an interlibrary loan fulfillment service (RACER), citation management software (Refworks), and Ex Libris' SFX open-URL resolver.

OCUL I and OCUL II Implementation of MINES in Brief

In 2004–05, the Ontario Council for University Libraries (OCUL) determined the MINES for Libraries protocol to be an effective means of surveying its members (Kyrillidou, Olshen, Franklin and Plum 2005). The OCUL Directors deemed that it be conducted again in 2009–10, with similar objectives being addressed:

- To capture in-library and remote web usage of the OCUL Libraries e-resources
- To identify the demographic differences between in-house library users as compared to remote users
- To identify users' purposes for accessing OCUL's electronic services
- To develop an evaluation infrastructure to make studies of patron usage of networked

electronic resources routine, robust, and integrated into the decision-making process

A number of distinct differences mark the two instances of MINES and must be kept in mind when comparing results. When MINES for Libraries was implemented in 2004 for OCUL 1, the digital content being measured was comprised of solely e-journals (8.2 million articles from 7,219 full text electronic journals) that had been locally loaded onto the Scholars Portal platform and which served a 365,000 FTE user base. In 2010, the user base had grown to over 400,000 FTE and there was a corresponding expansion in e-resources being measured — 17 million e-journal articles, 240,000 e-books, over 40 abstracts and indexes and portals to statistical and geospatial data collections licensed both by the consortium and by individual libraries.

SFX, the open-URL resolver that connects users to this digital content, is an integral component of the 2010 implementation of MINES since it acts as the delivery mechanism by which the patron encounters the survey. To date, the content type most represented in the SFX knowledge base is by far the electronic journal. Other resources, such as e-books, data, print journals, audio visual and other non-textual resources are underrepresented.

OCUL I and OCUL II comparisons		
	OCUL I	OCUL II
digital content measured	e-journals locally loaded on SP	e-resources activated in SFX knowledge base (e-journals, SP and native, some e-book collections, a & I, library catalogues, etc.)
methodology	randomly selected 2 hr periods each month for a year mandatory	SFX as delivery systematic sampling mandatory and optional

The York Context

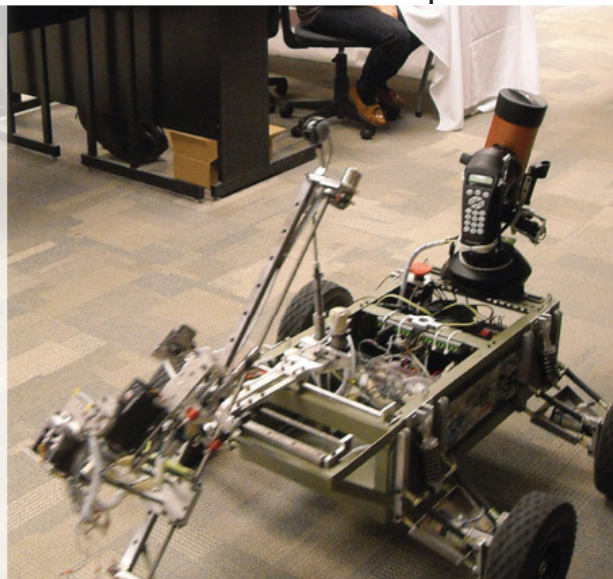
At York, the original MINES survey results, both those provided by ARL and those generated by Dana Thomas at Scholars Portal, were communicated via various channels within the Libraries. But the authors wanted to continue to

mine the data for additional insights on other elements. As AUL for Collections and Research, Davidson was interested in viewing the results specifically through the research lens. York's research agenda is top of mind and reflected in the Libraries' current Strategic Plan.

Figure 2: Theme IV: Advance York's Research Culture and Reputation

**Theme IV: Advance York's
Research Culture and Reputation**

Libraries and librarians are an integral element in the research equation. Librarians play a dual role with respect to research; we carry out our own practice-based research that advances librarianship and higher education and we provide support and infrastructure for evolving data driven research methodologies such as those seen in the emerging digital humanities.



GOAL A: YORK UNIVERSITY LIBRARIES WILL BE RECOGNIZED FOR CONTRIBUTIONS TO YORK'S RESEARCH CULTURE AND REPUTATION

Librarians will collaborate with researchers and their external partners in order to enrich and disseminate York's research output.

Strategy 11: Advance research culture of librarians.

Strategy 12: Align library activities and resources more closely with York research.

For the Libraries, it is critical to gain a better understanding of the extent to which our licensed e-resources support faculty research. So we wanted to more closely examine what faculty are citing as important for their research (both funded and unfunded).

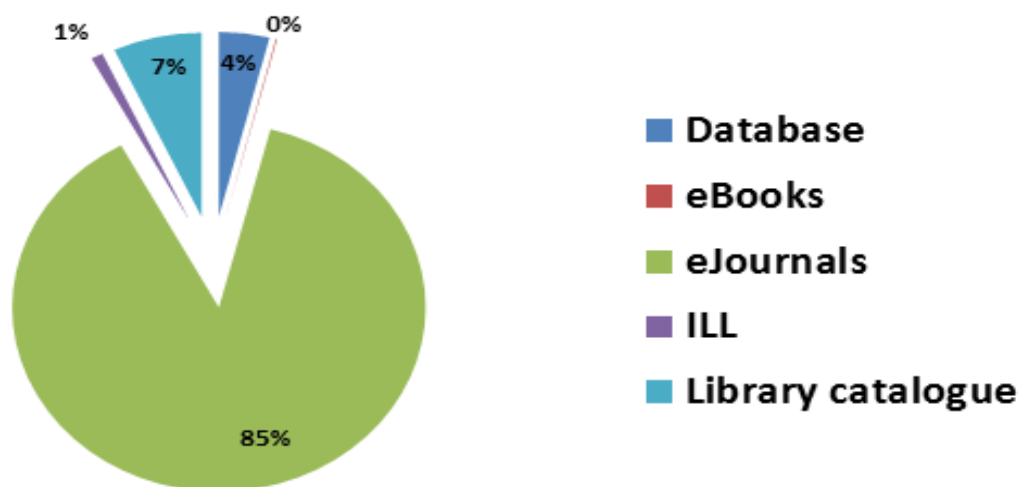
The second driver leading the authors to embark on this deeper analysis stemmed from the recent creation of the Libraries' Assessment Committee in 2009. Chaired by Lupton, this committee is also intent on establishing a library-wide culture of assessment. Lupton was instrumental in the dissemination of the ARL MINES reports internally within the Libraries. Also, having attended the ARL Service Quality Evaluation Academy in 2011 which provided an introduction to SPSS, Lupton was able to carry out the more complex cross-

tabulations of the York data that did not come as part of the canned ARL reports.

York Results Compared to OCUL Aggregate Results

In January 2012, Dana Thomas of Ryerson posted SPSS files of each institution's survey results, which she had created while serving as the Scholars Portal Evaluation & Assessment Librarian. Having the data broken down and in this format allowed us to perform cross-tabulations of results that were not possible in the institutional reports previously provided by ARL. Because the overall OCUL results were also available, we were able to benchmark York's results with those of the other survey participants overall. Keeping the research focus in mind, we went back to the data to zero in specifically on faculty results.

Figure 3: York Results: Resource types being measured



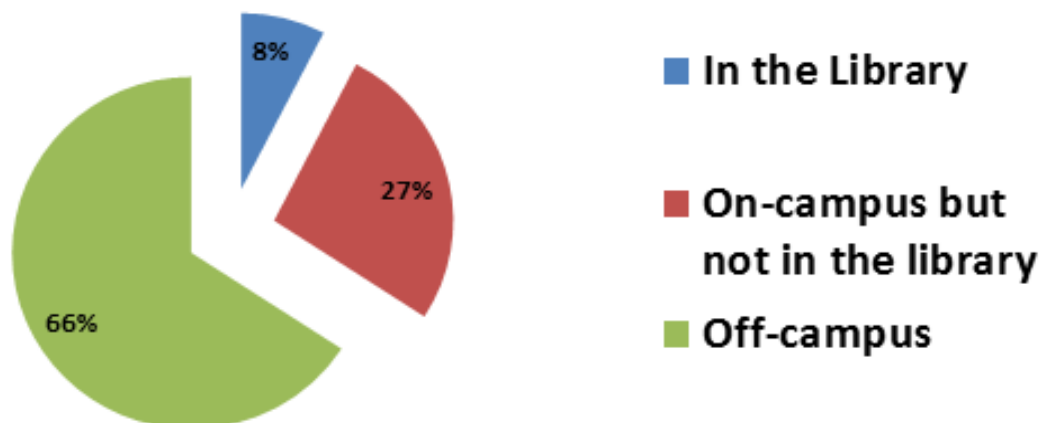
Types of Resources Being Used

First, we took a look at the type of resources that were used by survey respondents. As shown in Figure 3 above, the vast majority of resources used were e-journals (85%). So as we discuss additional analysis of the MINES survey data, and when we draw conclusions from that data, we should keep in mind that we are really talking about usage of e-journals specifically. Usage of other types of e-resources in the MINES survey was negligible. The same analysis of the overall OCUL responses reveals a similar result, with 88% of uses being e-journals. The reason that e-journals make up the majority of survey responses can be explained by the fact that, as discussed above, the survey trigger mechanism is the open URL resolver SFX and the SFX knowledge base is primarily populated by e-journals.

Location: Where are the Faculty Situated When They Search?

One basic analysis worth noting is where faculty were accessing e-resources when the survey was triggered. As shown in Figure 4 below, the majority of users triggered the survey from off-campus (66%). This trend reflects OCUL responses precisely, as 68.75% of overall users triggered the survey from off-campus.¹ At York, this result is not at all surprising, since with an overall FTE of approximately 45,000 it is certainly understandable that users cannot always access e-resources from within the library. Also, the location of York, remote from the main population of Toronto suggests that if users can access e-resources from their home, they will.

Figure 4: York Results: Faculty and Location

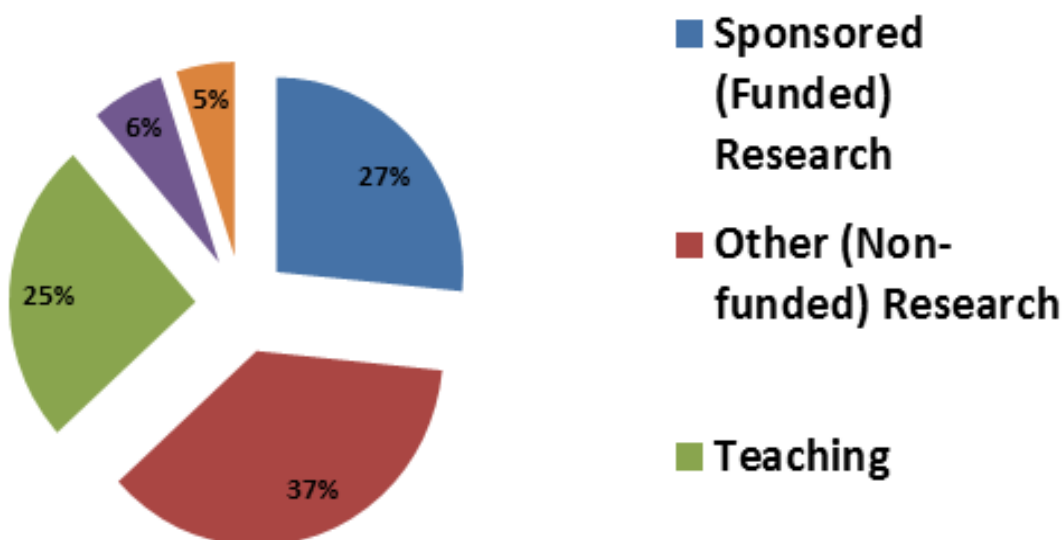


Perhaps more importantly, this data points to a growing trend of university research, study, and learning taking place in a digital environment. This type of data can be used to support strategic initiatives that focus on augmenting resources and services for remote users. Two examples would be the growth of online reference help services and the investment in electronic content versus print materials.

Primary Purpose of Use

One of the questions asked in the MINES survey is "Primary purpose for using this electronic resource." At York, the bulk of responses were related to coursework (72.35%), followed by non-funded research (12.37%), and then funded research (7.22%).² These responses are likely a reflection of the respondents' status, as a majority of them were undergraduates (70.01%), who are typically not involved in in-depth research projects outside of regular coursework.³

Figure 5: York Results: Faculty and purpose



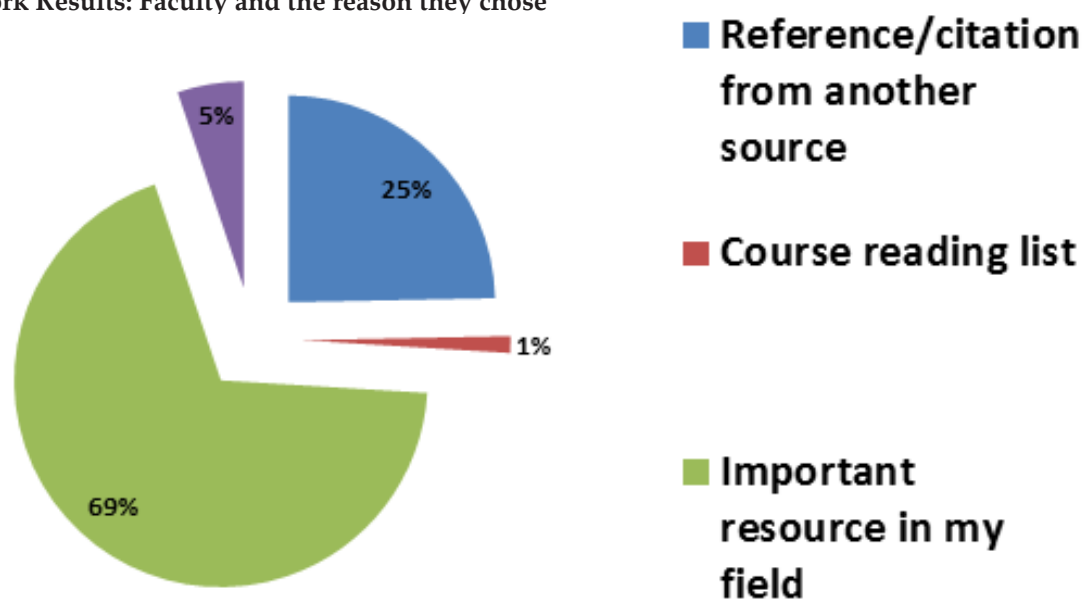
When we went on to cross-tabulate *purpose of use* with *user status*, it was revealed that of the faculty who responded to this question, 37% indicated they were using e-resources for non-funded research while 27% indicated for funded research. This compares to 25% of Faculty using e-resources for purposes related to teaching.⁴ (See Figure 5.) This response is perhaps a reflection of York's strategic focus on becoming a research institution. However it must be noted that these responses reflect those of OCUL overall, where 36.19% of faculty selected funded research as their primary purpose of use, followed by non-funded research (25.40%), and teaching (24.26%).⁵ This analysis was

done by ARL in 2011, but it prompted us to dig deeper into the data at York, to learn more about what e-resources faculty are using for research and how they are using them.

Reason Resource was Chosen

Another question asked in the MINES survey is "Why did you choose this resource?" At York, the most common response was that it was an important resource in their field (59.10%), followed by reference/citation from another source (22.55%), and then recommended by a professor/colleague (18.18%).⁶

Figure 6: York Results: Faculty and the reason they chose



In cross tabulating *reason they chose* with *user status*, it was revealed that faculty responded that they had chosen to use the resource because it was an important one in their field with even greater frequency (68.83%) and that they had followed a reference/citation with greater frequency as well (24.68%). These responses make sense since it is logical that faculty would be less likely to respond that they had used a resource because it was recommended by a professor or colleague (in this case 5.19%)⁷ (see Figure 6). When compared to responses by OCUL overall, a similar pattern is revealed where 66.62% of faculty selected "important resource in my field" as their primary reason for selecting the resource, followed by "reference/citation from another source" (23.65%),

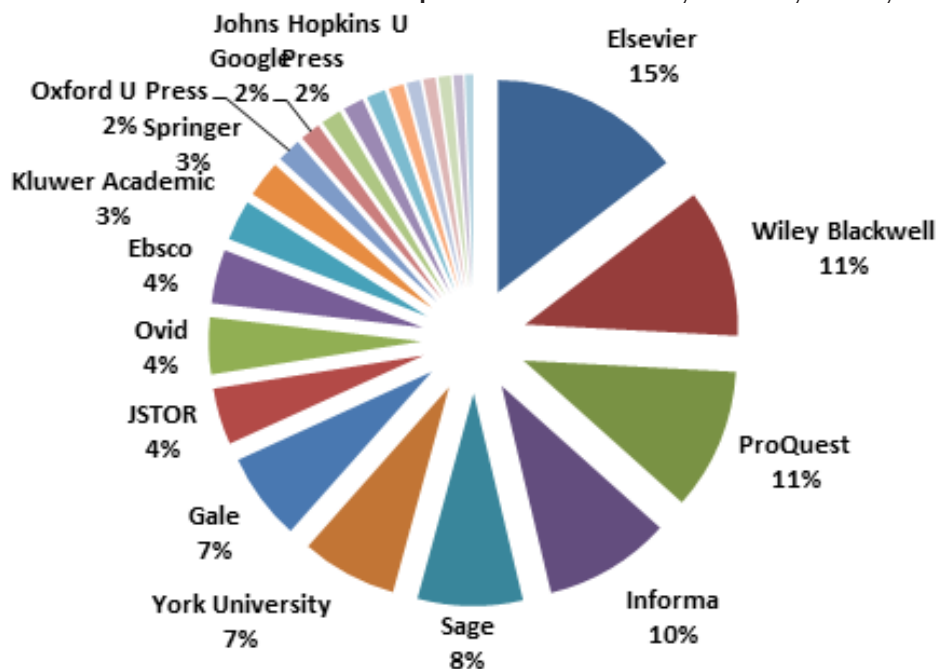
while "recommended by a professor/colleague" gathered fewer responses (3.60%).⁸ Again, while this analysis was done by ARL in 2011, it prompted us to dig deeper into the data at York, to learn more about what e-resources faculty are indicating are important to their disciplines.

Using the SPSS files created by Dana Thomas of Ryerson in 2011 we were able to perform our own cross tabulations of the MINES survey data. In crossing "Why did you choose this resource" with the actual resource chosen when the survey was triggered, we were able to view those e-resources that were chosen when users indicated they were an important resource in their field.

As shown in Figure 7, the top e-resources which were indicated as being important were Elsevier (15%), Wiley Blackwell (11%), ProQuest (11%), and Informa (10%). Again, when we refer to Elsevier, for example, we are referring to Elsevier e-journals specifically. This sort of data can support

assessment activities related to e-resources since as it could support renewal decisions, particularly in environments where costs are high, budgets are tight, and decisions to make these kinds of expenditures is likely to be scrutinized by administration more carefully.

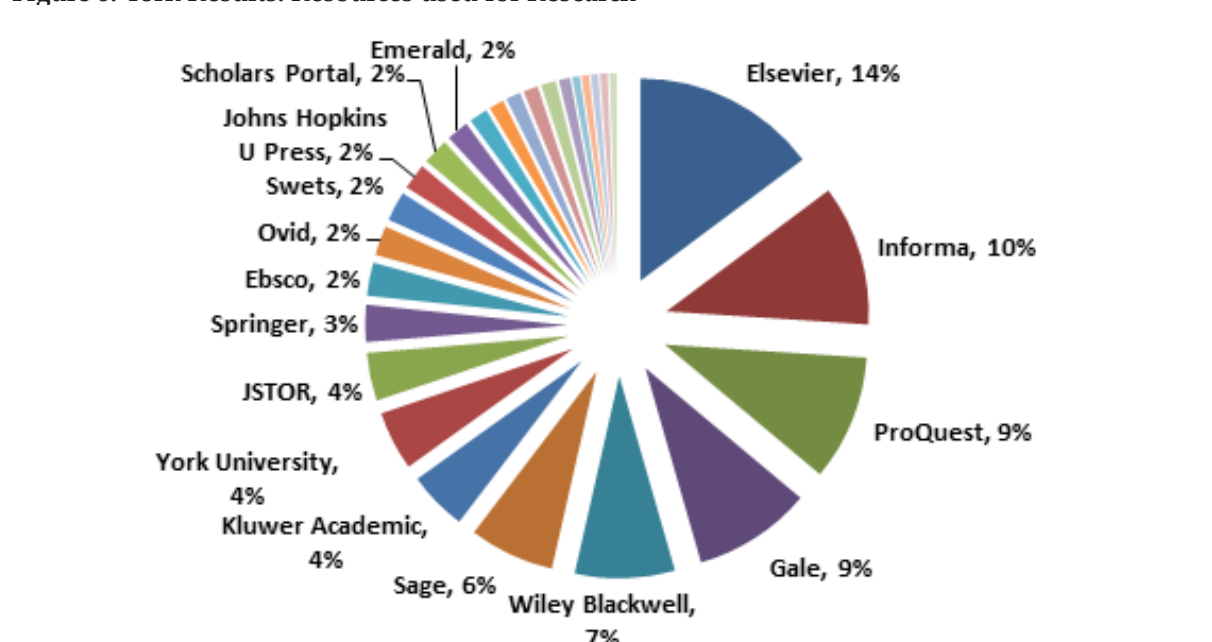
Figure 7: York Results: Resources cited as "Important resource in my field" by faculty



In a similar vein we were able to use the SPSS file to cross-tabulate "Primary Purpose of Use" with the actual resource chosen when the survey was triggered and thus we were able to view those e-resources that were chosen when users indicated that they were performing funded and non-funded research. As shown in Figure 8, the top e-resources that were indicated as being used in funded and non-funded research were Elsevier (14%), Informa (10%), ProQuest (9%), and Gale (9%). This sort

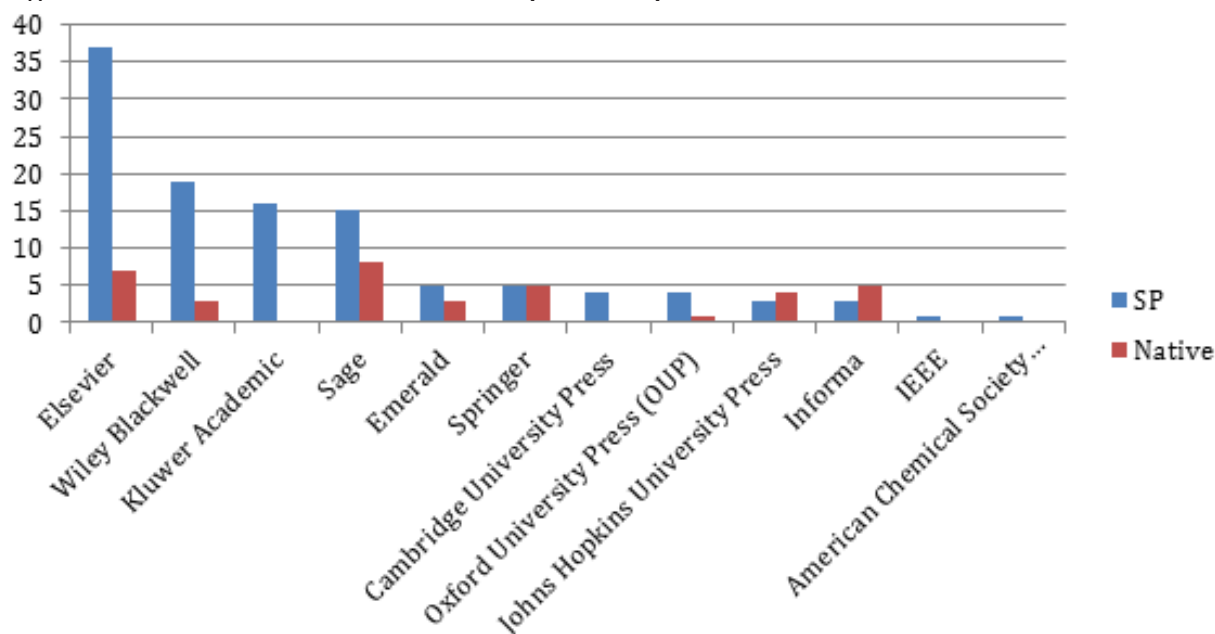
of data is also useful in supporting assessment activities since it adds contextual information for not only whether or not these resources are useful, but for what they are being used. At York, the Library Strategic plan (York University Libraries' Strategic Plan 2012–2015: New Horizons for the Digital Age) places focus on advancing York's Research Culture and Reputation. Thus, investments in these specific e-resources contribute to fulfilling that aspect of the strategic plan.

Figure 8: York Results: Resources used for Research



One of the interesting things about the MINES data is that it reveals where the user accessed the resource, i.e. by showing the URL. So when the survey is triggered it could be by a resource hosted on either the resource's native platform or on the Scholars Portal platform. Many e-journals, for example Elsevier, are accessible in both locations. The MINES data provides a unique opportunity to examine which platform users may prefer. For example, when performing research, we know Elsevier is the top e-resource for that purpose. We were able to do some analysis of those e-resources being used for research and compare what

platforms people were using. As shown in Figure 9 below, there seems to be a general preference for the Scholars Portal platform. Elsevier in particular, the top e-resource for research, is used much more on Scholars Portal than the native (ScienceDirect) platform. The fact that Scholars Portal is being used as a research tool is key information for assessment purposes by OCUL on this product/initiative. It is also valuable information from a cataloguing/access perspective since libraries have the ability to create access in their OPACs or discovery layers to either or both platforms for e-journals.

Figure 9: York Results: Dual access - native publisher platform and Scholars Portal

Concluding Observations

In digging deeper into our institutional MINES data, not only did we find qualitative information that feeds into our assessment activities but we were able to elicit a more nuanced view of how a specific user group (in this case, faculty) use and value our e-resources. The exercise provided concrete evidence to back up previously held assumptions. It also provides concrete affirmation about platform preference (native vs. Scholars Portal) which is an important factor in the OCUL context.

But the possibilities don't end here. We'd love to be able to carry out similar analytics on other formats. To date, MINES result reflect primarily on e-journal usage. Being able to conduct similar analysis by the same measures of patron status, affiliation, location, purpose of use and why they chose for e-books and other digital resources would be the logical next step.

Finally, we are inspired by the work done by researchers at the University of Wollangong⁹ with their Library Cube; we will be watching closely to see if there could be a similar opportunity here to link data captured in a user session via the proxy logs with student performance.

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Notes

1. MINES for Libraries: Measuring the Impact of Network Electronic Services and the Ontario Council of University Libraries' Scholars Portal Final Report 2011 (Washington, DC: Association of Research Libraries, 2011), 18.
2. MINES for Libraries: Measuring the Impact of Network Electronic Services and the Ontario Council of University Libraries' Scholars Portal Final Report—York University 2011 (Washington, DC: Association of Research Libraries, 2011), 7.
3. Ibid, 6.
4. Ibid, 14.
5. MINES for Libraries: Measuring the Impact of Network Electronic Services and the Ontario Council of University Libraries' Scholars Portal Final Report 2011 (Washington, DC: Association of Research Libraries, 2011), 48.
6. MINES for Libraries: Measuring the Impact of Network Electronic Services and the Ontario

Council of University Libraries' Scholars Portal Final Report—York University 2011 (Washington, DC: Association of Research Libraries, 2011), 7.

Network Electronic Services and the Ontario Council of University Libraries' Scholars Portal Final Report 2011 (Washington, DC: Association of Research Libraries, 2011), 63.

7. Ibid, 26.
8. MINES for Libraries: Measuring the Impact of
9. Brian Cox and Margie Jantti, "Discovering the Impact of Library Use and Student Performance," *Educause Review Online* (July 2012): accessed September 17, 2012.

MINES for E-Books

Brinley Franklin

University of Connecticut Libraries, USA

Terry Plum

Simmons Graduate School of Library and Information Science, USA

Abstract

This paper is the first tabulation of electronic book (e-book) usage at Association of Research Libraries (ARL) libraries collected using MINES for Libraries® and draws from a survey of e-book usage at ten academic research and health science libraries between July, 2009 and June, 2012.

These libraries represent seven ARL member libraries and more than 4,000 e-book users were included in the sample. The paper contributes to the growing literature on e-book usage in academic research libraries by profiling user demographics and purpose of use.

Using the collected data, the authors report several observations about current e-book usage at academic research libraries. The first finding is that the percentage of e-book use for funded research at all ten libraries was less than the percentages of either database or e-journal uses related to funded research. Employing a novel web-and-pen or mixed-mode survey methodology, the second finding is that the percentage of print book use related to funded research was greater than the percentage of e-book use related to funded research at eight of the ten libraries.

The third finding is that, at the six libraries where there were significant numbers of health sciences users, the percentage of e-book use related to patient care was higher than the percentage of either e-journal or database use related to patient care. The fourth finding is that the demographics of e-book users at all ten libraries differ from the demographics of print book users for either classification, affiliation, or both. This last finding leads to implications about how the adoption path of e-books over print books differs from the path of the growth in the use of e-journals and the

associated decline in the use of print journals by patrons of academic libraries.

Introduction

This paper reports findings from the first compilation of electronic book (e-book) usage at seven ARL member libraries collected using MINES for Libraries. It draws from a sample of e-book usage by more than 4,000 e-book users at ten academic research and health science libraries between July, 2009 and June, 2012. The paper contributes to the growing literature on e-book usage in academic research libraries by profiling user demographics and purpose of use.

The authors examined the use of e-books in the sample libraries by analyzing the results of web-based surveys administered at each library over the course of a year, following the MINES for Libraries protocol. In the web-based survey, data for the usage of e-journals, library databases, and e-books were collected, allowing for a comparison of the usage of these three categories of library resources. The authors also collected data from the same sample libraries through a web-and-pen or mixed-mode survey methodology in which print-survey data was collected at these sample libraries over the same time period and compared to the web-based, MINES for Libraries survey data. This latter methodology made it possible to compare the use of print books to e-books.

The authors were interested in investigating the following questions for the sample of academic and medical libraries:

- Are e-books used for different purposes (e.g., instruction/education/non-funded research; funded research; other sponsored activities;

patient care; or other activities) than e-journals or library databases?

- How are e-books used at libraries with significant numbers of health sciences users? At these specialized libraries, are e-books being used for different purposes than e-journals and databases?
- Are e-books used for different purposes than print books at the same libraries and in the same sample?
- Are e-books used by different types of user (e.g., undergraduate student; graduate/medical/professional student; faculty/staff member; or other user) than print books?

These specific research questions grow out of an interest in addressing the larger concern: are e-books being adopted in the same way as e-journals were in academic libraries, or are e-books being used differently and by different categories of academic library users? Will the adoption path of e-books over print books differ from the path of the growth in the use of e-journals and the associated decline in the use of print journals by patrons of academic libraries? While this study perhaps does not definitively answer this larger question, it collects and analyzes evidence of differences in e-book usage from e-journal, databases, and print books, as posed in the more specific research questions. The results will be of interest to libraries and librarians responsible for collection development, research and instruction services, and for anticipating trends in scholarly publication.

Definitions and Limitations

In this study, data was collected over three years. Among the implications of this paper is that these patterns of e-book usage reflect a transition point along the adoption path of e-books by academic libraries and their users. Three years is a relatively long time in the quickly changing development path of e-book technology and devices. Yet, among the academic and health sciences libraries sampled, the pattern of use is fairly consistent, so assertions about these distributions as describing a period of transition are reasonable.

Because the intercept survey methodology for e-books is web-based involving the access methods offered by the library, in general the usage of e-books offered on readers and portable

devices was not captured, unless the library made downloading to devices available through its website. Since this model of e-book access is more common with public libraries (e.g., OverDrive, <http://www.overdrive.com/>) than academic libraries, and since the web-based survey would at best document only the download of an e-book, but not its subsequent availability on an e-book device, in general data regarding the usage of e-books within the e-content platform of devices and readers was not collected, although health sciences libraries support devices and the downloading of publications to the device.

Some of these differences are noted in the *E-books and Libraries: An Economic Perspective* report:

The consumer market is dominated by the sales of e-books downloads . . . Downloads are sold outright for the user to keep, although further use may be controlled by DRM [Digital Rights Management] software. Consumer e-books therefore follow a retail model similar to online music sales and the role of the supplier is essentially limited to the sale transaction.

In contrast, the library market focuses more heavily on an online e-book supply model.

Instead of buying e-book downloads and then making the files available for uses to access offline at any time, the library pays for access to e-books that are hosted on a third-party website.¹

The consumer model is closer to the model that uses e-book readers and devices. The libraries we examined primarily used the e-books supply model. However, an initiative such as the University of Iowa Libraries experiment with patron-driven acquisitions of e-books blurs the distinction between these two models.²

A further limitation to this study is the exclusion of data about the use of textbooks supporting curricular purposes, such as Cengage Learning (<http://www.cengage.com/>) and Pearson (<http://www.pearsonhighered.com/>), but the inclusion of medical textbooks that are constantly updated, as in MD Consult (<http://www.mdconsult.com/das/booklist/view/392378760-2373>), McGraw Hill's

AccessMedicine (<http://accessmedicine.com/textbooks.aspx>), reference handbooks through Lexicomp (<http://webstore.lexi.com/IN-PRINT>), and Truven Health Analytics' Micromedex (<http://www.micromedex.com/>). Only a few libraries make curricular textbooks available, whereas virtually all medical or health sciences libraries offer online diagnosis and treatment textbooks.

Additionally, many of the e-books in libraries are in fact reference works that have been available for years from full-text aggregators such as Gale Virtual Reference Library (<http://www.gale.cengage.com/>), CQ Researcher (<http://library.cqpress.com/cqresearcher/>), Chadwyck-Healey Literature Collections (<http://collections.chadwyck.com/marketing/index.jsp>) and other reference compendiums. WoltersKluwer's Books@Ovid (http://site.ovid.com/site/products/books_landing.jsp), SpringerLink books (<http://link.springer.com/search?facet-content-type=%22Book%22&from=SL>), EBSCO's e-book Academic Collection (<https://www.ebscohost.com/e-books/academic/subscriptions/academice-book-subscriptions>), ebrary for Academic Libraries (<http://www.ebrary.com/corp/academic.jsp>) and other aggregators are relative latecomers to this world. Reference works and the e-books of subscription aggregators were included. In general, this study did not include open access e-books, unless the library folded open access resources into its presentation and access systems.

As can be seen from this brief list of inclusions the definition of an e-book is evolving, unlike the definition of a journal article, which was clear from the start. In SPEC Kit 313, *E-Book Collections*, Anson and Connell define an e-book as follows:

For the purposes of this survey, the term e-book was defined as an electronic text publication, excluding journal publications and textbooks, made available for any device (handheld or desk-bound) which includes a screen.³

Also excluded are library digitized collections.

The NISO definition, based on NISO Z39.7-201X proposed revision to the 2004 standards for *Information Services and Use: Metrics & statistics for libraries and information providers*—

Data Dictionary is the following:

4.3.6 e-books Emetrics

Digital documents, licensed or not, where searchable text is prevalent, and which can be seen in analogy to a print book (monograph). The use of e-books is in many cases dependent on a dedicated device and/or a special reader or viewing software.

Note 1: e-books can be lent to users either on portable devices (e-book readers) or by transmitting the contents to the user's PC for a limited time period.

Note 2: Doctoral dissertations in electronic format are included.⁴

This definition includes doctoral dissertations and books on portable devices but does not single out digital reference books.

Under Question #2 regarding volumes in the library of the Association of Research Libraries Statistics Questionnaire for 2011–12, the following definition is proposed as guidance to the respondents.

Include e-book units, as long as these e-books are owned or leased and have been cataloged by your library. Include electronic books purchased through vendors such as NetLibrary® or Books 24x7, and e-books that come as part of aggregate services. Include individual titles of e-book sets that are treated as individual reference sources. Include locally digitized electronic books and electronic theses and dissertations.⁵

This definition is based upon NISO Z39.7-2004, *Information Services and Use: Metrics & statistics for libraries and information providers—Data Dictionary*, but has augmented some of the NISO language. The idea of cataloging as part of the definition of an e-book is introduced by these instructions. Note also that locally digitized e-books are included in this definition, are permitted under the NISO definition, but are excluded or at least left out of the SPEC Kit 313. The Association of College and Research Libraries uses the same definition as ARL in its instructions to respondents for the ACRL Academic Library Trends and Statistics Survey, implemented by Counting Opinions.⁶

For this survey, the NISO definition was followed, although portable devices were not surveyed. Dissertations are included, as are digital reference books. Locally digitized materials such as digital collections, institutional repositories, and digital archives were not included. The intercept survey did not distinguish whether an e-book had been cataloged, so it includes e-books found through catalog searches, discovery search products, or searches of vendor collections using the native vendor interface.

Mixed Mode Surveying

The MINES for Libraries point-of-use web-based methodology has been well documented in the publications listed on the ARL website, <http://minesforlibraries.org/publications>. The print book usage data has been collected through paper surveys administered as part of the indirect cost studies, conducted for the last thirty years at more than fifty universities. This print survey methodology for surveying in-house library use of materials and services is the library cost analysis study methodology originally developed by Franklin at KPMG and described in greater detail by Franklin at the Fourth Northumbria Conference.⁷

There is much interest in the design of web surveys, particularly in comparison to print survey design. Studies of web and pencil-and-paper surveys usually compare a web survey method to a paper survey method to look for differences in the distribution of values, self-selection by the respondents, evidence of digital divide, validity, reliability, and differences in response rates. However, most of these studies are comparing administration of identical surveys by print mailing of a paper survey and by emailing a link to a web survey.⁸ The purpose of these studies was usually methodological, to search for differences between the assessment techniques, and finding few, to justify the web survey as less costly, more accurate, creating a larger possible sample frame, and ease of processing the data. This phenomenon is sometimes called mode dependency in survey response.

Generally, the results of these studies suggest that internet based surveys produce data that is at least as reliable, valid, and of equal quality as data obtained via more traditional survey methodologies. Consequently, internet surveys and more traditional paper-and-pencil surveys

have been reported as producing equivalent data.⁹

A reasonable question is: can we compare the results of a pencil-and-paper survey with the results of a web survey? Although the response rates may differ between mixed-mode surveys, there is little evidence that the results are biased or that the distribution of the results of the web and pencil-and-paper surveys are substantially different. The methodological studies that compared mixed mode results, finding little difference, are typically self-administered surveys, not intercept surveys.¹⁰ These studies tend to be from the early to mid-2000s, when web surveys were being introduced.

E-Books

The literature related to e-books is extensive and recent, as librarians, authors, publishers, Google, vendors of devices and collections, and copyright attorneys wrestle with this changing landscape. From the librarians' point of view, summaries of the current state of e-books document rapid change in the technologies of access and digital rights, content, file formats, business models, and pricing.¹¹ Interestingly, Ennis in his summary of the "2012 Survey of Ebook Usage in U.S. Academic Libraries," sponsored by e-books on EBSCOhost, notes that in academic libraries students tend to use computers and laptops to read, rather than tablets or dedicated e-readers.

There is extensive literature about the impact of e-books on the academic library and the associated management issues, primarily focusing on collection management and collection development. Much of the literature of e-books is tied to collection development decisions in academic libraries about whether to purchase e-books and speculation or studies on whether the use of print book materials is different than that of e-books.¹²

A survey to assess the use of e-books and print books, distributed to the patrons of the HealthSciences Library System at the University of Pittsburgh, found that the use of e-books and print books was positively related. Eighty-six percent of interns, residents, and fellows reported using an e-book to support clinical care, a finding supported by this paper as well.¹³ The literature review by

Staiger,¹⁴ finds that the academic users of e-books search the text for discrete bits of information, rather than reading the book, a finding supported by Slater.¹⁵

The literature review by Slater discusses some of the issues of adoption of e-books, including discovery of e-books in the library, digital rights management and licensing, different e-readers and PDAs, e-books publishing in certain content areas and not others, and pricing models.

Patrons do not use e-books because they find the experience of using e-books incongruous with their experience of using other electronic resources, and many of the unexpected limitations they encounter when using e-books are not inherent to the format.¹⁶

Implicit in Slater's abstract is the idea that libraries and now the open access movement have trained researchers to expect digital journal articles in more or less the same form as the print, and that e-books are somehow different.

Guthrie proposes a different set of reasons and a different framework for why the print-to-electronic transition of e-books will not resemble the print-to-electronic transition of e-journals, although he is addressing the same problem.¹⁷ Guthrie offers six reasons for the orderly transition from print to electronic for e-journals, and why the e-book transition may be less straightforward:

1. A robust and growing economic environment;
2. Considerable investments made in technology infrastructure;
3. Growth in discovery and search engines;
4. A standardized method for reading and printing digital articles (.pdf);
5. Creation of licensing approaches and consolidation among libraries and publishers; and
6. Preservation of e-journals and paper backups.

For e-journals, most of these areas went well or were conducive to the transition. E-books have struggled in all of these areas. For example, in the academic library e-journals focused on scholarly articles, which are consistent across discipline in structure and function. Books have a much wider range of structure and functions. Academic books are different from consumer books. While discovery has been hugely aided by Google

Books, delivery has not kept pace. E-journals were subjected to the big deal, which played a significant role in their development, but the fundamental delivery was similar. E-books have a plethora of business models, as documented in Besen and Kirby. Guthrie's conclusion, that the transition to e-books will not be as smooth as the transition to e-journals, is a helpful theoretical framework for this study. Our results support Guthrie's general proposition.

Methodology

Using the random moment research design for the MINES for Libraries web survey intercept methodology as described in several articles on the ARL website, <http://minesforlibraries.org/publications>, the authors analyzed electronic book usage at ten academic research libraries representing seven institutions. All seven universities are members of the Association of Research Libraries and e-book usage data was collected between July, 2009 and June, 2012. The web-based surveys conducted were a census of virtually all e-resource users during a randomly selected two hour period each month for a year at the main libraries and four hours a month at the health sciences libraries. Print book usage was also collected through self-reported responses to in-house surveys that were conducted concurrently with the MINES for Libraries survey. More than 4,000 e-book uses were examined on the basis of:

- Users' classifications (e.g., undergraduate student; graduate/medical/professional student; faculty/staff member; or other user);
- Users' affiliations (e.g., arts and sciences; business; education; engineering; law; medicine; etc.); and
- Purpose of use (e.g., instruction/education/non-funded research; funded research; other sponsored activities; patient care; or other activities).

The ten academic research libraries included in the study included:

- Four main campus libraries with a separate health sciences library that also offered electronic resources, including e-books. At these four libraries (libraries 1–4), users were primarily associated with the main campus.
- Four health sciences libraries that offered their own electronic resources, including e-books.
- At these four libraries (libraries 5–8), users were primarily from the health sciences.

- Two libraries (libraries 9 and 10) where electronic resources, including e-books, were offered centrally to both main campus and health sciences users.

In this study, the print and electronic surveys are both intercept surveys administered in the same, randomly chosen, two-hour time period. Patrons entering the library are intercepted and asked to fill out the print survey. Close count is kept of non-respondents. The surveys are consecutively numbered so there are two counts of non-respondents; those who refuse the survey are counted by the surveyor and those who take a survey but do not fill it out are counted by the missing numbered survey. For users of electronic services, patrons are asked to fill out a much shorter web survey as they click on a networked electronic resource, for example, an e-book.

Although the print and web-based survey forms are not identical, they are very similar. The print form includes a question that asks for an estimate of the number of print books used or charged out

during the library visit (session) and then analyzes these results by status (e.g., undergraduate), affiliation (e.g., School of Business) and purpose of use (e.g., instruction). The web form asks the patron for status, affiliation and purpose of use, but because it is an intercept survey the URL target (e.g., e-book) is known. Further, use of e-books and other licensed resources is tracked and recorded during the web session in the same manner as the print book use is estimated on the print survey form during the physical visit to the library by the respondent. Multiple uses of e-books are accounted for in both survey modes.

E-Resource Usage by Funded Researchers

At all ten libraries, the percentage of e-book usage was less for funded research than the percentage of either database or e-journal uses related to funded research. Interestingly, at each library, the percentage of funded research use as a percentage of total use was highest for e-journals, next highest for databases, and lowest for e-books. Table 1 illustrates this trend.

Table 1. E-Resource Usage by Funded Researchers

	Percentage of E-book use related to funded research	Percentage of Database use related to funded research	Percentage of E-journal use related to funded research
Main Libraries			
Library 1 (FY 2010)	2.47%	5.86%	15.15%
Library 2 (FY 2010)	1.90%	9.03%	17.88%
Library 3 (FY 2012)	5.88%	7.49%	25.40%
Library 4 (FY 2012)	14.29%	15.62%	30.61%
Health Sciences Libraries			
Library 5 (FY 2010)	1.45%	9.14%	16.45%
Library 6 (FY 2011)	0.00%	12.75%	14.90%
Library 7 (FY 2011)	4.69%	9.16%	14.42%
Library 8 (FY 2012)	3.33%	13.06%	20.02%
Main and Health Sciences Libraries			
Library 9 (FY 2011)	5.14%	14.60%	22.02%
Library 10 (FY 2012)	1.41%	3.88%	8.65%

At eight of the ten libraries, the percentage of

e-book use related to funded research was lower

than the percentage of print book use related to funded research. At half of the libraries, the percentage of print book use related to funded

research was considerably higher than the percentage of e-book use related to funded research.

Table 2. E-book and Print Book Usage Related to Funded Research

	Percentage of E-book use related to funded research	Percentage of Print Book use related to funded research
Main Libraries		
Library 1 (FY 2010)	2.47%	11%
Library 2 (FY 2010)	1.90%	7%
Library 3 (FY 2012)	5.88%	4%
Library 4 (FY 2012)	14.29%	13%
Health Sciences Libraries		
Library 5 (FY 2010)	1.45%	18%
Library 6 (FY 2011)	0.00%	16%
Library 7 (FY 2011)	4.69%	24%
Library 8 (FY 2012)	3.33%	16%
Main and Health Sciences Libraries		
Library 9 (FY 2011)	5.14%	6%
Library 10 (FY 2012)	1.41%	5%

E-resource Usage Related to Patient Care

Conversely, at all six libraries where there were significant numbers of health sciences library users, the percentage of e-book usage was higher for patient care than the percentages of either

database or journal uses related to patient care. At five of the six libraries, the percentage of patient care use as a percentage of total use was highest for e-books, next highest for databases, and lowest for e-journals. Table 3 illustrates these trends.

Table 3. E-Resource Usage Related to Patient Care

	Percentage of E-book use related to	Percentage of Database use related to	Percentage of E-journal use related to
	patient care	patient care	patient care
Health Sciences Libraries			
Library 5 (FY 2010)	28.92%	21.24%	10.95%
Library 6 (FY 2011)	20.61%	12.75%	14.00%
Library 7 (FY 2011)	42.19%	26.44%	19.55%
Library 8 (FY 2012)	50.69%	28.02%	19.93%
	Percentage of E-book use related to	Percentage of Database use related to	Percentage of E-journal use related to
	patient care	patient care	patient care
Main and Health Sciences Libraries			
Library 9 (FY 2011)	24.77%	4.51%	4.47%
Library 10 (FY 2012)	11.83%	3.78%	3.01%

Classifications of E-Book Users and Print Book Users

The authors also compiled a demographic comparison of e-book users to print book users at each of the ten surveyed libraries included in the study. All ten of the libraries asked users to identify their classification. The analysis of e-book usage by classification (Table 4) revealed that

faculty/staff at all four main libraries represented a significantly higher percentage of e-book users than print book users. At all four main libraries, undergraduates represented a higher percentage of print book users than e-book users. Graduate students, on the other hand, comprised about the same percentage of total users for both print books and e-books.

Table 4. Classifications of E-Book Users and Print Book Users (Main Libraries)

	Classification	Percent of E-book Users	Percent of Print Book Users
Main Libraries			
Library 1 (FY 2010)	Faculty/Staff	23%	4%
	Graduate Student	26%	25%
	Undergraduate	48%	69%
	Other User	1%	2%
Library 2 (FY 2010)	Faculty/Staff	23%	14%
	Graduate Student	33%	36%
	Undergraduate	34%	35%
	Other User	9%	16%

	Classification	Percent of E-book Users	Percent of Print Book Users
Library 3 (FY 2012)	Faculty/Staff	25%	4%
	Graduate Student	17%	25%
	Undergraduate	55%	69%
	Other User	3%	2%
Library 4 (FY 2012)	Faculty/Staff	55%	18%
	Graduate Student	30%	41%
	Undergraduate	14%	37%
	Other User	1%	3%

At the health sciences and main and health sciences libraries with undergraduates, undergraduate students were a higher percentage of print book users than e-book users at all five libraries. At four of the six libraries, faculty/staff represented a

higher percentage of e-book users than print book users. Graduate students again comprised about the same percentage of total users for both print books and e-books.

Table 5. Classifications of E-Book Users and Print Book Users (Health Sciences and Main and Health Sciences Libraries Combined)

	Classification	Percent of E-book Users	Percent of Print Book Users
Health Sciences Libraries			
Library 5 (FY 2010)	Faculty/Staff	20%	22%
	Graduate Student	68%	61%
	Undergraduate	3%	12%
	Other User	9%	5%
Library 6 (FY 2011)	Faculty/Staff	19%	16%
	Graduate Student	73%	45%
	Undergraduate	6%	31%
	Other User	2%	8%
Library 7 (FY 2011)	Faculty/Staff	57%	73%
	Graduate Student	31%	26%
	Other User	12%	1%
Library 8 (FY 2012)	Faculty/Staff	50%	30%
	Graduate Student	39%	47%
	Undergraduate	1%	2%
	Other User	10%	21%

	Classification	Percent of E-book Users	Percent of Print Book Users
Main and Health Sciences Libraries			
Library 9 (FY 2011)	Faculty/Staff	40%	8%
	Graduate Student	14%	18%
	Undergraduate	23%	66%
	Other User	23%	8%
Library 10 (FY 2012)	Faculty/Staff	14%	11%
	Graduate Student	42%	36%
	Undergraduate	35%	49%
	Other User	9%	4%

Affiliations of E-Book Users and Print Book Users

At eight of the ten libraries, and all four main libraries, e-book users were asked to identify their affiliation. At all four main libraries, users from the arts and sciences represented a higher percentage

of print book users than e-book users. In the majority of instances, professional school users (e.g., Business, Dentistry Engineering, Law, Library Science, Medicine, and Pharmacy) represented a higher percentage of e-book users than print book users.

Table 6. Affiliations of E-book Users and Print Book Users

	Affiliation	Percent of E-book Users	Percent of Print Book Users
Main Libraries			
Library 1 (FY 2010)	Arts and Sciences	49%	64%
	Business	9%	4%
	Agriculture	7%	5%
	Medicine	6%	1%
Library 2 (FY 2010)	Arts and Sciences	47%	66%
	Law	10%	1%
	Library Science	8%	3%
Library 3 (FY 2012)	Arts and Sciences	43%	81%
	Business	31%	3%
	Engineering	7%	6%
Library 4 (FY 2012)	Arts and Sciences	64%	71%
	Medicine	9%	1%

	Affiliation	Percent of E-book Users	Percent of Print Book Users
	Engineering	4%	6%
	Business	2%	5%
Health Sciences Libraries			
Library 5 (FY 2010)	Pharmacy	70%	9%
	Medicine	13%	27%
	Dentistry	3%	11%
	Public Health	2%	23%
Library 7 (FY 2011)	Medicine	57%	22%
	Dental School	6%	40%
	Public Health	1%	1%
Main and Health Sciences Libraries			
Library 9 (FY 2011)	Medicine	23%	1%
	Arts and Sciences	16%	43%
	Agriculture	10%	15%
	Biological Sciences	8%	1%
Library 10 (FY 2012)	Pharmacy	20%	6%
	Liberal Arts	16%	31%
	Business	14%	4%
	Medicine	12%	11%

Conclusion

The authors noted a decade ago, when electronic resources offerings primarily consisted of e-journals and databases, that “the distribution of usage of electronic resources and print journals show a similar pattern.” More specifically, we reported in 2002 that at 31 main libraries surveyed, the average print journals use related to funded research was 13.1% while electronic services use was 11.8%. At 36 medical libraries, the average print journals use was 31.2% for funded research and 25.9% for electronic services.¹⁸

This preliminary study of e-book usage reflects a different trend. The percentage of print book use for funded research was considerably higher than the percentage of e-book use for funded research. As electronic resource offerings become

more diverse, differences between how e-journals, databases, and e-books are currently used by funded researchers and patient care providers can be noted. As has been observed:

Books are indeed quite different from journals. This article has identified a number of obstacles that will need to be overcome for academic books to make a successful transition from print to electronic formats (Guthrie).¹⁹

In the current information environment, this study indicated the demographics of e-book users differ from print book users, with undergraduate students and arts and sciences users currently using print books more than e-books. It also demonstrated that continuously updated e-resources such as medical textbooks and reference handbooks have prompted clinical

practitioners to employ these types of e-books in their patient care activities. Continued analysis of e-book usage in the coming years will reveal if and when these current trends change as e-books become even more prevalent at academic and health sciences libraries.

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Quest for Continuous Improvement: Gathering Feedback and Data through Multiple Methods to Evaluate and Improve a Library's Discovery Tool

Jeanne M. Brown

University of Nevada, Las Vegas, USA

Abstract

This paper is a consideration of the approach used to assess the discovery tool *Summon* in its first year of use at the University of Nevada Las Vegas Libraries. The paper discusses the advantages and challenges of collecting evidence through multiple methods. Examples of synthesizing data gathered through both quantitative and qualitative methods are provided. Prioritization of assessment projects for year two—based on year one results—is also discussed. Some findings are presented in the course of describing the methods, although that is not the primary focus.

Implementation of Summon

The UNLV Libraries implemented the discovery tool *Summon* in fall 2011. The purpose was to provide an effective and simple tool to serve as a starting point in finding library resources. It was expected that if successful, *Summon* would lead to an increase in use of both purchased and library-created resources. Simultaneous with implementation, the Continuous Summon Improvement Group (CSIG) was formed, chaired by the Head of Assessment. The CSIG was charged with ensuring continuous and appropriate improvement to *Summon* by collecting relevant data and feedback.

Literature on Evaluation of Discovery Tools

Discovery tools have been viewed through the lens of a variety of assessment methods, including usability studies, surveys, focus groups, and analysis of use data. The most common method for gathering insight on *Summon* and other discovery tools has been the usability study, a qualitative approach based on observation of search behavior. Already, in the short time since web-scale discovery tools have become an option for libraries, several institutions have reported usability test

results.¹ Usability studies often administer a survey as well, to ascertain overall attitude toward the search experience.

Some studies gauge the reaction of users to the search tool without actually observing use. University of Huddersfield, an early adopter of *Summon*, has been active in evaluating the user's response to *Summon*. The report provided by Thoburn, Coates, and Stone² describes the use of several qualitative methods including surveys, focus groups, and feedback during training sessions and demonstrations. The emphasis, as one might expect, is on the findings, rather than on the method per se.

Quantitative analysis of use data has also been reported, sometimes in conjunction with usability studies. The Johns Hopkins Library report on a usability study of Ebsco's discovery tool EDS includes a quantitative component: a short section on use statistics of the search widget to provide context.³ Grand Valley State University, another early *Summon* adopter, has looked at the change in electronic resource use post-implementation, reporting that use statistics went up for full text resources and down for abstracting and indexing databases.⁴

Reports have been published or otherwise shared with the library community in order to inform their selection of a discovery system, or to alert libraries to possible issues as they implement a discovery system.⁵ Once a system has been selected and implemented, the tasks of evaluating the system, making improvements to the system, and ultimately deciding whether to extend a contract or replace a system follow. This is the context for the activities described in this paper.

Why Employ Multiple Data Collection Methods

Discovery tools are complex. Even though they are intended to be a simple approach for the user, they are phenomena of many parts, many purposes, and many constituencies. The information environment as a whole is complex as well, undergoing continuous change. In this evolving environment, assessment must consider multiple perspectives and outcomes. Just as the web design principle of “responsive design” seeks to lay out content in such a way that it can be viewed optimally on any device,⁶ so too must we provide services and resources in such a way that they perform optimally for a wide range of (often unpredictable) users and uses.

Our users’ expectations have changed. Beyond that, there is evidence that the way their brains function is changing as well. Research by Betsy Sparrow from Columbia University, reported in a 2012 article in *Time Magazine*, shows that “when we don’t know the answer to a question, we now think about where we can find the nearest Web connection instead of the subject of the question itself.”⁷ Perhaps that is one reason that many users start their searches with Google. The user wants to be able to find resources easily and preferably in full text. They want search tools that can be used without prior instruction. They want to be able to do it on their own. As one UNLV PhD student commented, “as a graduate student, finding resources should not be as cumbersome as it used to be.” The bottom line for many searchers is convenience.⁸

Libraries and librarians are also changing, responding to some forces while anticipating others. Like higher education and government services, they are subject to increasing accountability. They are expected to document efficient and effective provision of resources, including the discovery and use of the collections which account for a substantial portion of the library budget. They are also expected to support research by providing transparency or instruction in access to those collections. Librarians want—for their users—the best results possible. They want their users to be able to judge how and why they obtained the results of a search. Librarians want—for their own processes—a system that is easily maintained and is transparent enough that it can be easily explained to users.

The vendors who are library partners in providing these services and resources are themselves subject to economic strains, while striving to meet the changing needs of libraries and their users. Web-scale discovery tool development is one response to changing needs. For library users web-scale discovery seeks to provide a Google-like search box that does not require much from the user to elicit immediate results, yet is accompanied by enough options that the results can be managed. For library processes it also comes with limits. Many of the functions, including updating records, must be handled through and by the vendor. Enhancements are also within the vendor realm. Summon rightly boasts of its frequent upgrades, but the changing product is a challenge for training staff and users alike.

Given the changing and complex library and information environment, as well as the range of expectations for web-scale discovery, a multifaceted approach to evaluating Summon is both prudent and necessary. Many in assessment are already familiar with the benefits of triangulating multiple streams of data. Triangulation is a way of reducing reliance on one set of data, thereby leading to more surety in acting on assessment results. Frequently triangulation is seen as collecting corroboratory evidence. However data from one method can interact with the data from another in several possible ways: to confirm, to interpret, to compliment, to supplement, to question, and to lead to additional assessments.

Using Multiple Methods

The UNLV Libraries Continuous Summon Improvement Group (CSIG) has used several streams of input to evaluate the usability and effectiveness of Summon, including both qualitative and quantitative data collection methods. Modes of assessment include observation, self-report, and data analysis. The data and feedback has been used for a variety of purposes, including identifying strengths, weakness, and performance problems, and judging the impact of the tool on the use of library resources and services (see Appendix I for a chart showing assessment method linked to purpose).

Although there are many advantages in using multiple methods, there are also challenges. One challenge of employing a range of assessment

methods is balancing the time required with the value derived from each method. Methods such as transaction log analysis, though valuable, are extremely time-consuming. Other challenges include matching the method with the outcome to be assessed, and prioritizing among methods. A description of each assessment CSIG used in evaluating Summon—including strengths, weaknesses, sample findings, and the role of the method—is provided in Appendix II.

Following are illustrations of how the data from one method interacts with the data from another. The streams of feedback serve to balance user perspectives and staff perspectives (usability, surveys, staff focus groups, heuristics) and/or balance the behavior of the user with the performance of the product (ILL cancellations, availability study, usability). Findings from one method may corroborate other data or may suggest the need for further investigation.

1. Using multiple methods to identify specific performance problems.
 - a. Quantitative: availability tests
 - b. Qualitative: feedback forms, usability, heuristics, staff feedback

Several methods were used to identify performance issues. A feedback form was provided on the Summon web page, used primarily by staff during the first few months after implementation. This method was erratic and depended on individual initiative. A second method proved more effective long term, though also more time consuming for staff. Monthly availability tests were run, using the top ten keyword searches as identified in our Google Analytics profile. This quantitative method was systematic and sustained over time. Both methods identified concrete examples of problems, many of which proved to be related to full text access. Without the feedback forms from the first method, however, we might not have undertaken the second. The feedback forms constituted an early warning system.

The application of heuristics to Summon was also instrumental in identifying problems early in implementation. One example is the sort function. Summon provides three sort options: relevance, date (from newest), and date (from oldest), with relevance the default sort criteria. However, when the sort option is changed to date, relevance seems

to disappear. This problem would not have been uncovered through problem reports, nor through availability studies. It is possible that usability testing would have addressed the sort issue, had it been structured to explore that function. However because the heuristics exercise identified it as a known problem, it was not included. Instead usability testing focused on behavior regarding functions initially identified through heuristics as *potentially* problematic, such as a save icon which only appeared when moused over. Usability findings were often echoed in staff feedback, reinforcing observations from both methods.

2. Using multiple methods to highlight strengths and weaknesses of functionality.
 - a. Quantitative: log analysis of use of facets to limit results
 - b. Qualitative: training feedback, usability

A critical Summon function is providing relevant results. This function depends on several factors, including the effective use of filters (referred to in the Summon literature as facets) provided in the left column of the screen (e.g. facets for full text, for content type, for date, for library location, etc.). Functionality strengths and weaknesses present a range of success. Some of these became evident in usability testing. For instance, usability tests revealed that most users did not notice the date limiter, nor did they notice the date bars as indicators of the number of results by year. Log analysis supports the conclusion that users are often not aware of many of the facet options, which could improve retrieval of relevant results: only about 30% of searches employ facets or limiting options.

Post-training feedback reflected user perceptions of the success of the results list. Some students reported that results were right on target. Others reported that results did not seem to reflect their search. Some were simply intimidated by the number of results. Differing views on the success of Summon in producing relevant results could be attributed to differences in user patience for ambiguity, experience with searching, or skill in interpreting and evaluating results. It might also be a factor of the discipline or the search terms. A more in-depth study would improve our understanding of how users are interpreting and achieving success.

3. Using multiple methods to judge patron and staff perspectives on the product overall and

identify specific aspects seen as valuable by users and staff.

- a. Quantitative: log analysis
- b. Qualitative: usability, staff and user surveys

The mix of quantitative and qualitative methods used to explore functionality also proved useful in identifying components seen as valuable. Surveys were used to solicit opinions about Summon, with responses to open-ended questions such as “What is good and bad about using Summon?” of particular interest. Though our surveys had limited response rates, comments were nonetheless helpful in providing insight into the user’s perspective. Users liked Summon because it was easy, fast, and convenient. Negative perceptions most often mentioned relevance of results.

Additional insight on perceptions was collected through a modified scenario-based usability test in which students searched for resources for an upcoming class research assignment (a second round of usability testing during the spring). Testers participated in the research exercise by pointing out features that would otherwise have been overlooked. This enabled observation of reactions to those features. For example, that obscure save folder—which also includes a citation formatting function—elicited quite a bit of excitement.

Staff feedback also mentioned the popularity of the citation formatting function, reinforcing the observations from the usability testing. Staff also noted the value *they* saw in the abstract and the article title searching functions. However they raised potentially negative aspects that were not tested in usability nor mentioned by users. They pointed out, for instance, that there was a lack of transparent connection between the online catalog (and its functions of account management and consortial borrowing) and Summon.

A quantitative method for exploring value was log analysis. Frequency of facet use gave some insight into what might possibly be considered most valuable. For instance, the facet option limiting results to scholarly sources was not much used. This finding may be an indicator that it is not valuable or it may indicate that training is necessary to point out or even define the facet!

On the other hand, the “limit to full text” facet was among the most frequently used facets. Log analysis also highlighted behavior, such as length of time on the search page, which will be pursued through other methods.

4. Using multiple methods to begin to judge the impact of the discovery tool on the use of library resources and services.
 - a. Quantitative: ILL cancellation analysis, Google Analytics data on source of referrals to library-created content, link resolver click-throughs, vendor data on product full text views.
 - b. Qualitative: usability (future)

To judge the impact of the discovery tool on the use of library *resources*, quantitative methods analyzing a variety of use data are critical. In year one this type of data provided preliminary indicators; it should prove most useful over time. To judge the impact of the discovery tool on the use of library *services*, quantitative data is suggestive, but must be further explored through other methods such as usability testing.

For purchased library resources such as electronic journals, vendor data on changes in the number of full-text views as well as link resolver reports of the number of click-throughs to full-text access pages provided relevant information. Of interest, and once again underlining the value of multiple methods, is that data from these two sources uncovered apparent contradictions that call for discussion and further monitoring. For instance, one full text database increased in both full-text views and click-throughs; another increased in the number of click-throughs but decreased in the number of full-text views.

For library-created content, such as LibGuides and digital collections, use is one indicator. However this data too cannot be used in isolation, especially since use of web pages tends to increase each year. Indeed a better measure of the impact of Summon for this category of resources is the number of referrals from Summon to those web pages. In the first year, the number of referrals from Summon to LibGuides and digital collections was low. Both are featured prominently on the library home page so this is not necessarily cause for concern; however since Summon has identified increased visibility of library-created content as a strength of the product,

and because a single search box for all library-provided resources is a goal, it will be monitored.

The impact on services such as interlibrary loan (ILL) is less clear, both because use of ILL results from many factors and because there is no direct link between Summon and interlibrary loan data. For instance, in fiscal year 2010–2011, 320 requests were cancelled because they were available electronically from the library. With improved discoverability and access through Summon, it seems reasonable to expect this to decline. However it nearly tripled in the following year. A qualitative approach is needed to explore this pattern in more depth. Quantitative data does show that there are multiple sources of the cancelled requests: Summon, PsycINFO, and Scopus were the top three sources for the cancellations.

Planning Year Two Assessments

Planning for year two assessment—determining which methods are needed to supplement findings from year one and which are needed to track performance—must be rooted in the findings from year one. This is particularly true of feedback on user perception and behavior through methods like usability testing and surveys, but also includes use data. Changes to the product must also be incorporated as we continue to determine effectiveness, patron reaction, and possible training needs.

Choice and prioritization of future assessment methods must also be rooted in desired outcomes for the product. An effective user experience is key to considering Summon a success. Our findings pointed to two areas as having strong potential for improving the user experience: consistency of full text linking, and user training and instruction. Two other outcomes are critical to considering Summon a success: increased use of library resources and services, and support for staff workflow.

Priority will be assigned those assessments providing insight into user training, full text access, library resource use, and the connection between Summon and the ILS. We have therefore determined to continue analyses of much of the use data, both to provide an indicator of the impact on use of library resources and services, and a possible indicator of instruction impact. Other tentative

targets for assessments are listed below, though the list may be overly ambitious.

- Connection between Summon and ILS
 - o Impact on library work flow; ease of maintenance and upkeep
 - o Ability of user to go into other tools as necessary (e.g., Link+, e-reserves)
- Frequency, outcomes and impact of instruction on the effective use of Summon
 - o Choice of items in results sets
 - o Use of facets for more effective searching
 - o Decline in ILL cancellations
 - o Ability to access full text, when there is no direct link
- Impact on the user experience
 - o Usefulness to distinct populations, such as novice users, disciplinary vs. interdisciplinary researchers, transfer students, advanced researchers
 - o Change in user behavior and satisfaction
- Impact on enhanced discovery
 - o Referrals from Summon to library created content
 - o Effect of discipline scoping on relevancy of results
 - o Effect of database recommender on use of databases

The value of employing a variety of methods to collect data on the use and impact of Summon was established in year one. The approach will be continued in year two, although specific year one methods may or may not be repeated, and new methods will be employed.

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Notes

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Appendix I: Assessment method and its purpose

The input has been used to

1. identify specific performance problems,
2. highlight strengths and weaknesses of functionality and apply findings to make modifications to the UNLV instance of Summon, to identify functionality issues for eventual Summon enhancement, and to provide information to staff working with users to improve the effective use of Summon,
3. gain insight into how users search using Summon,
4. judge patron and staff perspectives on the product overall and identify specific aspects seen as valuable by users and staff,
5. begin to judge the impact of the discovery tool on the use of library resources and services,
6. gauge use and performance over time.

	1	2	3	4	5	6
Heuristics	x	x				
Usability test #1	x	x	x	x		
Usability test #2		x	x	x		
Staff feedback	x	x		x		
User feedback	x	x		x		
Availability testing	x	x				x
ILL cancellations					x	x
Search data: logs, analytics		x	x	x		x
Use data					x	x

Appendix II: Methods used in Year One of Summon evaluation

The description of each method includes strengths and weaknesses, sample findings, and the role of the method. “Role” could include providing insight into behavior, documenting perspectives and changes to perspectives, measuring performance, ascertaining satisfaction level, or determining the impact of Summon on the use of other resources and services. More generally, note is made on the role of the method in evaluating Summon and in helping to focus staff on improvement.

Qualitative Methods

Qualitative methods can provide descriptive insights. They are not necessarily generalizable.

Heuristics

Heuristics refers to the application of expert opinion and/or best practices and standards to a page or web tool. The committee applied heuristics to Summon by running a series of sample searches (previously used to test Encore) and evaluating the list of results.

- Strength – application of expert opinion to identify items to be tested with users and items to be fixed rather than testing with users
- Weakness – view of expert may overlook elements problematic to the novice
- Sample Findings – “database recommender” function produced irrelevant suggestions; save folder icon was difficult to locate since it required mousing over; sorting by date removed relevance
- Role of method – was immediately useful in that we were able to de-activate the database recommender before it caused user frustration; other observations were tested and verified through usability (e.g. lack of visibility of save folder); strengths and weaknesses were tentatively identified and shared with instruction and reference staff.

Usability – Test 1 – traditional navigation- oriented

Usability testing provided insight into patron approach to the tool. An initial usability test was performed August 2011. Four undergraduates, four faculty, and one doctoral student were asked to perform eight tasks aimed at getting to and using the Summon search engine. They were also asked questions about the experience afterward.

- Strengths – user centric; representatives from multiple populations including faculty and novice students; tested navigation, behavior, and attitude
- Weaknesses – although representatives were included from multiple populations, results are not necessarily generalizable; limited time and topics
- Sample Findings – faculty found items they had not previously encountered through use of disciplinary databases, even for topics with which they were quite familiar; students loved being able to format citations in the save folder; subject headings as filters caused more confusion than illumination
- Role of method – provided direct observation of user behavior and interaction with product; allowed identification of areas where training would be useful; provided an overall sense of ease of use and satisfaction/frustration levels

Usability – Test 2 – scenario-based

A second round of usability testing was undertaken in spring 2012, this one taking a scenario approach and asking students to search for items for a class paper. Unlike a standard usability test, librarian testers participated in their process, offering alternatives when they seemed to run into snags, and observing how that would affect subsequent process. Four students from a fourth year Honors class were recruited. The presumption was that they would approach research with more sophistication than the students tested in the fall, and provide insight into how well Summon supports research, especially interdisciplinary research. This assumption proved erroneous. Their research approach could perhaps be characterized as efficient rather than sophisticated! Nonetheless, this round did provide unique insights into research process.

- Strengths – interaction with user allowed observation of not only what they did not find (e.g. save button) but how they would change course once they did find it; using a class paper topic potentially adds a higher level of interest
- Weaknesses – required more time to fully explore issues (e.g. importance of interdisciplinary results to user); unique topics make it more difficult to compare results across participants
- Sample findings – students were very enthusiastic about the formatting feature; there was no apparent awareness of “discipline” in the research process
- Role of method – provided overall sense of ease of use, features found valuable; search snags lead to a tip sheet staff can use either at the reference desk or during instruction

Staff survey and feedback through in-person meetings

Various modes of obtaining staff feedback were employed, including staff discussions forums, discussions at weekly meetings of instruction staff, and a staff survey.

- Strengths – informed perspective; potential to provide informal trend tracking
- Weakness – librarians’ standards for the product are quite high and not necessarily reflective of user expectations
- Sample findings – comments pointed to consistent linking to full text as a problem; some noted that use was not intuitive and required instruction; some mentioned the value for student users in not having to choose a specific database
- Role of method – was useful in identifying strengths and weaknesses, specific performance problems, and insight into staff and even patron acceptance of the product; information was shared with staff which created common ground for discussion of training and issues

User feedback

User feedback was collected through several means: surveys of students after instruction sessions conducted by library staff, feedback forms after training provided by ProQuest, and a feedback form located on Summon pages (very few feedback forms were received).

- Strength – feedback on the sense of the student as to how useful the tool is, and for what
- Weaknesses – small population; opinion is less “real” than performance
- Sample findings – Summon is convenience and easy to use, with lots of results – sometimes too many results

- Role of method – indicated patron acceptance of the product; identified specific glitches; provided a student voice; echoed some of the staff perceptions; indicated an appreciation of training, which was an important insight for staff

Quantitative Methods

Quantitative methods are numerical; they may be generalizable; they are often useful for benchmarking performance over time. Since they lack context, they often serve to provide a catalyst for further investigation.

Availability study

Standard availability testing uses known item searches to evaluate accessibility. However a different method is called for to test a discovery tool whose strength and *raison d'être* is to uncover library resources across disciplines, across content types, and across other library finding tools (e.g. databases, online catalog, LibGuides, etc.). Topical searches, rather than known item searches, are particularly appropriate for testing a discovery tool. We used known keyword searches (identified through Google analytics) and replicated the top ten searches monthly from March onward.

- Strength – based on actual searches
- Weakness – searches may be ones which never appear again
- Sample findings – full text linking a consistent issue, though there seems to be some improvement from March to July
- Role of method – provided data to support (or not) the full text linking issue identified in staff feedback; used to track performance over time; informed those working with users so that they could explain and circumvent the failures

ILL cancelled requests analysis

ILL requests which were cancelled because access is available online through library resources can be a sign of user error or a sign of access failure in the search engine.

- Sample Findings – requests cancelled because they were available to the patron constituted 31% of all requests cancelled
- Role of method – indicated a potential issue which will have to be investigated further to ascertain its cause(s); used to benchmark and track over time

Search data

Google Analytics allows us to track the number of Summon uses as well as search characteristics. Data on frequency of search topics, length of time on a page, filters employed, and interdisciplinary searches were examined. Google Analytics data was supplemented by Summon search logs for October and November.

- Strength – quantitative data across all users to compliment usability observations and reported behavior of individual users
- Weakness – challenges in interpreting data without context (for instance, can a search be effective if less than 30 seconds is spent on it?)
- Sample Findings – based on the top ten keyword searches, the disciplines using Summon most frequently were: sociology, psychology, education and history; using Summon least

frequently were music, architecture, communication, mathematics; 50% of searches last 60 seconds or more; facets were used to limit results in approximately 30% of searches

- Role of method – provided point of departure for discussion on how the tool is being used; possible uses of the data include marketing Summon to disciplines which seem not to have made use of it thus far, and targeting areas for instruction

Data on use of resources

It is a reasonable expectation that use of Summon would provide seamless access to library resources and therefore result in higher use levels of e-journals and databases. Vendor data on number of full-text downloads and clickthrough data on accesses through the link resolver provide complimentary though not necessarily congruent data.

- Strength – quantitative basis for benchmarking impact
- Weakness – data may reflect factors beyond Summon which are buried in vendor practices and link resolver functionality
- Sample Findings – some databases show increases, some do not
- Role of method – provided point of departure for discussion on impact of Summon on use of library purchased resources; used to benchmark and track over time

Data on use of library-created content

One potential advantage of Summon lies in its stated commitment to highlighting library-created content such as LibGuides and digital collections. Google Analytics provides source information identifying how many hits to library content can be attributed to referrals by Summon.

- Sample Findings – number of referrals both to LibGuides and digital collections was low
- Role of method – provided point of departure for additional investigation; used to benchmark and track Summon efforts to make library-created content more visible in results

Herding Cats, Knitting Fog, and Nailing Pudding to the Wall: Toward a Mixed-Methods Approach to Evaluating Social Media Marketing in Libraries

Selene Colburn
University of Vermont, USA

Introduction

In his September 5, 2012 broadcast covering the Democratic National Convention, The Colbert Report's Stephen Colbert took the media to task for presenting valueless social media metrics. "Ultimately," he told viewers, "the true measure of last night was not the volume of the crowd or how deeply people were moved. No. It was the Twittering." MSNBC, CBS, and Fox News all shared data on "tweets per minutes" following Michelle Obama's convention speech, which topped out at 28,000 tweet mentions a minute (in contrast to Romney's 14,000). When she talked about "four more years," she garnered 22,004 tweets in a minute, which Fox News's Chris Stirewalt described as "huge, huge numbers that we're not used to seeing."

"Yes. Boom," Colbert countered. "I have never seen numbers like that. Twenty-two thousand four. That number is huge. Especially when you compare it to other numbers that are smaller." In response to an ABC reporter's concession that the data didn't measure whether the tweets contained positive or negative remarks, Colbert said, "Who knows? Who cares? Point is, these numbers are out there and it's the media's duty to report them without the liberal filter of meaning something."¹

Michelle Obama's tweet mentions may not have provided meaningful insight into the likely outcome of the presidential election, but there is growing evidence that social media can influence its users' behaviors. A study published in *Nature* in September of 2012 recorded the effects of political mobilization messages on 61 million Facebook users during the 2010 Congressional elections. The study estimates that the Facebook messaging "increased turnout directly by about 60,000 voters and indirectly through social contagion by another 280,000 voters, for a total of 340,000 additional votes."²

Social media is defined by the Merriam Webster Dictionary as, "Forms of electronic communication . . . through which users create online communities to share information, ideas, personal messages, and other content. . . ."³ Social media includes blogs, social networks (e.g. Facebook), microblogging utilities (e.g. Twitter, Tumblr), video and photo sharing sites (e.g. YouTube, Flickr, Pinterest), wikis (e.g. Wikipedia) and other tools that facilitate the exchange and collaborative creation of networked information.

Just a few years ago, social media platforms were so new that adapters were considered innovators. Many libraries now routinely share information about collections, programs, and services through these modalities. The Pew Internet and American Life Project reports that 67% of online Americans use social networking sites. Eighty-three percent of Americans between the ages of 18 and 29 report social media use⁴ and many experts agree that this generation is likely to continue sharing personal information as "ambient broadcasters" throughout their lives.⁵

As new tools and features arise, the challenge of understanding how social media works, and if it's working in the ways we want it to, can often feel like nailing pudding to a wall. How do we evaluate our efforts, in a medium that remains inherently experimental? Librarians must begin to develop some formal assessment measures that can be used to better appraise our investments of time, training, and paid resources in this evolving landscape.

Tools built into utilities such as Facebook, YouTube, and Twitter can be used to answer questions about audience, user interaction, reach, and the success of library messaging. Additional assessment methods can be deployed to further understand the impact

of social media on user behaviors. Used together, quantitative and qualitative methods, designed in tangent with library goals and objectives, can provide powerful means to assess the efficacy of social media marketing campaigns.

Literature Review

Library scientists have embraced social media as a topic of discussion since tools such as blogs and social networks began to appear under the rubric of “web 2.0” midway through the first decade of the millennium. A recent search for the terms “social media” and “web 2.0” in the database Library Literature and Information Science Full Text retrieved over 1,300 results (see Figure 1). From the first occurrence of these subjects in 2005,

when five articles appeared, annual publications quickly numbered over 100, with close to 300 currently indexed publications appearing in 2012.

Much of the library literature on this topic features overviews of social media tools in libraries or in general,⁶ exhortations to use them in libraries,⁷ or anecdotal case studies of local implementations.⁸ Proposed uses focus heavily on marketing and outreach efforts such as communicating with existing patrons, attracting new audiences, increasing brand exposure, driving traffic to the library’s website, promoting resources or services, advocating for library budgets, and gathering feedback from users. Additional uses cited include facilitating collaborative learning strategies, and fostering professional development.

Table 1: The occurrence of “social media” and “web 2.0” subjects headings in library science literature (April 2013).

Year	Retrieved articles via <i>social media</i> or <i>web 2.0</i> as subject in Library Literature & Information Science Full Text
2012	284
2011	157
2010	141
2009	217
2008	242
2007	103
2006	28
2005	5

Formal assessment of social media use is rarely taken up as a topic; discussion instead focuses on either the question of whether to use social media tools at all or comparative evaluation of which tools to deploy in various scenarios. A handful of recent articles and presentations suggest the emergence of more robust metrics.

Harry Glazer’s “‘Likes’ Are Lovely, But Do They Lead to More Logins?” investigates Rutgers University Libraries’ experience with Facebook and proposes some tools that libraries can use to evaluate their efforts. Glazer writes, “. . . there is one area of this booming field of libraries activity [Facebook use] that is woefully underdeveloped. That void exists in the lack of reliable metrics, which we can use to assess the strength of our

Facebook pages and their ‘return on investment’ for our libraries,” and goes on to propose setting marketing goals around the number of fans, interactions, and impressions, benchmarking with other libraries’ Facebook pages, and tracking “anecdotes of success.”⁹

“Measuring Libraries’ Use of YouTube as a Promotional Tool: An Exploratory Study and Proposed Best Practices,” by Selene Colburn and Laura Haines, examines the use of YouTube as an outreach tool by libraries and proposes possible metrics to evaluate the viewership, reach, and impact of both individual and collective efforts.¹⁰

In 2010, Linda Musser offered the first presentation on social media metrics at a Library Assessment

Conference, in the form of a poster session entitled “Totally Twitterpated: Evaluating Twitter Use in an Academic Library.” Musser proposes measuring the volume and frequency of tweets, the resulting interactions, the number and quality of followers, and the relevance and influence of content as measured through keyword tools such as hashtags and wordclouds.¹¹

Articles appearing in early 2013, as this paper goes to press, suggest an upsurge in the study of social media evaluation.¹²

Business literature advocates more aggressively for tactics such as use of analytics, text mining, and the adaption of a Return on Investment (ROI) model. Donna Hoffman and Marek Fogor’s “Can You Measure the ROI of Your Social Media Marketing” is particularly relevant to libraries, because it argues persuasively against using a simpler ROI calculation—e.g. how much did it cost you to start this blog and how much sales revenue has increased?—to an evaluative framework that looks more at how social media tools are meeting broader marketing goals, such as brand engagement. The authors suggest that social media ROI should not be measured in sales, but in longer term customer investment.¹³ This reframing is particularly useful in the wake of valid criticisms about the ROI model’s applicability to academic libraries, issued by James Neal¹⁴ and others.

The Internet Advertising Bureau Social Media Council’s Social Media Measurement and Intent Guide provides useful ways of thinking about relative assessment measures for social media platforms and begins to suggest the usefulness of rubrics and mixed-method assessments in this work.

It asks us to focus on:

- Intent—What are our key objectives?
- Awareness—Are users finding you in social media environments? How many followers do you have?
- Appreciation—Are users engaging with you and the content your providing? Are they responding to you? Interacting with the available tools?
- Action—Are they doing the things you ask them to do? Do they show up for events you market with social media?
- Advocacy—Are they becoming advocates for you, creating some virality? Do they share your content with their own networks?
- Benchmark—How do your efforts compare to those of your peers, to your efforts using other outreach channels, or to historical data?¹⁵

Facebook, YouTube, and Twitter

Common social media tools in use by libraries are Facebook (a social network), Twitter (a microblogging utility), and YouTube (a video sharing site). These sites are frequently listed by web ranking services among the top ten or twenty visited worldwide, with Facebook and YouTube in second and third places, respectively, preceded only by Google. Other widely trafficked social networking sites include blogging services and Wikipedia.¹⁶

Facebook, Twitter, and YouTube all have built-in tools that allow users to track statistics, such as numbers and demographics of users/fans/followers; view counts; sources and numbers of external referrals; degree of interactivity; and even the media consumption habits of followers. Each of these three tools can be used to gather more information about how users are engaging with a library’s social media presence.

Facebook

Facebook boasted more than a billion monthly active users at the end of December 2012.¹⁷ Non-profits, educational institutions, groups, and commercial entities can form a Facebook profile as a Page. Individuals who elect to like a Page receive content posted by its creator in the form of text, links to external websites, photographs, and videos. Various advertising models allow Pages to push content more aggressively to followers and their larger networks.

Facebook offers Page administrators management tools that include the ability to investigate data about followers and their interactions. The Page Insights tool tracks a wide array of metrics, many of which can be exported for richer analysis. In addition to summarizing total likes, friends of followers (indicating viral network potential), and weekly reach, it captures statistics such as:

- Demographic and location data on followers
- Daily Page likes and unlikes
- Basic information on where likes come from

- How many people were reached with page content
- How they were reached (organic, viral, paid)
- How many people are talking about a page
- How many individuals are included in a page's viral reach
- How often individual posts were viewed, liked, commented on, or shared¹⁸

Figure 1: An Overview of Data Captured Using the Facebook Pages Insight tool.



For Page administrators using Facebook's sponsored posts, sponsored stories, and paid advertisements, additional data is available to help assess the efficacy of these models in driving new traffic to the Page and in engaging current followers.

YouTube

In 2011, YouTube had more than a trillion views, averaging around 140 views for every person on earth.¹⁹ In this heavily trafficked environment, individuals or organizations can create a channel, upload videos, subscribe to other users' content, and interact by liking/disliking, flagging videos as

favorites, commenting, or posting video responses.

For any given video, YouTube's Statistics feature allows a viewer to track:

- The growth in view counts over time
- "Key discovery events" such as search paths, referrals from subscribers, views from mobile devices, embedded links in Facebook, and much more
- Basic demographic and location data about audience
- Engagement numbers for interactive features (likes, dislikes, favorites, comments)

Figure 2: A Screenshot Showing Video Statistics Features in YouTube.

Video statistics

Views and discovery



Engagement



Audience



Twitter

Twitter is a microblogging tool that allows users to “tweet” posts in 140 characters or less and to share text, links, photos and videos. Individuals and/or organizations can create accounts and Twitter users can post, reply to tweets, reference other users, retweet one another’s content, and send direct messages for more private communications.

Compared to the statistics modules offered by Facebook and YouTube, Twitter affords far less internal data. Users can gain access to the number of tweets and followers for an account, as well as a record of interactions. A number of independent tools offer more robust statistical analysis for the “Twitterverse.” The Twitter Archive at the Library of Congress also offers the possibility for more longitudinal tracking than is currently available via Twitter itself, though as of early 2013 they were still working on “making the archive accessible to researchers in a comprehensive, useful way.”²⁰

Independent Tools

There are numerous independent online tools that

can be used in conjunction with social media, some of which are designed to help address the data limitations faced by Twitter users.

Hootsuite is a social media management tool (much like similar products such as TweetDeck or UberSocial) that allows users to schedule and organize their contributions to Twitter, Facebook, and other social media utilities. HootSuite Pro users gain access to a reporting feature that uses a link shortener, by which the tool tracks data such as numbers of click-throughs, retweets, and number of times other Twitter users have mentioned an account. HootSuite also allows users to sort Tweets by popularity, analyze click-throughs by region, track top referrals, and take note of particularly active users (dubbed “Influencers”) who have interacted with content.²¹

Schmap It (which as of this writing has transitioned to a fee-based utility, now called Demographics Pro for Twitter) is a service that analyzes Twitter followers for a given account and generates robust data about their demographics and interests, using

fuzzy set theory. A Schmap It analysis performed for the University of Vermont Libraries' Twitter account in 2012 indicated that approximately 16% of followers were students and that 83% were working people, with the top professions represented being journalists, writers, teachers, and librarians—a finding that squared well with the University Libraries' anecdotal impressions of its followers.²²

Google Analytics is an important external tool that can be used to track traffic to your website(s). In addition to seeing how social media tools direct users to your sites, you can create segments that track one or more social media referrers to better understand how those users behave when they arrive at your website or web-based library catalog. There's also a Social Analytics plug-in that allows you to analyze how users interact with sharing tools embedded in your web environments.²³

In addition to these and scores of other independent online tools, there are masses of local data routinely collected by libraries, including transactional statistics about how people are using and finding resources and services. These might include gate counts, reference and instructions statistics, circulation records, website statistics, online resource usage records, interlibrary loan numbers, group study room requests, and much more. Combining these with some of the aforementioned tools and with more qualitative analysis of how users experience libraries' social media presences may help facilitate a better understanding of the merits of libraries' efforts with social media.

A Proposed Framework for Evaluating Social Media

Through an analysis of available features and existing practices, the author proposes five distinct categories of social media assessment that can be used by libraries, with examples of specific quantitative and/or qualitative measures that can be utilized for each.

1. Network Mass and Audience Analysis

Assessing the size and demographics of your network, as well as followers' capacity for viral reach, is an important step toward understanding if you are meeting basic goals. If you are an academic

library, do your followers include students, alumni, and faculty of your own institution, or are they weighted toward librarians at other institutions and community members? If you are a regional library, how do your followers break down by town? If you plan to expand your social media efforts, how will you need to grow your networks?

Sample metrics include:

- Numbers of followers/fans/likers
- Demographic data
- Information on referral pathways
- Information on the mass and make-up of followers' networks

2. Content Reception

A relative evaluation of the content you are creating can help you to adjust messaging most effectively over time. Which posts or videos are garnering the most views? Do those numbers warrant the investment of time it takes to create the content? Which external links are users most likely to follow?

Sample metrics include:

- View or post counts
- Growth rate of view counts over time
- Click through rates
- Traffic to library website/catalog/online collections
- Reach totals

3. Interactivity

Much of the early literature extolling the value of social media referenced the interactive features of the medium. Questions remain about whether or not interactivity in this environment is innately valuable, though a high degree of interactivity presumably demonstrates an interest and investment in the libraries represented. More qualitative analysis can provide a richer understanding. What are the themes represented in user interactions? Are interactions positive, negative, or neutral? How do social media users understand their interactions with libraries?

Sample metrics include:

- Numbers of:
 - Comments
 - Likes
 - Favorites

- o Shares
- o Retweets/replies
- o Direct messages or posts
- Qualitative analysis of comments
- Self-reported experiences of social media users (through surveys, focus groups, etc.)

4. Benchmarking

Understanding your efforts through relative measures can help track progress over time, provide assurance that efforts are meeting industry standards, and indicate which tools work best for various kinds of communications.

Sample comparisons include:

- With peer institutions
- With institutions in related fields
- With historical data
- With other media types (e.g. direct mailings, print advertisements, e-mail announcements, etc.)
- Between social media types

5. Results

To measure the results of social media efforts, libraries must have clearly defined goals. Are we looking to increase circulation of a featured resource? To raise the profile of the library? To drive users to library website content? Questions about numbers of web referrals, resource use, and event attendance can be analyzed using internal data, but to better understand results and the role of social media, libraries may need to collaborate with users and social media participants.

Sample metrics include:

- Expressed intent to use resource or service marketed (e.g. a YouTube comment saying the

viewer will use a featured service)

- Increases in use of resources or services
- Increased brand loyalty or visibility
- Increases in web traffic
- Increases in event attendance
- Qualitative analysis of brand/library mentions in social media environments
- Self-reported experiences of social media users (through surveys, focus groups, etc.)

Integrating methods

Social media evaluation will be most effective if it is undertaken in the context of strategic planning, a library's overall mission, and specific social media goals and objectives. Assessment plans can draw on a number of methods and tools to better understand the full picture. A library may, for example, want to analyze its network mass and audience demographics and assess which content seems to resonate most, before following up with social media users to better understand how and why they interact the way they do.

Megan Oakleaf has argued persuasively for the use of rubrics as a tool to help guide evidence-based decision making in the library field. Oakleaf defines rubrics as "descriptive scoring schemes used to analyze and judge the quality of services, products, or performances."²⁴ These schemas, which evaluate objectives on a continuum, may be particularly well suited as an organizing device for social media assessments using multiple methods.

To illustrate the use of rubrics and the potential application of social media metrics, two sample rubrics were developed for proposed social media initiatives at the University of Vermont Libraries (see Tables 2 and 3).

Table 2: Measuring Impact of Discovery of the Day Tweet Campaign

Project description:

Tweet daily, showcasing a library resource, program, or service.

Goals:

- Increase Twitter presence and followers.
- Showcase the depth and diversity of Libraries' collections and services.
- Increase use of collections and services.

Objectives	No Impact	Some Impact	Significant Impact
Growth rate of Twitter followers during campaign	Growth rate of Twitter followers stays about the same as pre-campaign rates	Growth rate of Twitter followers increases by up to 25% (compared to pre-campaign rates)	Growth rate of Twitter followers increases by more than 25% (compared to pre-campaign rates)
Percentage of Tweets re-tweeted or replied to	Percentage of RT's and @replies stays the same as pre-campaign	Percentage of RT's and @replies increases by up to 25%	Percentage of RTs and @replies increases by over 25%
Traffic to hyperlinked referrals	Twitter accounts for 0-20% of web referrals (within 30 days of original tweet)	Twitter accounts for 21-40% of web referrals	Twitter accounts for over 40% of web referrals
Circulation/ item use	Item circulates the same as average holdings	Item circulates up to 25% more frequently than average holdings	Item circulates over 25% more frequently than average holdings
Services used	Promoted service is used the same amount (within the 30 days of original tweet) as year-round averages	Promoted service is used up to 25% more frequently than year-round averages	Promoted services is used over 25% more frequently than year-round averages

Table 3: Photo Scavenger Hunt (using Facebook/Twitter/Instagram)

Project description:

Encourage participants to post images taken in the library from a scavenger hunt menu to Instagram, Twitter, or the Libraries' Facebook page, using a pre-identified hashtag.

Goals:

- Increase representation of Libraries collections and services in social networks.
- Showcase the depth and diversity of Libraries' collections and services.
- Create peer referrals of Libraries' collections and services.
- Increase use of collections and services.

Objective	Minimal impact	Some impact	Significant impact
# of unique participants	Under 10	10-20	Over 20
# of unique posts	Under 15	15-30	Over 30
Participants report increased awareness of library collections & services	0-15%	15-40%	Over 40%
Participants report recommending library collections & services to friends	0-15%	15-40%	Over 40%

Objective	Minimal impact	Some impact	Significant impact
Participants report increased use of library collections & services	0-15%	15-40%	Over 40%

Conclusion and further questions

Social media metrics remain largely untested and/or unreported in libraries. Creating social media content and presence requires a significant investment of time; adding a layer of assessment practices to that workflow may present significant time management challenges. Libraries and librarians with mandated research agendas have an opportunity to pilot evaluative tools for the profession as a whole, in order to arrive at nimble solutions that can provide realistic feedback about both the overall value of libraries' investments in social media and in evidence-based best practices with these tools.

One of the most significant challenges in social media assessment is the variability of available data and tools, in a medium that is defined in part by experimentation and innovation. Over the course of this study, features in Facebook's Page Insight tool shifted, YouTube Statistics referral data changed, and independent tools were re-envisioned. Librarians have a potentially important role to play in advocating for the preservation of longitudinal social media assessment mechanisms, both in our own profession and in service of the larger goal of ensuring that future researchers across disciplines can access information about how users have engaged with social media over time.

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Defining User Experience in Libraries

Joseph Gilbert and Erin Mayhood
University of Virginia, USA

Abstract

Library User Experience, SPEC Kit 322, published by ARL in 2011,¹ provides one of the first published overviews of the ways research libraries are employing “user experience” (UX) in their organization. As authors Robert Fox and Ameet Doshi note, their survey results show that no strong, consistent definition of user experience within a library context has yet emerged for ARL libraries. As libraries experiment with UX—exploring what it is and where it fits in their organizational structures—trends in definition and implementation are beginning to emerge, which tend to share an emphasis on assessment. But, while assessment plays a vital role in any UX process, libraries need to recognize that we are often only implementing half of the discipline. This paper encourages libraries instead to consider emergent UX efforts through the dual lenses of assessment and design.

A BRIEF HISTORY of UX

Although UX is new to libraries, it has been a recognized discipline associated with interface design since the mid-1990s.² Before Donald Norman became the world’s first User Experience Architect at Apple Computers and Human-Computer Interaction became a recognized and wide-ranging field, he authored the seminal text *The Design of Everyday Things* in 1988 (originally published as *The Psychology of Everyday Things*).³ Considering design elements of common objects and the ways they can frustrate or conversely assist a user in achieving a goal, *The Design of Everyday Things* coins the term “user-centered design” to describe processes that remain at the center of user experience today: determining the user’s need and goals and crafting the simplest way for her to achieve them. When Norman and HCI expert Jakob Nielsen later formed a partnership, the duo brought measurable, research-based methods for making tools easier to use to the fore of design consciousness.

In 2000, Jessie James Garrett’s *Elements of User Experience Design* helped expand Nielsen and Norman’s ongoing work for the Web world. Garrett revealed user experience on the web as a complex interplay of discrete interactions and hyperlinked systems.⁴ From the workings of individual form elements to the overarching information architecture of the site to the design and affordances of similar interfaces across the web, Garrett underscores the dual—and occasionally dueling—importance of specific, local needs and contextual normalcy. A tool must be consistent and simple in and of itself, though to become truly useful and usable, it must also make sense in the ever-shifting larger context of other sites and services in the same realm.

Today, industry leaders such as Jared Spool, founder of User Interface Engineering (UIE),⁵ and Jeffrey Zeldman, founder of Happy Cog and the leading web design publication *A List Apart*,⁶ marry a keen understanding of design best practices and the capabilities of the web as a platform with a desire to study and understand users’ ever-shifting needs. Recent innovations such as new web standards, the emergence of responsive design, and the rise of both quantitative (e.g., analytics) and qualitative (e.g., usability testing) measures for user experience have further reinforced this union of design and assessment. It is this tradition of design insight combined with user research that libraries should emulate in order to cultivate relevant, exciting, and intuitive online services.

Why UX?

Given UX’s massive growth in recent years, libraries have a tremendous opportunity to learn and build upon UX successes in other industries. Central to the UX philosophy is the desire to be user-centered, which aligns with one of the core competencies of our profession: considering the needs of our users.⁷ And, while librarians have been remarkably good at *considering* user needs, we

have emphasized assessment and evaluation over design and implementation.⁸ It should come as no surprise, then, that library users are increasingly seeking out unmediated, online services instead of face-to-face reference interviews, e-mail conversations with subject librarians, and the like. With the popularity of direct services waning, visitors to a library's reference desk represent only a fraction of its user population. Librarians can no longer intuit user needs or behaviors based on typical interactions (if indeed we ever could). In response to this world of rapidly changing information systems, evolving user expectations, and administrative accountability, libraries must organize and build expertise to develop high comfort with rapid, iterative implementation of online services.

Implementing systems and online services that consider the needs of our users first requires a solid understanding of user-centered design (UCD). The Usability Professionals Association asserts that (UCD) focuses "*on users* through the planning, design and development of a product."⁹ Creating something usable is the primary goal of assessment activities which ". . . really just means making sure that something works well: that a person of average (or even below average) ability and experience can use the thing—whether it's a web site, remote control, or revolving door—for its intended purpose without getting hopelessly frustrated."¹⁰ Translated into the library world, this means using the outcomes of our user research and assessment efforts to create designs, services, and systems that make it easy for users to find, choose, use, and share information. Our assessment efforts can tell us what to create and help guide the details required in the administrative and project-planning part of the process.

Because UCD products are research driven, they are predicable, measurable, and communicable. As our libraries are asked to quantify how we contribute to student enrollment, retention and graduation, the student experience, faculty research productivity and overall prestige, we can use UCD to avoid decision making based on anecdotes and committee opinion and guarantee user adoption and success.

Dichotomy of Design & Assessment

Understanding this dichotomy of design and

assessment posed by UCD is vital to finding a way forward for library services. While assessment activities are important to UX methods in all industries, the discipline also emphasizes designed conversations, iterative implementation, and strategic direction as equally important elements.

At the ALA Annual meeting in June 2012, Steve Hiller provided a history of library assessment activities.¹¹ Since the early twentieth century we have been collecting statistics largely focused on issues related to size, expenditures and staffing. Interest in our users as "customers" has influenced our assessment activities insofar as we measure their use of our collections, facilities, instruction activities, and web usage. But Hiller makes a vital observation when he notes that measuring customer use of materials and services can show if what we offer is being used but have not measured "what users were able to accomplish as a result."¹²

As a customer-service oriented profession this gap is problematic especially given higher education's recent emphasis on institutional accountability, service improvement, budget justification, and evidence-based decision making. We will not rise to the challenges before us with service, collection, process, and performance evaluation alone because our methods do not directly lead to data-driven decision making or implementation of measurable solutions. Assessment units must rethink their methodology, the data they are collecting, and their lack of design expertise for the web—the home of the majority of our library services.

Examples of incomplete methodology can be seen in our use of surveys and focus groups, two of the most commonly used assessment methods in our libraries. Surveys easily emphasize inputs: how big and how many, but fall down when trying to measure the quality of our service—aside from telling us if people like current services. They concentrate heavily on the present ("tell me what you think of X") and provide very little in terms of future direction. Focus groups attempt to provide this direction through discussion of current likes and dislikes, and they often extend further to imagine next-generation services. "Imagine" is not an exaggeration: users are discussing abstractly what they are likely to think about future services or scenarios. But as usability guru Jakob Nielsen has been warning the UX community since 2001:

“... pay attention to what users do, not what they say.”¹³ If we are to plan accurately for our future, we must look more holistically at our use of assessment methods and expand our list of methods used within libraries and our leading organizations to include: surveys, usage counts, interviews, focus groups, usability testing, card sorting, web analytics, content audits and personae.

With a more comprehensive approach to assessment, UX teams will be armed with the best understanding of our customers and must now consider the ways we communicate and use this information. Today, sharing often occurs in the form of a report, white paper, or webpage.¹⁴ These passive methods can at best hope to enable data-driven decision making by proactive colleagues but alignment between administrative decision making and data is not always strong. It is here the UX model becomes most powerful; throw away the white paper model and organize to act by adding web expertise to our assessment resources.

A positive, though initially disruptive, outcome of researching-to-act is the ability to release improvement and new features for the library's online tools regularly and iteratively. Many software development groups are familiar with this idea, at least in the abstract, through the tenets of agile development. Agile development places an emphasis on cyclical (weekly, bi-weekly, monthly) releases based on achievable and well-defined user stories. If we apply the lessons of agile development more broadly, designing and assessing iteratively—and not just coding iteratively—we can help keep solutions lean and useful, and better in tune with the researched realities of user behavior. Rather than relying on long, intensive strategic planning sessions which result in the outlining of a far-flung goal state, we can start with lean, easily actionable activities that are repeatable and continually help us angle toward improvement.

Redefining for Libraries

Bringing all these factors to bear, an inclusive definition of this conception of UX that is also directly applicable to libraries might read:

User Experience employs user research and user-centered design methods to holistically craft

the structure, context, modes of interaction, and aesthetic and emotional aspects of an experience in order to facilitate satisfaction and ease of use. In order to implement a UX program along these more broadly conceived lines, we must modify our organizational structures to align assessment staff more closely with trained designers, making interface design an integral part of the UX process. To this end, the University of Virginia's UX Team pairs an assessment-focused librarian with a UX designer in order to facilitate a user-centered approach from assessment to implementation. This pairing obviates the need for “design by committee” and gives the UX designer a direct understanding of assessment results and user needs. It also deepens collaborations with technology staff within the library and university community and encourages user-centered design principles based on internal assessment efforts throughout the institution.

One of the most challenging organizational and project planning changes required in our libraries is the move away from costly and time consuming design by committee or “groupthink” in favor of more nimble models emphasizing user requirements, design expertise, and iterative approaches. UX, assessment-focused librarians should be responsible for researching, performing, and managing assessment activities, project planning, engaging stakeholders, and collaborating very closely with UX designers and/or developers. UX designers/developers translate assessment findings into design principles, designs, and collaborate with technical teams across the university to work out implementation details. To be effective UX designers must be fully engaged with the assessment process and users of the library, be flexible, and be able to work quickly as the cycle of designing and testing should be very rapid.

In order to satisfy these criteria, the U.Va. Library's UX Team uses a modified agile development process that is user focused, supports regular iterations, and encourages active communication. Although each project presents unique challenges, the team's process is cyclic and involves a variety of assessment techniques throughout the process of design principle creation, basic design, refined design, and development. The U.Va. Library has deployed its UX team of two on a variety of projects over the past few years but most recently

completed a library website redesign.

The last major revision to the library website occurred in 2007, and aside from a home page redesign, the changes then were mostly aesthetic rather than a full culling of site content. Having honed our methods improving our library catalog over the past few years, we first scoured annual assessment data and performed a much needed inventory of the site's content to determine what hordes of information we were currently keeping on the site, what was no longer needed or relevant, and what should stick around in one form or another. Jeffrey Zeldman has said that the creation of web content must "precede design. Design in the absence of content is not design, it's decoration."¹⁵ While design and research must be iterative and constant, it's important to note that the purpose and message of the site must lead the design and not the other way around.

Armed with assessment data including website low satisfaction scores, focus group data indicating a desire for the library to support more interdisciplinary study and cross-facility library usage, recent local and competitive usability studies, user personae, and web analytics showing large-scale user trends on our site, we were ready to move to a critical part of our implementation plan: establishing the design principles to guide our project.

Design principles are determined collaboratively by the UX team after combing through assessment data and speaking with stakeholders. Principles are used to develop project plans and requirements and can be used to measure the success of your project after completion. They are also an excellent communication tool for engaging library staff and help to clearly articulate what the positive outcomes of the project will be. Most effective are principles that are short, emphasizing both organizational and user goals, and measurable. As an example, design principles for the 2012 redesign of the U.Va. Library website were:

1. Organize by user needs, not by internal structures and facilities.
2. Streamline access to search and research
3. Present the Library as place, space and community
4. Embed instruction where appropriate (not in a silo)

5. Facilitate rich engagement with our special physical and digital collections
6. Make our site accessible, responsive and search engine friendly
7. Enable embedded news and updates from our distributed service points
8. Make content updates easy

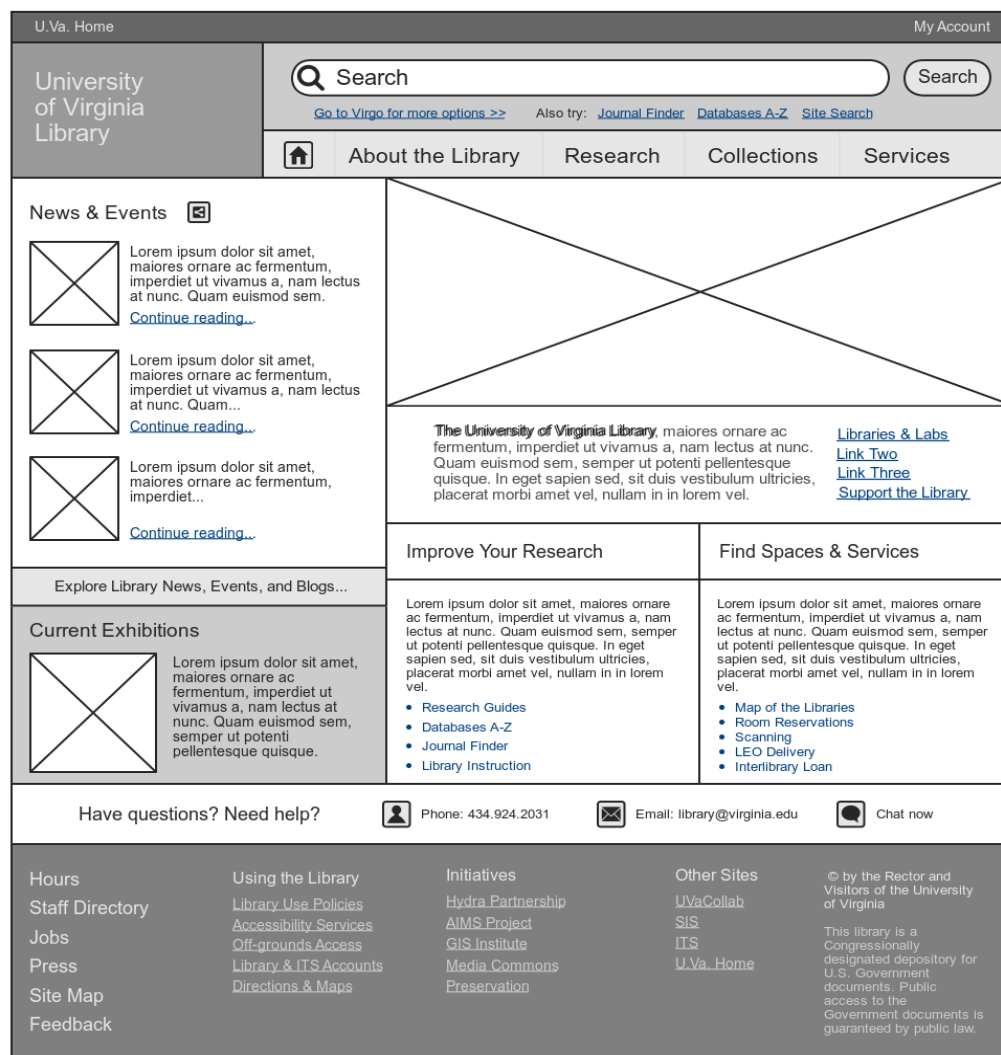
Following creation and presentation of the design principles, the UX designer immediately begins work on wireframes for presentation to the stakeholder community and usability testing. Wireframes are simple, low fidelity sketches of page layouts and content produced using software or pen and paper. Wireframes are often linked together to provide rudimentary interactivity and navigation, and stand as the antithesis to high fidelity mockups created in software like Photoshop. Wireframing is an excellent tool for moving a project forward quickly; wireframes are quick to produce, keep stakeholder discussions focused on usability of a site rather than getting caught in discussions of subjective design elements, and allow assessment staff to quickly assess the viability of a design before major developer/designer effort.

Design principles and wireframes are perhaps the two most important stages at which to gather stakeholder feedback. At this point, you are laying out your overall philosophy for the site through design principles and through wireframes making design decisions that will likely remain through the entire project. While the stakes are high in terms of what is being decided, the cost of making changes at this point is very low compared to an in-development or post-release tool, so both the project team and stakeholders should feel liberated to poke and prod the project at this point. Reaching concord during these two phases also helps assure acceptance of later phases by stakeholders, since it is easy to draw parallels between more polished versions and these early deliverables.

To ensure good feedback, we ask our fellow librarians and administrators to remember one rule: describe problems and not solutions. Often, feedback comes in the form of "I think we should do X instead of Y," which pushes conversation into the realm of personal opinion instead of evidence and user goal-based thinking. By keeping the conversation centered on user needs and goals,

the problem-solving expertise of the project team is respected while maintaining a user-centered approach.

Figure 1 – Home Page Wireframe



Once the project is underway, and also after a new release, user research becomes perhaps even more vital than it is during the earlier planning stages. Truly coming as close as possible to meeting user needs requires direct observational research of your local community using your tools and services. The most effective way to observe users interacting with our online services—and a vital element of the UX process—is usability testing.¹⁶ By asking users to perform a typical set of tasks, libraries can observe difficulties with terminology, navigation, content, and arrangement. The most commonly employed usability testing method used in libraries is the “think aloud” method,¹⁷ which

combines user task completion with verbalizations of their reactions, impressions, and thoughts. This method allows us to simultaneously measure the degree of effectiveness, efficiency, and satisfaction¹⁸ users have with our online services. To be most effective, testing must occur early and often before too much development time has been committed to a particular design or direction.

In keeping with our pledge to assess throughout our website re-design process, we performed a round of usability testing immediately following the presentation of wireframes to our stakeholders.

Thanks to our data-driven process, initial testing of the wireframes was extremely positive; users reacted positively to the simple architecture and found the site easy to navigate; categories and terminology worked in most cases. Locating physical library spaces proved a simple task, and our biggest change—the consolidation of our library services onto one core services page—was intuitive and easy to navigate. Most importantly, testing confirmed our design principles and some users, although already familiar with the library system, expressed genuine surprise at the depth of services the library provides. All of this feedback confirmed we were moving in the right direction.

Always critical to the usability process is exploring what is not succeeding in the design. Our testing revealed areas needing improvement including terminology on our services page, the need for clearer distinctions between discovering a service and a call to action such as making a reservation, difficulty locating the library account login button, and the need for more maps and visuals of our interior spaces. Our users wanted glimpses into

our study spaces to get a sense of the character of each space.

We also identified the weakest area of the site: the collections pages. With our new design we were attempting to highlight our collections and make clear as possible the various paths users must take to explore them. Although usability testing identified some quick fixes we could make to improve the page (such as providing more visual cues directing users to tools used to search the collections), it became clear that multiple initiatives and projects across the library must coordinate to fully realize our goals. In situations such as this, members of UX teams can function as ombudsmen: helping teams throughout the organization understand the needs and goals of our users thus providing focus and momentum to projects. As a result of our testing, UX is working with the Collections Steering Group, Digital Curation Services, and Special Collections to generate new, streamlined ways for our users to access our unique collections.

Figure 2 – Collections Wireframe

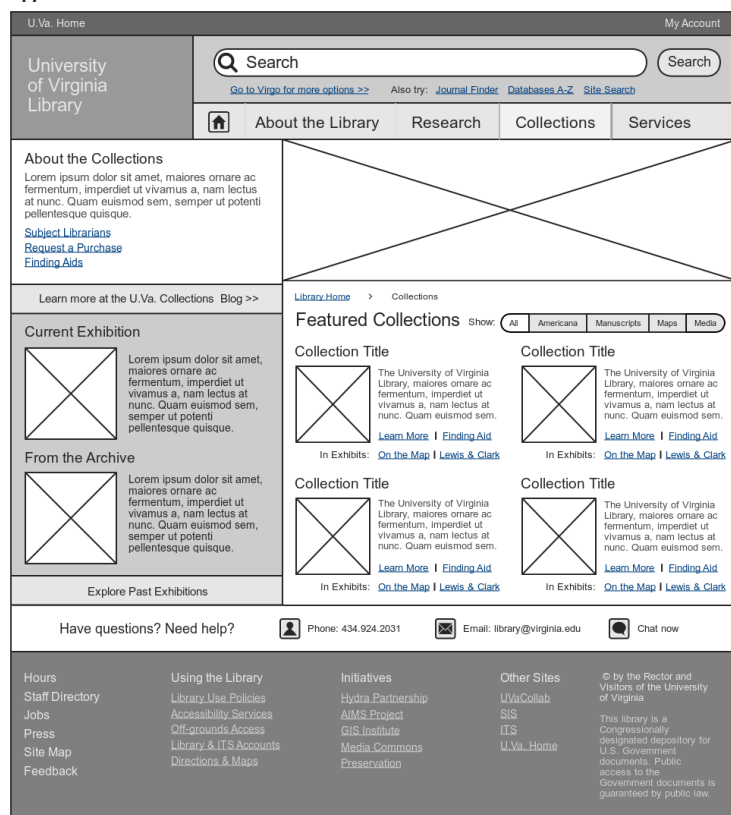
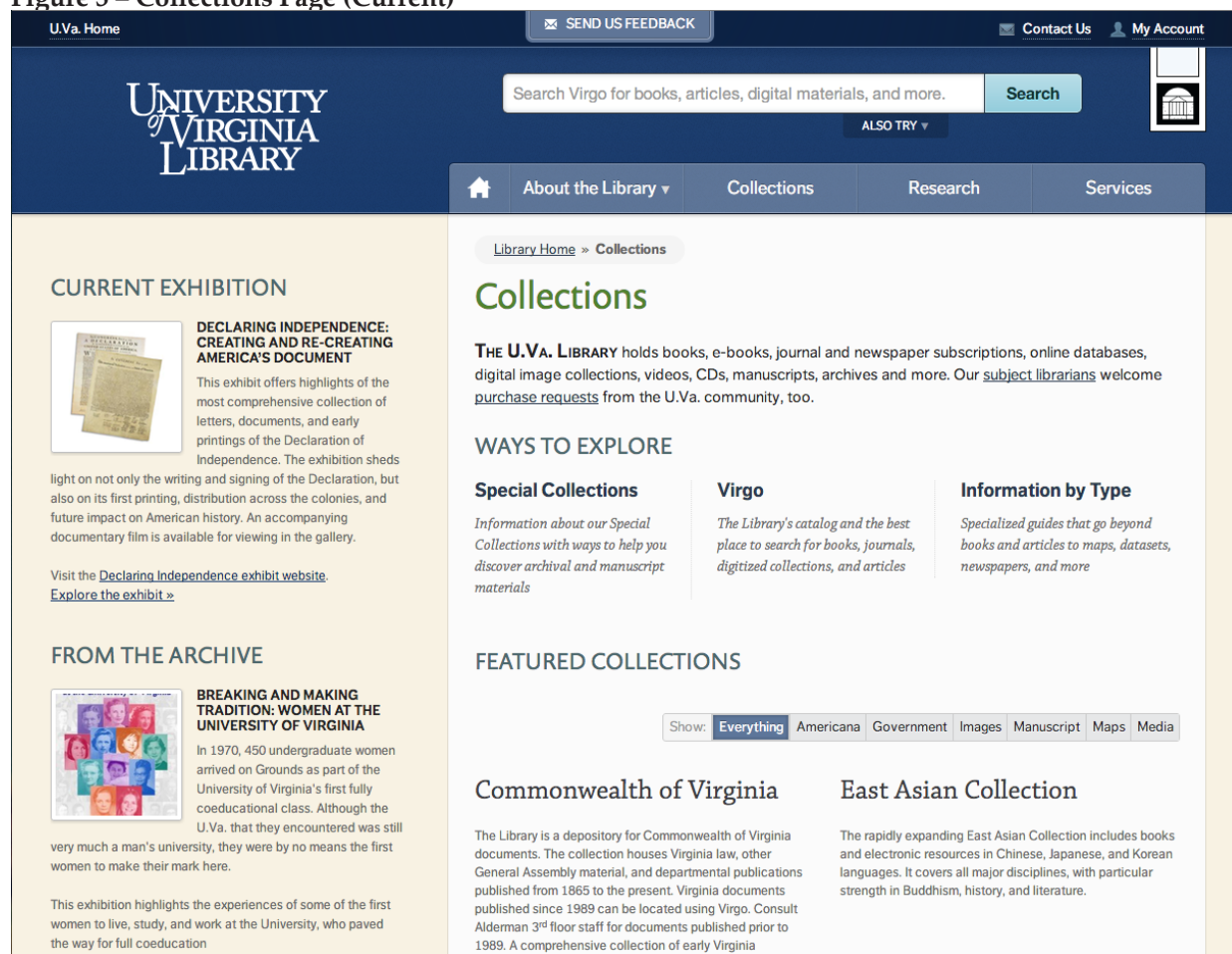


Figure 3 – Collections Page (Current)



Our aggressive communication strategy led us to share verbally our initial findings immediately following the final test at a public services meeting. What followed was a period of rapid development based on those findings and testing. With each design iteration we conducted testing; sometimes we did further usability testing with students and faculty, other times we called upon library staff to test new features and the site on a variety of devices.

During this period we were also preparing for the release, training of our staff and ongoing feedback. With assessment embraced as part of the design process, institutions can avoid periodic, large-scale redesign rollouts in favor of iterative releases offering steady improvement/increase in online services.

As our discussion has shown, we believe that the

way forward for library user experience lies in lean, informal, and iterative processes. While the precise user experience process employed by the U.Va. Library may not be an ideal fit for every institution, adding a user-centered design focus allows project teams to establish abstract design principles, build an information architecture, confirm design decisions, and prioritize continued work. The importance of a joint assessment and design-led approach lies in its ability to help an organization move from top-down approaches to a responsive, action-oriented strategy that favors doing over deliberating.

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Notes

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Mining Library and University Data to Understand Library Use Patterns

Scott Britton

University of Miami, USA

Abstract

Data on library use is generated automatically by various systems, but it is often hard to analyze because those systems are unconnected. For example, library circulation data, turnstile data, and database access logs are all on different systems. Furthermore, the desire to protect user privacy has prevented the retention of user-identifiable data that could be used to correlate library data to non-library data such as grade point average, major, and academic department. In 2011–2012, a University of Miami research team comprised of librarians, the University's Center for Computational Science, and a faculty member in the Computer Science department worked together to collect and analyze library turnstile pass-throughs, library system data, and database logon activity as well as data from the Registrar, Human Resources, and Student Activities. A major outcome of this effort was that the collection and secure analysis of the research data was completed in a much more efficient manner than if the partnership had not been created. All datasets were uploaded into a single, secure data warehouse at the Center for Computation Science allowing datasets to be analyzed and correlated against each other. The analysis of data revealed patterns of library use by academic department, the pattern of book use over 20 years, and the correlation between library use and grade point average.

Introduction

Academic libraries are increasingly required to offer evidence of their effectiveness in supporting institutional goals such as improving undergraduate retention, accelerating graduate student degree completion, and facilitating faculty research. Libraries are expected to demonstrate both their contributions to the institutional goals as well as fiscal responsibility in meeting those goals. User surveys and assessments of instruction sessions are often used to provide evidence of library effectiveness. While these tools should continue to be a significant source of data, there

are limitations to their effectiveness in showing unbiased impact of library services and collections on the academic mission of the university. Specifically, they rely on users providing an accurate report regarding their use of the library and its collections. They also entail the creation of the assessment tool, user time to complete, and often incentives to increase user participation. An alternative to surveys and feedback forms is to use existing data and data mining techniques to reveal patterns of use and correlations between library activities and user achievement.

While data analysis is a critical component of most library research, the data is often contained within a single dataset of manageable size. Data mining, on the other hand, usually entails use of multiple datasets or a very large dataset along with techniques for analysis that reveal patterns. The subject of data mining has been discussed in library literature for several years. Cullen¹ provides examples of libraries already employing data mining to assist with management decisions. He points to the University of Pennsylvania's Data Farm and the University of Waterloo's use of software from Cognos as examples of libraries that routinely export large quantities of ILS data for external analysis. Nicholson² has written frequently on data mining for libraries and coined the phrase "bibliomining" or the use of large sets of library data to provide evidence-based management. He finds similarities between library data and the need for healthcare data³ to be private yet still available for research. Kovacevic,⁴ Chen,⁵ and Tsai⁶ each propose use of library data mining to provide recommender services for library materials. Finally, while not specifically using the term "data mining," Goodall⁷ used data mining to correlate library use with academic achievement. The value of data mining for libraries is evident. There is great potential in the data collected by libraries, and data mining methods can use it to produce individualized services for users, assist with

decision making, and provide evidence of library impact on academic achievement and research.

Most libraries collect data and use it to answer questions such as number of checkouts, website visits, popularity of various collections, etc. For many libraries, deeper analysis such as that provided by data mining, may be difficult or impossible due to lack of user identifying information, lack of system interoperability, or simply staff unfamiliarity with advanced data analysis. Forming partnerships with researchers on campus is an efficient way to benefit immediately from the experience of others, both in the analysis of data as well as the management of user privacy concerns. The University of Miami Libraries did just that by entering a partnership⁸ with the University of Miami's Center for Computational Science (CCS).

The Libraries had already been talking with the CCS regarding support for e-science and data curation. The CCS exists to aid researchers in the analysis of very large datasets. Working primarily with faculty in the Miller School of Medicine and the Rosenstiel School of Marine and Atmospheric Science, the CCS provides secure processing and expert analysis of sensitive research data. Because the CCS does not have long-term data curation in their mission, the Libraries and CCS began working together to address the needs of researchers for that service.

The idea of a data mining partnership with the CCS began when librarians learned that Mitsunori Ogihara, a professor in Computer Science and Director of the Data Mining Program at the CCS, was conducting research in the digital humanities. Ogihara's work in digital humanities data mining involved the type of analysis the Libraries wanted to explore. However, with limited data expertise to do the analysis, the librarians had been unsure how to begin. Examples of questions the librarians wanted answered included "Who is and who is not using the physical library?," "What is the useful life of a book?," and "Does library use correlate to student success?" Librarians sought the expertise of Ogihara to conduct research on library data with the goal of discovering patterns of use and demonstrating library effectiveness. That Ogihara also had a joint appointment with the CCS made it clear that the CCS should be included in the

Libraries' data mining partnership. The research team would draw on CCS expertise in handling large sets of private data as well as navigating the requirements of the Institutional Review Board.

Methodology

The research team, comprised of two librarians, Ogihara, and staff from the CCS, reviewed a list of research questions provided by library administration. Answering many of the questions required sensitive data such as GPA and membership in student activities, therefore approval by the Institutional Review Board (IRB) was required. The research protocol was written and IRB exemption was requested and received. Much of the needed data was not in possession by the Libraries, so requests for data were sent to the Registrar, Student Activities and Human Resources. Having IRB exemption and a research partner that routinely works with private medical data made the request for external data much easier than expected. After a brief explanation of the research project and how the datasets would be managed, everyone willingly provided their data.

To receive IRB approval, all data had to be purged of personally identifiable data. The data was further "cleaned" by restructuring the data so that the various datasets could be integrated into a single data warehouse. The process to do so involved submitting identified data to the "vault," a secure server at the CSS. In a process similar to what is used to clean private medical records for large-scale review projects, the CCS replaced the University ID number with a unique project ID number. The project ID number was assigned to demographic information (department, major, campus role, etc.) but no personally identifiable data (name, University ID, etc.) was retained. The unique project ID allowed the various cleaned-up datasets to be linked without compromising privacy. Analysis of the various datasets did not allow look-up by name, University ID, address, etc., and queries were not allowed that might produce a result unique enough to potentially identify someone based on demographic information (e.g. junior and female and physics major).

The library contributed the entire database of item-level records, bibliographic-level records, order records and patron records to the data

warehouse. To protect readers' privacy, the ILS does not retain personal information in its historical circulation transaction data. In order to collect longitudinal transaction data that could be linked to demographic information, a weekly snapshot of currently checked out items was created during the summer and fall of 2011 and spring of 2012. The snapshots were sent to the CCS for cleaning. Because most items are checked out for more than one week, cleaning this data also required removing circulation transactions that reappeared in subsequent snapshots. While not a complete record of all circulation activity, the result was a very large and representative sample of circulation activity over time that could be linked to demographic data.

Collecting data for visitors to the main library was relatively simple because it has turnstiles at the entrance that require swiping a University ID card. The library turnstiles keep a log of all ID card swipes. A complete record of all card swipes for the summer and fall of 2011 and spring of 2012 was uploaded to the data warehouse and cleaned. Other libraries at the University do not require a card swipe, so data regarding physical use of the library is restricted to the central library.

Tracking visitors that use the Libraries' online resources was more difficult. Licensed databases are restricted by IP address, therefore users on campus may access them without needing to authenticate. No personally identifiable user information is available to analyze. Furthermore, the IP addresses on campus are not assigned systematically, so we were unable to easily group users' IP addresses into anything that might provide demographic information such as department or campus role. However, off-campus use of licensed databases does require personal authentication. For those accessing databases via the main library portal, authentication is provided by a proxy server so that it appears to database vendors that users are working from on campus. The proxy server keeps an audit log showing University ID and the session number assigned to the user for the period they are logged in. Data from the audit log was uploaded to the data warehouse and cleaned. This way demographic information was linked to audit log data and a partial picture of off-campus use was produced. The Law and Medical Schools use different authentication systems so users accessing library

resources via those portals are not included in the audit log. However, everyone from Law and Medical is able to use the main library portal, so some activity from those users is captured.

In addition to the audit log, the proxy server also keeps a log of the activity of each authenticated session. Elements of the log include the session ID provided by the audit log and the web address of the accessed resource. Because nearly all of these web addresses are created dynamically by the database providers, the character string varies greatly from resource to resource. The Libraries' systems contain the URLs for each of over 130,000 individual journal links and 1100 databases. Resources with zero usage over the review period will drop from consideration, but those items that do show usage can be paired with demographic and other information to create a robust picture of user activity that may be analyzed down to the resource level.

The cleaned datasets in the data warehouse were uploaded to a SQL database. Tables in the database were structured with each row representing a transaction or person and each column representing an element of the rows. All rows included the project ID that represented a unique University ID, the data element that allows the various datasets to be linked. Java code was written to match various datasets, such as turnstile activity with grade point average. Matlab was used for correlation analysis.

Findings

Through analysis, patterns emerged from the data, and preliminary findings are discussed here. The findings are preliminary because with each finding, more questions are raised requiring deeper analysis of subsets of data. It is this process of iterative queries and the cyclical review of the data that makes data mining such a powerful assessment tool.

Analysis of library checkout patterns by user type revealed a pattern that was expected (Figure 1). The percentage of checkouts roughly corresponds to the size of the population, with undergraduates checking out the most number of items, followed by graduate students and then faculty. This does challenge the assumption that undergraduates are no longer interested in print materials, but

that assumption was also challenged by general observation of students lined up at the circulation desk. What is surprising is the low percentage of all undergraduates that check out materials (Figure

2). Less than 20% of undergraduates checked out library materials in the fall 2011 semester. Faculty checked out materials at only 16.24%.

Figure 1

User types	User type % of total checkout
Undergraduate	36.43%
Graduate	25.05%
Faculty	20.57%
Others	17.96%
total	100.00%

Figure 2

Fall 2011	% of user type checkout
Undergraduate	19.12%
Graduate	22.16%
Faculty	16.24%

We expected to find that departments use the library in different patterns. The assumption is that humanities will use the print collections more than the sciences, and that assumption was supported by the data. Figure 3 shows the top five departments as a percentage of total circulation.

As expected, English takes the top spot by a large margin. But we were not expecting to see Music, Law and Architecture in the top five places. All three schools have their own libraries and we would expect those collections to satisfy most of their needs for print materials.

Figure 3

top 5 departments	% of total checkout
English	12.26%
Music	4.41%
Law	4.27%
Modern Language	3.21%
Architecture	3.12%

From observation, we knew that members of the English Department were frequently in the library. However, there are also many people in the English Department. A greater percentage of members from a smaller department might use the library without us realizing it. In Figure 4, the data shows the percentage of people in a department

that checked out materials. Music again appears unexpectedly in the top five. All of the top five departments support our observations that researchers in the humanities and social sciences are heavier users of the library than researchers in the sciences.

Figure 4

top 5 departments	% of dept checkout
Music	36.05%
English	34.80%
History	24.50%
Latin American Studies	22.81%
International Studies	22.60%

To evaluate the physical use of the library, we conducted an analysis of turnstile counts for the central library. We know that undergraduates use the library in greater numbers than other groups, but they are also the largest group. Therefore, our question was not simply the numbers of each user group, but the percentage of each group using the library. Figure 5 shows that graduate students use

the library in the greatest percentage, followed by undergraduates and finally faculty. These numbers seem low considering that when classes are in session, over 100,000 people pass through the library turnstiles each month. Closer analysis showed that there are a large number of frequent users which raise the overall turnstile count without increasing the number of unique users.

Figure 5

Turnstile (fall 2012)	% of user type using turnstile
Undergraduate	28.68%
Graduate	34.26%
Faculty	19.45%

Figure 6 reveals the percentage of library users based on department. The top five departments as a percentage of potential users within that department are very surprising but similar to the patterns revealed by the book checkout data. The

Schools of Music, Architecture and Law are again in the top five departments despite having their own libraries. English continues to be a department that uses the library heavily.

Figure 6

turnstile (fall 2011)	% of dept turnstile
Music	59.66%
English	57.77%
Architecture	48.25%
Law	26.11%
Modern Language	20.41%

Analysis of various material types was also conducted. Books by a large margin continue to be the most commonly checked out material. The

next highest type of material is quite different depending on the type of user. After books, the next highest category of materials checked out to

undergraduates is DVDs. For graduate students, CDs. scores take the second spot and for faculty it is

Figure 7

Material type	undergraduate	graduate	faculty
books	84.00%	90.00%	90.84%
CDs	0.80%	1.28%	3.73%
Scores	6.37%	5.54%	1.77%
DVD	6.90%	1.86%	2.56%
Others	1.94%	1.32%	1.10%
total	100%	100.00%	100.00%

We asked if there was a difference in checkouts based on undergraduate status. For books, the pattern is what we expected. In figure 8, it is clear that upper level students are checking out more books than the first and second year students. This pattern does not hold for DVDs, which are much more evenly used among all class levels. Although

the DVD collection was, for the most part, created to support research and teaching in courses such as film studies. Unlike the book collection, which was also created for research and teaching, the DVD collection is likely used for recreational purposes, and therefore use patterns do not differ as much by class level.

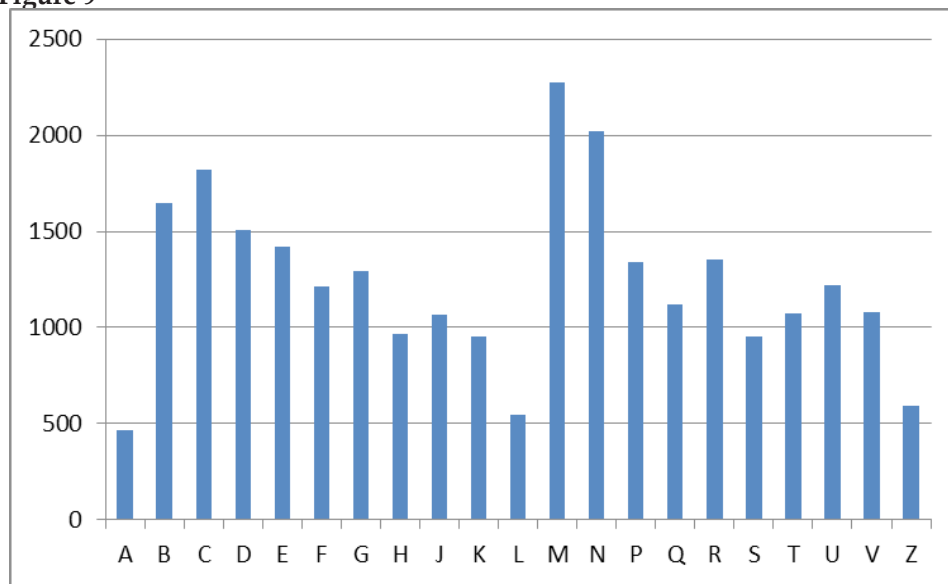
Figure 8

Student class	Book checkout	DVD checkout
Freshmen	11.80%	27.41%
Sophomore	19.58%	25.48%
Junior	25.76%	20.46%
Senior	42.86%	26.64%
total	100%	100%

Libraries often look for tools to help determine which materials to keep on site, which materials to move to remote storage, and which can be withdrawn from the collection. Circulation data can help identify individual titles that have either a very high or very low number of checkouts. Aggregate data for various subjects or call number groupings may help identify high use and lower use collections. But neither method provides an answer to the question, "What is the useful life of a book?" In other words, for a book purchased today, how long should it remain on the shelf before relocating it to remote storage? We looked at the average length of time from the date of

cataloging to the date of last checkout. Circulation data is only available from 1991 to the present, so items cataloged between July 1, 1991 and June 30, 1992 were examined. The total number of days between the catalog date and the date of last checkout was calculated and then grouped by call number. Figure 9 shows how the useful life of books varies greatly depending on the discipline. As expected, philosophy, history, music, and art display longer useful lives than books in the sciences. Surprisingly, literature displayed the same pattern as medicine, and the social sciences were nearly all used for less time than the sciences.

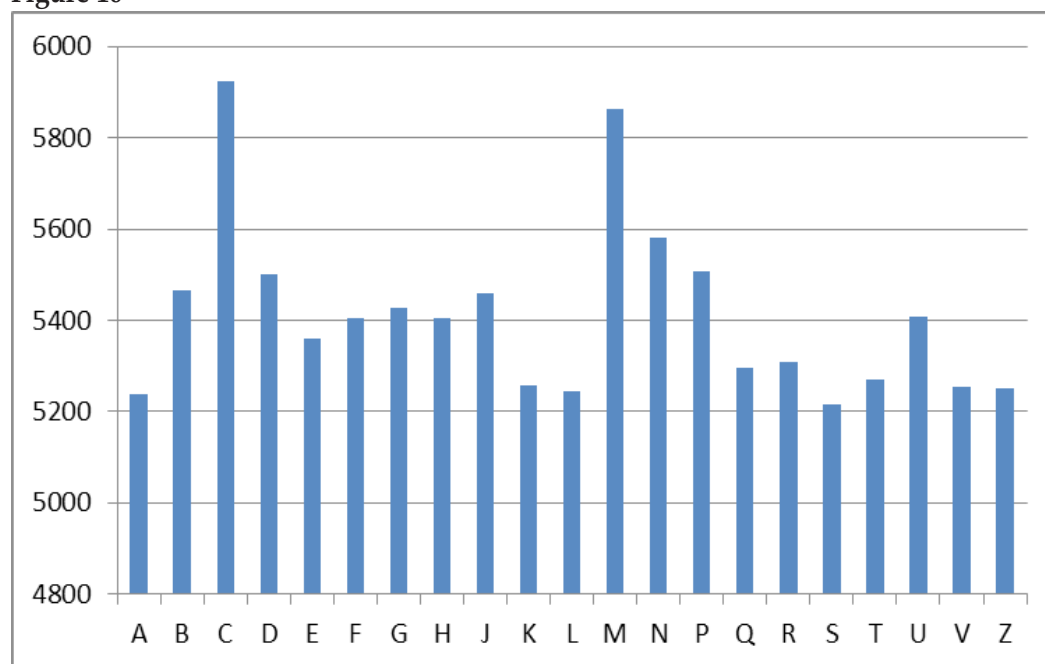
Figure 9



The results shown in Figure 9 prompted the research team to ask a slightly different question. Because the size of the various call number groupings are not evenly distributed, and in any group there is a large number of books that never circulate, we removed from the analysis items that never circulated. Our thought was that books that never circulated in 20 years are more a

reflection of collection development decisions than the longevity of “useful” books within a subject area. Figure 10 shows the results of removing uncirculated books from the analysis. Literature and the social sciences rise significantly. It is assumed that as circulation data grows beyond 20 years, an even greater difference in book use will be revealed between the humanities and sciences.

Figure 10



Our final research question related to library use and student achievement. A Pearson correlation analysis was done comparing turnstile and book checkout with undergraduate GPA. As shown in Figure 11, there is little if any correlation between data from one semester's use of the library or book check out and that semester's GPA. There is a weak positive correlation when a semester's use

of the library is compared with the cumulative GPA, although book checkout still shows little correlation. While the low level of positive correlation is disappointing, it is clear that analysis of the data must be refined. Not all majors require use of the library or books to succeed, and the need for library resources changes as students progress through the curriculum.

Figure 11

Correlation Analysis	turn- stile	check- out
Semester GPA	0.16	0.08
Cumulative GPA	0.21	0.12

Breaking down undergraduates by class year shows that seniors do have a much stronger correlation between GPA and library use. Figure 12 shows that it is still true that cumulative use (noted

as "cum") of the library has a stronger correlation than a single semester's use (noted as "sem"). The other three classes have very weak positive correlation.

Figure 12

GPA by class	circ_ sem	circ_ cumltv	turnstile_ sem	turnstile_ cumltv
Freshman	0.06	0.053	0.068	0.0736
Sophomore	0.0991	0.1091	0.1044	0.175
Junior	0.031	0.0383	0.0517	0.0607
Senior	0.1089	0.213	0.1154	0.322

Breaking down undergraduates by their various schools and the College of Arts & Sciences by the areas of Humanities, Social Sciences and STEM revealed some puzzling findings. Architecture and Law were the only two schools that showed consistently positive correlations between GPA and library use, and this held true for individual semesters as well as cumulative use. Music showed a small positive correlation for cumulative turnstile use only. Interestingly there were several minor negative correlations revealed in the analysis.

The School of Communication and The School of Marine and Atmospheric Science both showed a negative correlation in three of the four areas of library use. The negative correlation is very weak, but certainly not what we wanted to see. Marine has their own library, so their students' use of the central library (on which the analysis was conducted) may not be a good indicator of how library use might otherwise positively affect their academic success.

Figure 13

GPA by school/area	circ_ sem	circ_ cumltv	turn- stile_ sem	turnstile_ cumltv
architecture	0.3213	0.2133	0.3495	0.2211
business	0.0609	0.0594	0.0363	0.0481
communication	-0.0626	-0.0661	-0.0653	0.0513
education	0.0058	0.011	0.0063	0.1064
engineering	0.0125	0.0313	0.0136	0.0217
humanities	0.0985	0.0799	0.1071	0.0144
law	0.2693	0.1904	0.2929	0.2019
marine	-0.0298	-0.0351	-0.033	0.1063
medical	0.0349	0.0091	0.0379	-0.0321
music	0.1053	0.136	0.1528	0.2435
nursing	0.0213	0.045	0.0232	0.0932
other	-0.0121	0.0269	-0.0062	0.0343
social sci	0.0739	0.1254	0.0806	0.1373
stem	0.0269	-0.0027	0.0292	0.0528

Discussion

Data mining involves analyzing large sets of data in order to reveal patterns. Usually, the process requires several cycles of analysis, with each cycle presenting answers as well as more questions. The research conducted so far at the University of Miami Libraries is just the first round of analysis. The basic questions were answered, but as expected, more questions arose.

The next level of analysis will review checkout patterns more narrowly divided by department and major to determine if researchers in areas of study that we assume are heavy library users (literature, history, etc.) have checkout patterns in greater percentages than our initial findings. We also need to understand why schools such as Music, Architecture and Law utilize the central library to the extent that they do. What are they doing in the central library that they cannot do in their school library, and what are they checking out?

The data on the useful life of a book is interesting, but more information is needed before we can

act on it. More detailed subject breakdowns will help narrow the collection areas that might be selected for relocation to remote storage. Specific subclasses might skew the results of the broad subject classification, so those instances must be discovered. The data analyzed was for books purchased in fiscal year 1992. Analysis should be conducted on fiscal year 1993 to see if the patterns remain the same or if some anomaly occurred in publishing or acquisition activities.

Finally, the correlation between library use and student achievement is always difficult to determine. Library use matters more in some disciplines. Books also are needed in some disciplines more than others. Further breakdown of the data into specific majors will be necessary to reveal a truer correlation between library use and student achievement. Furthermore, many more factors than just library use contribute to student achievement. Therefore, non-library factors must also be analyzed to determine if they show positive (or negative) correlation and how those correlations compare to that of the library.

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Notes

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Dingding Wang, Post Doctoral Associate, Data Mining, Center for Computational Science, University of Miami

Christopher Mader, Director, Software Engineering, Center for Computational Science, University of Miami

Luz Maristany, Senior Project Manager, Software Engineering, Center for Computational Science, University of Miami

Joel Zysman, Director, High Performance Computing, Center for Computation Science, University of Miami

Game of Clones: Using Analytical Research Data to Identify Institutional Peers and Collections Needs

Elizabeth Brown

Binghamton University (State University of New York), USA

Abstract

Libraries routinely generate and submit data to internal and external sources including ACRL (Association of College and Research Libraries), ARL (Association of Research Libraries) and NCES (National Center for Educational Statistics). Academic university and college campuses compile data on student performance and research activities for assessment and planning. Individually, these approaches rarely provide data to identify strategic planning priorities in collection building or implementing new library services. Analysis of comprehensive collections and service data indicate that identifying library and institutional peers requires data sources linked to multiple standards that correlate library collections data with citation or other usage metrics.

Institutional peer evaluation is an activity of growing interest within libraries with potential applications to campus assessment, strategic planning and scholarly communications activities. Research analytical tools built from citation databases, such as SciVal Spotlight and InCites, are being marketed to libraries and campus administrators as strategic research assessment tools. Collections data from these tools can be used to determine collections gaps and future needs. Peer institutional analysis data suggested multiple data sources provided complementary information and used in tandem with research analytical tools were a powerful indicator of quality and effectiveness of academic programs. This is true if data sources utilize different data collection techniques or productivity standards.

Introduction

Academic library collections, services and spaces have come under increasing scrutiny in recent years. Declining endowments, budget cuts, rising inflation costs and the growth of new social media, web search engine tools and alternative publishing

models has concerned the library community. Recent literature suggests the depth and breadth of a library's collections and its traditional role as the center of campus intellectual activity is being challenged. Library assessment activities have been targeted to directly address the relevancy and effectiveness of the library within curricula and student success. Less attention has been paid to identifying niches where libraries can demonstrate value outside these areas.

As financial support for academic libraries has been challenged, libraries have experimented with offering scholarly communications services and tools to support research. These services include providing guidance with data management plans and digital curation of research materials, assisting with author rights and copyright concerns, and working with authors to locate policies for depositing works in both local and subject-based repositories. In many cases these services were created in response to federal mandates as a way to more directly participate in the research process.

Within this climate of budget challenges and emerging service models, libraries can use research analytical tools as a vehicle to both develop new services and anticipate support for future collections needs. This can better position libraries as a provider of strategic data for long-range decision making and planning, and move beyond traditional perceptions of library services and support. Libraries can create niches in the campus ecosystem by locating gaps in strategic information gathering and identifying library databases and other tools that can provide data needed for campus assessments and strategic planning. Some gaps identified at Binghamton include peer institutional data, peer library data, research group performance strengths and department interrelationships, and emerging research strengths.

The Binghamton University Libraries used a variety of analytical data tools to help tell its story and provide briefing materials targeted to administrative offices and the President and Provost. These materials included visual charts, graphs, tables and other data to demonstrate the importance of library collections and library databases in the gathering of strategic data. This information, coupled with anecdotal information on library needs, provided a rich set of data to identify future collections priorities and enhanced library services.

Binghamton University and the Binghamton University Libraries

Binghamton University (BU) is a US doctoral-granting institution in the State University of New York (SUNY) system enrolling over 14,500 students and with 800 faculty members. Accredited by the Middle States Association of Colleges and Secondary Schools, BU's external grant and private support exceeds \$30 million annually. BU has six schools: the Harpur College of Arts and Sciences, the Thomas J. Watson School of Engineering and Applied Science, the Decker School of Nursing, the College of Community and Public Affairs, the School of Education and the School of Management. The University averages a 90% retention rate for first-year students and a 68% four year graduation rate.

National rankings indicate Binghamton University performs well for undergraduate education. *US News & World Report* has ranked BU in the top 50 public universities for the 15th consecutive year. The *Princeton Review* ranks BU as the 4th best value for public universities based on academics, cost of attendance, and financial aid. *Kiplinger's Personal Finance* ranks BU as 2nd overall for best value among the nation's public colleges for out-of-state students and 16th overall.

Individual programs and schools have received recent attention from rankings publications. *BusinessWeek* ranks BU's School of Management Accounting program 2nd in the United States, the School of Management as 13th best for public universities and 37th overall. The *Princeton Review* ranks the Thomas J. Watson School of Engineering and Computer Science among its "Great Schools for Computer Science/Computer Engineering Majors."

The Office of Institutional Research (OIR) maintains a common dataset on undergraduate performance and matriculation data as well as compiling special reports and white papers for the campus community on various assessment topics, including calculating the economic impact of BU on the regional economy (2010), graduating senior survey dashboard data and feedback on academic programs and support services (2010) and a comparison of performance in distance education versus traditional classroom experiences (2010). BU also regularly administers nationally normalized tools such as the National Survey on Student Engagement (NSSE) to students.

The Binghamton University Libraries contains 2,409,403 volumes including 1,869,980 microforms, 93,414 journals, 120,959 maps, 118,948 sound recordings, 234 databases, 2,951 CD-ROMs, and 2,000 linear feet of archives in four facilities. The Glenn G. Bartle Library houses collections in the fine arts, humanities, social sciences, math, computer science and Special Collections. The Science Library contains science materials and the map collection. The University Downtown Library and Information Commons supports the College of Community and Public Affairs. The Library Annex contains over 500,000 volumes in all subject areas. Library memberships include the Center for Research Libraries (CRL), Research Libraries Group (RLG), Council on Library and Information Resources (CLIR) and Online Computer Library Center (OCLC).

Recent assessment initiatives in the Libraries include administering the LibQUAL+® survey in 2003, 2004 and 2009. Feedback from these surveys requested in expanded service hours, enhanced paper and electronic resources for library collections, additional group study space, and increased access to technology tools for student assignments and research. The Libraries incorporated this feedback into a number of new services and spaces. Additional internal assessment activities in the Libraries include projects focused on collections budget allocation review, success of virtual reference transactions, resource sharing activities, uniqueness of collections held by the Libraries, usability of the Libraries' website (2002, 2003, 2006) and OPAC (2005), exploratory studies on the effectiveness of search engines to locate library content (search engine optimization) (2007, 2008) and undergraduate research habits (2007)

and critical research skills (2006).

Assessment and Reputation Management

While the Libraries' assessment projects identified specific services, collections, and spaces in need of more attention, with few exceptions many of these projects focused on improving services, spaces and collections for undergraduate students. There was a need, with increasing emphasis on graduate education and research productivity, to identify and promote tools to help the campus with research support and productivity.

As the Libraries' virtual and physical spaces were changing, a Scholarly Communications Committee in 2005 and later a Scholarly Communications Officer in 2008 developed partnerships and alliances within the campus, university system and other venues to influence policy and scholarly practices in changing models for scholarship. As programs and support services emerged and developed, it became clear that part of the program's success depended upon campus faculty and administrators understanding how technology and changing publishing models influence reputation management within and outside the academy.

When the scholarly communications program began, many library studies of scholarly productivity and collections analysis focused on volume of output. Deeper analysis of the impact and influence of scholarly work was difficult to measure and quantify. Citation counts, while popular among science technology engineering and medicine (STEM) faculty, do not always accurately measure the quality of the works cited nor determine if a citation supported or negated earlier research. Circulation statistics and library subscriptions were also inadequate measures of identifying high-impact research, especially in emerging and niche areas where there are fewer journals and active researchers. The humanities and social sciences collectively rely more heavily on qualitative assessments, like reviews, rather than citation counts.

Elsevier introduced SciVal Spotlight in 2009 as a strategic planning and research productivity tool that creates profiles of high-impact researchers and programs using Scopus citation data with additional metrics. Spotlight was planned as part

of a suite of tools to provide research information on funded projects (Funding), research groups (Strata), and identify faculty expertise in specific research fields (Experts). Within this framework, Spotlight served as a benchmarking tool to identify departments, research groups and individuals with distinctive and emerging competencies. This approach of taking citation and publication data and providing research analytical data was unique. Thomson Reuters has introduced a similar product, InCites, using the Web of Science citation database to create a comparable suite of research productivity and impact measurements.

As SciVal Spotlight data was promoted and shared at BU from 2010–2011, the campus was undergoing a period of administrative changes. A new president began on January 1, 2012, with a new Provost announced in May 2012 and starting on July 1. This new administrative team provided an opportunity for the Libraries to demonstrate the synergy between supporting research activities and library collections support. In separate executive briefing sessions, the Libraries presented peer data on key collections and services along with summaries of high impact research activities on campus and the collection materials needed to support them. SciVal Spotlight data was used, as well as the ACRL*Metrics* dataset and the National Research Council (NRC) Doctoral Program Analysis Project. This library research benchmarking data was presented to the President in February 2012 and the Provost in August 2012.

An additional opportunity arose for the Libraries to provide institutional peer data to the campus administration. In the spring of 2012, the central State University of New York (SUNY) administration and University President asked for input on identifying institutional peers. The Libraries prepared analyses of potential institutional and library peers using the IPEDS and ACRL*Metrics* data.

1. Library Peer Analysis

Table 1 shows comparative library data for BU and its peer doctoral universities within SUNY: the University at Albany, University at Buffalo and University at Stony Brook. Comparative data on collections, expenditures, interlibrary loan activity, staff salaries and wages and staff size indicate the Libraries' size and scope of collections compares

favorably with its SUNY peers, providing comparatively more unique research materials with a smaller collections budget and staff.

Table 2 shows comparative library data for national doctoral universities. The data gives an indication of the Libraries' national peers, when collections size, materials expenditures, staff size and wages are considered. This table indicates that like its SUNY peers, BU consistently spends less on materials and has a smaller staff size. Coupled with library usage and service data, this data suggests the Libraries is highly efficient and maintains a unique collection with a smaller budget and fewer staff. It also indicates that while BU is frequently compared with other SUNY schools, our true peers may lie in other geographical areas.

2. Institutional Peer Analysis

Table 3 shows comparative academic and institutional expenses using *ACRLMetrics* 2009–2010 data for institutions selected by the campus administration and the SUNY Resource Allocation Team in early 2012. This peer set was identified as the Mission Review II Peers. These peers were identified using IPEDs data on enrollment, location, degree, and mix of disciplines. The *ACRL* metrics data analysis indicated that while BU might have a similar size and mix of disciplines, many of these peers spent significantly more on academic and instructional support, suggesting that they were likely not true peers. The IPEDs data used suggest that these factors are not sufficient to identify peers based on quality of education and student success.

Table 4 shows a list of institutions with comparable support for academics and instruction created from *ACRLMetrics* 2009–2010 data. The results have almost no overlap with the previous list, suggesting that academic and instructional support is either difficult to measure using IPEDs data or that it was not used as a criteria.

Table 5 shows a list of institutions with similar student size and library collections, using *ACRLMetrics*. This list shows yet another set of potential peers for BU. There is a wide variation in library support levels, from \$2,000,000 to \$13,000,000, as well as name recognition and perceived prestige. In this list BU also appears to be relatively more efficient than these peers,

with lower staff wages serving similar numbers of students and faculty.

Table 6 lists institutions with similar retention and completion rates along with library, academic and instructional expenditures using *ACRLMetrics*. This data indicates BU compares well with other highly regarded institutions, as many are ranked highly by US News and World Report and other sources. The retention rate data indicates BU compares well with peers with respect to student success.

Collectively this data indicates that BU has a number of peers that can be identified from considering different factors. Interestingly, few institutions appeared in all of the lists, suggesting BU may have relatively fewer peers than similarly-sized public universities. This could be due to several factors. BU is a younger school than many of these peers, with newer, less well-established programs. The data is also not normalized for size of school. This may poorly represent smaller, more specialized campuses with strengths in comparatively fewer academic programs. Fewer student success metrics are available from *ACRLMetrics*, suggesting that student performance metrics may be more difficult to measure using this tool. The peer data collected may also give indicators as to which campuses BU can emulate for success in graduate programs, which are relatively newer than the undergraduate programs and majors.

3. Identifying Research Strengths

The peer analysis exercises fail to give a more detailed picture of research groups, programs and interdisciplinary areas, particularly those that are relatively stronger than others with respect to research output and influence. This information is of importance to campus and system administrators. SciVal Spotlight 2006–2010 data was used to identify research and program strengths at BU, with lists compiled for Distinctive (DE) and Emerging (EC) Competencies. These lists were used as part of the briefing data compiled for the new President and Provost library visits.

Table 7 lists the top ten Distinctive Competencies from the 2006–2010 Spotlight data. This data includes research group activity that met the following criteria: size of output and share of the

global market, reference leadership composed of citations to the work, and a state of the art leadership criterion. This state of the art included two criteria: a minimum relative article share (each article had to have a minimum impact) and the state of the art value needed to be higher than the publication leader. From the 2010 dataset eleven Distinctive Competencies were identified for BU. These competencies showed clusters of research activity and links between academic departments in research activity. This data suggests that research productivity in the STEM areas lies in many areas of Engineering, Psychology, Chemistry, and Biology, with additional research strengths in Management and Political Science. The normalization of the data allows for a more qualitative comparison of research activity and more information for the Libraries about the relative publication activities and impact of various research initiatives. The clustering of departments in the competencies also shows where interdisciplinary activity is occurring, and how schools and department boundaries are being crossed to complete projects.

Table 8 lists the top ten Emerging Competencies identified from the 2010 Spotlight dataset. Emerging Competencies are defined in a similar fashion as the Distinctive Competencies, with less stringent requirements. For an EC, only one of the three main criteria must be met (size of output, number of references, or state of the art parameters). As a result there are significantly more Emerging Competencies in the 2010 dataset (46). This list shows many of the same departments and research areas in the list of Distinctive Competencies. There are also no top ECs with multiple departments listed among the authors, which may be more indicative of the less stringent requirements for an EC or simply coincidental. Some authors in this list are senior faculty and some are not, suggesting that emerging research can occur at any stage of a researcher's career.

To supplement this SciVal Spotlight data, other sources were consulted. The National Research Council released a comprehensive report on doctoral programs in 2011. Table 9 shows BU's doctoral programs grouped by library collection fund family with the NRC public dataset. Doctoral programs are ranked within these fund families by publication output, citations per publication, a national strength criterion assessing the program's

national ranking, and a relative rank of the program within SUNY. A program designated as a strength within SUNY needed to meet at least one productivity/citation criteria and one ranking criteria.

The NRC ranking and productivity data is consistent with results from the 2010 SciVal dataset. Many of the departments identified in Spotlight also performed well in the NRC dataset. These include Mathematics, Behavioral Neuroscience (based in the Psychology Department) Political Science and Mechanical Engineering. Additional program strengths identified include Comparative Literature, Philosophy, English, History and Anthropology. Nursing is included as it has the only doctoral program within SUNY. While the NRC report and survey have been criticized for over-counting faculty in cross-disciplinary programs, it does provide a way to compare programs not represented in SciVal Spotlight and look beyond citation counts to provide a general picture of relative program strengths.

4. Future Library Collections Needs

The 2010 Spotlight dataset includes data on author publications represented in the competencies. This provides an opportunity to link research productivity and publishing to library collections holdings and support. This collective data on publications was compiled for the 2008, 2009 and 2010 Spotlight datasets. The average publication output per five year dataset period (Table 10) showed there was a steep decline in publication frequency among materials listed, with a high number of publications in a smaller number of sources. The table lists these sources along with library availability. In most cases the Libraries is supporting these high productivity researchers. Some sources have been recently added to the collections to support programs. Costs of packages, particularly the SPIE proceedings, have been one factor. In another case the IIE conference may not provide full text for content and may be of limited use. Collection access could be strengthened by moving from print to electronic access for some content, particularly the Lecture Notes in Computer Science and the Materials Research Society proceedings series. The list also highlights the collections needs of different areas—Engineering requires more proceedings packages and other STEM areas publish more research in journals. Collectively this list shows the impact of

the competencies on future collections needs and which packages a library might want to plan on purchasing as funds permit.

Conclusions and Future Work

Collectively, data generated from briefing projects demonstrated that data analysis of a library's collections and operations can make a persuasive argument for maintaining library support. Library peer data is an essential element of any strategic planning process. Identifying library peers can be an important tool to demonstrate the popularity of existing collections and services and also show campus administrators where there are gaps in support, staffing and services. Institutional peers do not always correlate to campus or system-defined peers, and these discrepancies can be useful in helping to tell an institution's story and identify its unique qualities. Research strengths on a campus can be ill defined. Public and licensed data can be utilized to provide an objective analysis on productivity and influence in the academy. SciVal Spotlight and the NRC report data provide complementary information on doctoral program and research strengths. These tools can be used as part of the other internal and external data to show support for the research process and impact on success of research programs.

Identifying research strengths and collections support needs with Spotlight data provides a way to determine collections gaps and prioritize support for growing research areas and programs. In many cases collection needs were materials

previously requested by faculty members and librarians. The Spotlight data provided a way to identify high-impact materials that benefit promising future research. Future work includes analysis of individual research group output to further identify and refine collections needs. This would include deeper analysis of authored material as well as cited material, which may uncover additional collections needs not previously noted. Additional future opportunities include collaborating with campus units to better provide productivity and research material support data for departments and schools. The Libraries is also investigating other research productivity tools, such as Thomson Reuter's Incites, as an additional source of data on faculty productivity.

SciVal Spotlight data analysis can reveal rich insights into the productivity and impact of individual researcher's work, which in the past has more heavily relied on individual references and analysis. These analytical tools can be used in conjunction with this qualitative data to provide more guidance in the promotion and tenure process, as well as selection for research and other awards. While this is currently outside the scope of library support, providing this support can further refine and strengthen emerging roles on scholarly communications and departmental liaison work and create new opportunities for librarians to communicate the impact of the Libraries on teaching and research.

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Table 1: Library Peer Comparison: SUNY Center Libraries (2009–2010 ARL Statistics)

Ranked Category	Binghamton	Proj. ARL Rank (n=116)	Albany	Buffalo	Stony Brook
Library Volumes	2,444,112	105	2,293,745	4,029,865	2,637,270
Unique Library Volumes	1,872,915	86	1,492,130	2,558,204	1,376,686
Microforms	1,875,133	104	2,922,357	6,187,843	3,851,230
Expenditures - Monographs	\$977,994	98	\$706,526	\$1,074,840	\$189,034
Expenditures - Current Serials	\$4,031,518	109	\$4,201,389	\$6,920,542	\$5,893,269

Ranked Category	Binghamton	Proj. ARL Rank (n=116)	Albany	Buffalo	Stony Brook
Total Expenditures - Library Materials	\$5,049,039	112	\$5,193,274	\$8,214,014	\$6,634,380
Monographs Purchased (volumes)	12,090	97	18,475	20,059	5,903
Current Serials (total)	82,258	55	67,417	87,997	87,737
Current Serials Purchased (titles)	52,400	61	51,804	60,532	62,163
Total Items Loaned (ILL)	26,545	75	15,401	32,793	21,379
Total Items Borrowed (ILL)	15,736	94	27,325	26,530	12,304
Total Salaries and Wages Expenditures	\$4,571,605	115	\$6,328,585	\$10,467,039	\$6,288,060
Total Staff (FTE)	87	*	149	204	140
Other Operating Expenses	\$837,587	104	\$36,554	\$1,338,010	\$695,341
Total Library Expenditures	\$10,472,977	115	\$11,597,750	\$20,062,539	\$13,640,247

Table 2: Library Peers: Library Collections Data and Budget Comparisons (ACRLmetrics)

Location	ARL member?	Volumes held (June 30 rep. yr)	Titles Held	Monographs	Total Library Materials	Total Salaries & Wages	Total Library Expenditures	Total Staff (FTE)
Saint Louis University		2,090,825	1,854,118	\$1,822,313	\$5,469,909	\$4,583,422	\$12,205,823	114.00
University of California, Santa Cruz		2,115,882	1,713,260	\$855,375	\$3,286,801	\$5,046,437	\$9,841,667	101.00
Virginia Commonwealth University		2,113,794	1,557,500	\$1,557,270	\$8,168,234	\$5,916,983	\$15,845,020	143.00
University of New Hampshire		2,153,185	1,577,755	\$405,917	\$5,631,810	\$4,398,530	\$10,817,056	106.50
University of North Texas		2,318,611	1,687,460	\$982,903	\$7,862,233	\$8,469,139	\$18,445,285	233.50
University of South Florida		2,126,094	1,956,098	\$1,559,491	\$7,517,953	\$5,498,722	\$13,998,623	111.00
George Washington University	Yes	2,352,015	1,531,271	\$2,421,181	\$11,509,525	\$11,328,925	\$27,157,092	185.00
University of Manitoba	Yes	2,306,410	1,592,516	\$1,647,643	\$8,405,158	\$12,026,574	\$22,586,369	195.00

2012 Library Assessment Conference

Location	ARL member?	Volumes held (June 30 rep. yr)	Titles Held	Monographs	Total Library Materials	Total Salaries & Wages	Total Library Expenditures	Total Staff (FTE)
University of Waterloo	Yes	2,364,347	1,842,827	\$1,255,375	\$7,052,562	\$7,195,711	\$15,476,851	124.00
Colorado State University	Yes	2,385,266	2,348,841	\$1,068,921	\$7,021,010	\$5,819,891	\$14,264,719	94.00
Virginia Polytechnic Institute & State University	Yes	2,634,115	1,799,403	\$2,245,098	\$8,428,572	\$5,781,230	\$15,164,519	120.00
Washington State University	Yes	2,450,409	1,883,552	\$674,196	\$5,935,225	\$6,712,967	\$13,943,581	123.00
SUNY at Binghamton		2,444,112	1,872,915	\$977,994	\$5,049,039	\$4,571,605	\$10,472,977	87.16
Northern Illinois University		2,100,623	2,100,623	\$1,010,115	\$4,812,133	\$5,421,715	\$11,249,002	152.00
Kansas State University		2,614,274	2,290,738	\$831,528	\$6,511,674	\$5,225,128	\$13,118,904	140.00
Boston College	Yes	2,602,677	2,149,945	\$1,501,991	\$9,529,516	\$9,460,731	\$20,338,858	140.00
Purdue University	Yes	2,566,521	2,183,032	\$1,081,535	\$11,244,162	\$10,853,659	\$24,201,236	172.00
Iowa State University	Yes	2,626,074	1,655,685	\$1,837,091	\$9,078,625	\$7,224,437	\$17,132,300	138.00
Rice University	Yes	2,667,111	2,149,601	\$2,716,264	\$10,015,546	\$5,071,456	\$15,767,079	105.00
University of Houston	Yes	2,708,936	2,280,869	\$1,399,669	\$10,548,198	\$6,489,264	\$20,294,011	137.00
Bowling Green State University		2,589,407	2,403,168	\$521,030	\$2,404,470	\$3,631,306	\$6,437,371	88.00
Case Western Reserve University	Yes	2,815,968	2,170,623	\$943,224	\$7,076,887	\$5,973,108	\$14,271,584	105.00
University of Delaware	Yes	2,829,768	2,098,446	\$2,206,410	\$9,169,159	\$8,119,900	\$18,961,932	149.00
Dartmouth College	Yes	3,029,067	2,361,288	\$1,945,875	\$9,421,474	\$8,819,155	\$19,740,990	167.00

Table 3: Institutional Peers: Institutional Support for Binghamton University's Mission Review II Peers (ACRLmetrics)

Location	Total Expenses	Academic Support Total Expenses	Instruction Total Expenses
Wichita State University	\$218,725,400	\$24,461,221	\$58,577,145
University of Maine	\$320,581,000	\$25,450,000	\$74,949,000
Montana State University		\$27,363,485	\$79,569,761
College of William & Mary in Virginia	\$275,260,230	\$23,500,809	\$89,852,435

Location	Total Expenses	Academic Support Total Expenses	Instruction Total Expenses
University of Rhode Island	\$400,430,444	\$35,081,587	\$94,337,934
University of Maryland-Baltimore County	\$319,798,946	\$20,112,551	\$94,946,908
University of Texas at Dallas		\$28,426,862	\$95,303,775
SUNY at Binghamton	\$348,112,253	\$29,329,588	\$118,035,451
University of Wyoming	\$403,162,891	\$27,401,608	\$119,582,924
Utah State University		\$32,918,777	\$121,580,414
University of Arkansas - Fayetteville	\$597,559,978	\$34,754,957	\$122,665,192
University of California, Santa Cruz	\$539,706,000	\$31,641,000	\$126,517,000
University of New Hampshire		\$36,092,290	\$142,919,927
SUNY at Albany	\$661,463,968	\$40,221,907	\$157,221,936
University of Nebraska - Lincoln	\$742,321,964	\$58,778,989	\$173,294,299
Miami University		\$58,587,467	\$181,457,285
University of Oregon		\$42,756,448	\$195,189,282
Clemson University		\$40,824,088	\$197,894,520
University of California-Santa Barbara	\$746,298,000	\$39,977,000	\$204,167,000
Auburn University		\$51,341,398	\$244,472,423
University of Massachusetts-Amherst	\$781,647,000	\$48,779,000	\$248,184,000
University of Maryland		\$151,414,740	\$416,159,435
University of Connecticut Libraries		\$133,993,701	\$452,575,133

Table 4: Institutional Peers: Support Data and Total Expenses (ACRLmetrics)

Location	Total Expenses	Academic Support Total Expenses	Instruction Total Expenses
Santa Clara University	\$251,943,000	\$33,473,000	\$107,549,000
Boise State University	\$269,657,672	\$22,711,467	\$96,835,891
Texas Christian University	\$274,071,000	\$25,560,000	\$107,714,000
Lehigh University	\$318,249,000	\$27,951,000	\$117,025,000
University of Maryland-Baltimore County	\$319,798,946	\$20,112,551	\$94,946,908

Location	Total Expenses	Academic Support Total Expenses	Instruction Total Expenses
University of North Carolina at Greensboro	\$327,196,411	\$34,947,720	\$124,343,824
SUNY at Binghamton	\$348,112,253	\$29,329,588	\$118,035,451
James Madison University	\$351,186,524	\$28,891,013	\$116,443,611
University of North Dakota	\$351,738,632	\$28,377,342	\$145,734,405
University of Memphis	\$360,675,088	\$28,636,207	\$119,100,959
University of Texas at Arlington	\$367,716,142	\$30,755,402	\$128,080,313
UTSA Libraries	\$388,792,520	\$35,186,212	\$107,937,692
University of Wyoming	\$403,162,891	\$27,401,608	\$119,582,924

Table 5: Institutional Peers: Student Population Size and Library Support (ACRLmetrics)

Location	ARL Member	# of Volumes	# Titles	Library Materials	Salaries & Wages	Library Expend.	Faculty	FT Students (G/U)	PT Students (G/U)
Bowling Green State University		2,589,407	2,403,168	\$2,404,470	\$3,631,306	\$6,437,371	795	14,693	2,616
Fordham University		2,743,179	1,462,956	\$1,963,259	\$3,915,363	\$6,692,614	669	10,908	3,636
University of Mississippi		2,036,623	1,516,686	\$4,350,008	\$3,519,842	\$8,756,826	756	13,079	1,275
SUNY at Binghamton		2,444,112	1,872,915	\$5,049,039	\$4,571,605	\$10,472,977	574	12,914	1,795
University of New Hampshire		2,153,185	1,577,755	\$5,631,810	\$4,398,530	\$10,817,056	611	13,286	2,025
University of Vermont & State Agricultural College		2,985,049	2,982,346	\$6,599,826	\$4,874,822	\$11,502,744	958	11,405	1,986
SUNY at Albany	Yes	2,293,745	1,492,130	\$5,193,274	\$6,328,585	\$11,597,750	637	14,693	3,327
Baylor University		2,484,100	27,382	\$7,061,889	\$6,014,046	\$13,733,099	870	14,614	621
Boston College	Yes	2,602,677	2,149,945	\$9,529,516	\$9,460,731	\$20,338,858	664	12,123	2,673
Massachusetts Institute of Technology	Yes	3,119,157		\$9,000,247	\$12,657,957	\$24,550,670	976	10,223	161
Vanderbilt University	Yes	3,531,208	2,788,015	\$11,312,373	\$9,984,473	\$24,872,400	2,745	11,691	815

Location	ARL Member	# of Volumes	# Titles	Library Materials	Salaries & Wages	Library Expend.	Faculty	FT Students (G/U)	PT Students (G/U)
University of Miami Libraries	Yes	3,348,622	2,409,418	\$13,598,382	\$9,590,434	\$27,120,660	961	14,212	1,417
Georgetown University	Yes	3,461,170	3,049,256	\$12,109,640	\$12,492,145	\$27,762,272	873	13,687	2,750

Table 6: Institutional Peers: Student Retention and Library Support (ACRLmetrics)

Location	FT Retention Rate	PT Retention Rate	% Completions 4 Years	% Completions 6 Years	Institution Total Expenses: Academic Support	Institutional Total Expenses: Instruction	Total Library Expenditures
College of William & Mary in Virginia	95	100	83%	91%	\$23,500,809	\$89,852,435	\$9,558,512
James Madison University	92	100	66%	81%	\$28,891,013	\$116,443,611	\$8,476,189
SUNY at Binghamton	90	88	66%	80%	\$29,329,588	\$118,035,451	\$10,233,049
Southern Methodist University	88	100	62%	77%	\$52,433,000	\$139,134,000	\$13,834,002
Rice University	97	100	83%	93%	\$38,086,658	\$217,073,398	\$16,246,764
Boston College	95	82	88%	91%	\$54,293,635	\$226,601,196	\$19,637,700
Wake Forest University	95	100	85%	90%	\$435,797,594	\$230,761,887	\$12,876,097
University of Connecticut Libraries	92	88	60%	77%	\$133,993,701	\$452,575,133	\$26,831,009

Table 7: Top Distinctive Competencies for Binghamton University (Scival Spotlight 2010 dataset)

DC#	Authors	Department(s)	Research Area(s)	# pubs	# cites
1	Wu N.E.; Klir G.J.; Zacks S.	EE; SSIE; Math	Signal Processing; Fuzzy Sets; Computer-Aided Process Planning	44	178.8
2	Spear N.E.; Miller R.R.; Arias C.M.	Psych	Psychopharmacology; Consciousness; Neurotoxicology	134	671.3
5	Meng W.; Zhao H.; Gupta C.	Comp Sci	Data Mining	14	32.6

DC#	Authors	Department(s)	Research Area(s)	# pubs	# cites
7	Younis M.I.; Alsalem F.M.	ME	Sensors & Actuators; Semiconducting Materials; Nanotechnology	48	137
9	Fridrich J.; Filler T.; Kodovský J.	EE	Data Mining; Image Processing	39	214.2
10	Yammarino F.J.; Dionne S.D.; Gooty J.	SOM	Leadership & Organizational Behavior; Strategic Management	22	37.3
11	Zhong C.J.; Luo J.P.; Wang L.	Chem	Sensors & Actuators; Nanotechnology; Electrochemistry	56	426.1
14	Fordham B.O.; Cingraneli D.L.; Clark D.H.	Poli Sci	International Conflict; Political Studies	12	10.9
19	Zhou J.; Zhang Y.; Braiotta L.B.	SOM	Financial Accounting	10	28.7
22	Wilson D.S.; Wilson D.S.; Dlugos M.J.	Biol, EVOs	Molecular Ecology; Consciousness; Bioethics	15	126.4
25	Long B.; Zhang Z.; Zhang Z.M.	Comp Sci	Machine Learning; Data Mining	15	40.7

Table 8: SciVal Spotlight Top Emerging Competencies for Binghamton University (2010 dataset)

EC#	Authors	Department(s)	Research Area(s)	# pubs	# cites
3	Gibb B.E.; Lenzenweger M.F.; Benas J.S.	Psych	Behavioral Research Therapy; Eating Disorders; Sex Roles	35	205.9
4	Ponomarev D.V.; Ghose K.; Farnam D.	Comp Sci	Fault Tolerant Computing; Heat Transfer; Integrated Circuit Design	32	19.9
6	Zaslavsky T.; Bowlin G.; Bowlin C.	Math	Discrete Applied Math	13	10.7
8	Coles M.E.; Pietrefesa A.S.	Psych	Behavioral Research Therapy; Clinical Psychiatry; Affective Disorders	26	194.7
12	Regan P.M.; Clark D.H.; Frank R.W.	Poli Sci	International Conflict	9	21.2
13	Westgate C.R.	EE	Antenna	43	283.4
15	Deak T.; Blandino P.; Barnum C.J.	Psych	Psychopharmacology; Neuroscience; Neuroimmunology	14	40
16	McDonald M.D.; Heller W.B.; Shvetsova O.V.	Poli Sci	Political Studies; Political Science	9	11
17	Meng W.	Comp Sci	Data Mining; Fuzzy Sets; Database Design & Management	33	40.4
18	Wu N.E.; Srihari K.; Ramakrishnan S.	SSIE	Computer-Aided Process Planning; Automatic Control	17	0.2

Table 9: Doctoral Program Analysis: Binghamton University (2011 NRC Doctoral Program Report)

Collection Fund Family	Doctoral Program	Avg pub/Fac	Avg. cites/Pub	National Rank (0.95Rank <0.8)	SUNY Rank
Humanities/Fine Arts	Art History	10.24	N/A		2 (2)
Humanities/Fine Arts	Comparative Literature	17.43	N/A		2 (3)
Humanities/Fine Arts	English	8.14	N/A	yes	3 (4)
Humanities/Fine Arts	Philosophy	10.24	N/A	yes	3 (4)
Science/Eng/Nursing	Behavioral Neuroscience	2.18	1.41	yes	2/3 (4)
Science/Eng/Nursing	Biology/Integrated Biology/Integrated Biomedical Sciences	0.98	1.64		3 (4)
Science/Eng/Nursing	Chemistry	2.3	1.61		3 (4)
Science/Eng/Nursing	Clinical Psychology	1	1.4	yes	2/3 (4)
Science/Eng/Nursing	Cognitive Psychology	1.81	1.61	yes	2/3 (4)
Science/Eng/Nursing	Computer Science	1.64	N/A		3 (4)
Science/Eng/Nursing	Earth Science	0.89	1.77		3 (4)
Science/Eng/Nursing	Ecology and Evolutionary Biology	1.24	1.61		2 (2)
Science/Eng/Nursing	Electrical and Computer Engineering	0.36	0.56		3 (3)
Science/Eng/Nursing	Mathematics	0.88	0.45	yes	2 (4)
Science/Eng/Nursing	Mechanical Engineering	0.46	1.63	yes	3 (3)
Science/Eng/Nursing	Nursing	0.16	1.74		1 (1)
Science/Eng/Nursing	Systems Science	0.42	0.53		2 (2)
Social Science	Anthropology	0.36	2.13	yes	2 (4)
Social Science	Economics	0.44	0.86		3 (4)
Social Science	History	12.6	N/A	yes	2 (4)
Social Science	Political Science	0.57	1.11	yes	1 (4)
Social Science	Sociology	0.07	0.4		4 (4)

Table 10: Collections Needs: SciVal Spotlight Aggregated Publication List for Binghamton University (combined 2008, 2009, 2010 datasets)

Journal (Proceeding)	Ave #pub/5 years	Library Availability
Lecture Notes in Computer Science	57	Print
Proceedings of SPIE - The International Society for Optical Engineering	48	No
Materials Research Society Symposium - Proceedings	26	Print
Alcoholism: Clinical and Experimental Research	24	Print/Elec
Proceedings - Electronic Components and Technology Conference	24	Yes*
ASME International Mechanical Engineering Congress and Exposition, Proceedings	17	Pending
Langmuir	16	Print/Elec

Journal (Proceeding)	Ave #pub/5 years	Library Availability
Physical Review B - Condensed Matter and Materials Physics	15	Print/Elec
Journal of Experimental Psychology: Animal Behavior Processes	15	Print/Elec
Developmental Psychobiology	13	Print/Elec
2006 IIE Annual Conference and Exhibition	13	No
Pharmacology, Biochemistry and Behavior	13	Print/Elec
Journal of Electronic Packaging, Transactions of the ASME	12	Print/Elec
2010 12th IEEE Intersociety Conference, ITherm 2010	12	Elec
Proceedings of the ASME InterPack Conference 2009, IPACK2009	12	Pending
IEEE Transactions on Components and Packaging Technologies	11	Elec
American Society of Mechanical Engineers, Electronic and Photonic Packaging, EPP	11	Pending
IIE Annual Conference and Expo 2007 - Conference Proceedings	11	No
Leadership Quarterly	11	Elec
Journal of the American Chemical Society	10	Print/Elec
Progress in Electromagnetics Research	10	Elec
Review	10	Print/Elec
2008 11th IEEE Intersociety Conference, I-THERM	10	Elec
IIE Annual Conference and Expo 2008	10	No
American Journal of Physical Anthropology	10	Print/Elec

NCES Datasets and Library Value: An Exploratory Study of the 2008 Data

David Schwieder
University of Florida, USA

Lisa Janicke Hinchliffe
University of Illinois at Urbana-Champaign, USA

Abstract

This study uses a sophisticated statistical analysis to assess library value across the populations of two- and four-year colleges and universities in the United States. Using a probit procedure, we analyzed merged data from two 2008 National Center for Education Statistics datasets—the Academic Libraries Survey (ALS) and the Integrated Postsecondary Education Data System (IPEDS)—to see how a variety of key academic library variables affect two key campus-wide outcomes: graduation and year-to-year retention rates for undergraduate students. Our results suggest that academic libraries at four-year colleges and universities can make a broad, empirically grounded claim of providing value to their institutions. Numerous library variables showed positive associations with retention and graduation rates; serial expenditures and library hours particularly stood out. The effects of these library factors were generally similar to or stronger than the effects of institution-wide expenditures. This aggregate-level approach permits analyses of academic library performance that would be impossible with institution-specific studies, and it demonstrates the assessment value of this kind of higher-level theoretical and methodological approach.

Introduction

Libraries matter. We know that. But sometimes this can be a difficult case to make. Supporting data can be limited or scarce, and library contributions are hard to measure, particularly at the institutional level. As just one current in the broader college and university stream, the academic library can find that clearly establishing its value is a difficult proposition.

Nonetheless, calls for library assessment have continued to increase. This emphasis has largely been driven by recent challenges facing libraries. Financial pressures in the higher education sector have impacted library budgets, and some have argued that online information access has reduced the importance of the library. Accordingly, many academic libraries are seeking to move beyond traditional measures of library impact in order to more assertively make their case.

This report takes up that challenge. Its genesis lies in the ACRL report, *The Value of Academic Libraries: A Comprehensive Research Review and Report*.¹ As the foundation of a broader initiative, the *Value of Academic Libraries* report seeks to encourage and facilitate improved assessment and documentation of value by librarians. The report identifies key areas of concern, reviews existing research, and outlines an agenda for further progress in this area.

In this paper, we address an important goal of ACRL's value initiative—the desire to show that existing administrative data can be used to establish library contributions to broader college and university goals. Using a range of library metrics, and focusing on the key institutional outcomes of student retention and graduation rates, our statistical analysis identifies a number of library factors that are associated with these outcomes. We find that several of these factors play a particularly important role. We discuss the interpretation and significance of these findings, draw general conclusions, and finish with suggestions for further work.

Use of NCES Data in Library Value Inquiry

Despite the potential of the Academic Libraries Survey (ALS) and the Integrated Postsecondary Education Data System (IPEDS) datasets made available by the National Center for Education Statistics (NCES), relatively few researchers have utilized these data. More commonly these data have been used for benchmarking through inter-institution comparison on specific variables or metrics. Both the 2004² and the 2011³ versions of the *Standards for Libraries in Higher Education* from ACRL have advocated this approach for assessing library inputs and outputs, and ACRL *Metrics* provides a commercial product for accessing and manipulating such data and the resulting calculations.

Nonetheless, two notable studies have pursued analysis of ALS and IPEDS data to investigate library impact on institutional outcomes. Though each has limitations, as does the current study, they begin to shape a research agenda for engaging with the NCES datasets.

Using 2005–2006 data, Emmons and Wilkinson⁴ conducted a linear regression analysis that found a positive association between the library professional staff/student ratio and institutional retention and graduation rates. However their analysis focused exclusively on 99 US colleges and universities belonging to the Association of Research Libraries, so it is unclear whether an analysis of other types of academic institutions would show similar results.

An earlier study by Mezick⁵ found statistical relationships between each category of library expenditure and student retention within every Carnegie Classification. “The strongest relationships exist between total library expenditures, total library materials expenditures, and serial expenditures at baccalaureate colleges.” Her analysis further revealed a relationship between professional staff and student retention within each Carnegie Classification, with the strongest relationship found at doctoral-granting institutions. This analysis was conducted using 2002–2003 data from 586 institutions in the United States. Unfortunately, however, Mezick did not control for any nonlibrary factors in her statistical model.

Accordingly, while these studies are suggestive, it would be useful to be able to identify broader effects, across a wider variety of higher education institutions, and to determine whether or not any identified effects hold up when controlling for extra-library factors. This paper seeks to accomplish that.

Data and Research Design

This paper is based on a statistical analysis of data from the 2008 Academic Libraries Survey (ALS) and the Integrated Postsecondary Education Data System (IPEDS) available through the National Center for Education Statistics (NCES) website.

The independent—i.e., causal—variables were selected from the ALS. Designed to produce a standardized overview of academic libraries, the ALS draws participation from over 3,700 two- and four-year degree-granting postsecondary institutions. Factors assessed include budgets and expenditures, staffing, acquisitions, and circulation and services. Our two dependent, or outcome variables—year-to-year retention rates and graduation rates—came from the IPEDS. A system of interrelated surveys that collects data from over 7,000 postsecondary institutions, the IPEDS measures institutional characteristics, enrollment, FTEs, and expenditures, as well as providing measures of student outcomes.

We canvassed the ALS and IPEDS datasets in order to identify relevant variables, employing two selection criteria. First, we sought valid measures, variables which accurately captured the most important factors in libraries, and important educational outcomes. Second, we tried to achieve broad coverage of our areas of interest. The most appropriate variables were selected and merged into a single dataset to provide data for our analysis. This produced the following model:

Research Model

Independent Variables

Library Factors

- Book Expenditures
- Serial Expenditures
- Audio-Visual Expenditures
- Library Hours
- Gate Count
- General Circulation

Reference Transactions
Electronic Reference Service
Attendance at Library Sessions
Information Literacy Implementation

Institutional Factors

Instructional Expenditures
Academic Support Expenditures
Student Services Expenditures

Dependent Variables

Educational Outcomes

Graduation Rates
Year-to-Year Retention Rates

Independent Variables: Library Factors

As the leading survey of academic libraries, the ALS is designed to yield a broad overview of academic library operations. Our selected library variables fell into three basic categories:

- expenditure variables: i.e., input measures
- output variables: hours, gate count, and circulation measures like service offerings or patron use of library materials
- instructional variables: attendance at library instruction sessions and degree of information literacy implementation reflect the more recent emphasis on library instruction, information literacy, and the educational role of librarians

This procedure yielded a useful array of variables, capturing both newer and more traditional measures across a variety of library areas.

Dependent Variables: Institutional Outcomes

Our choice of institutional outcome variables was simpler. Seeking to address an area of core concern—one highlighted in the *Value of Academic Libraries* report—we chose two variables: year-to-year retention of students and graduation. Long identified as central to the academic enterprise, these “academic progression” factors have increasingly been emphasized in recent years. Accordingly, they can provide a useful first look at library effects.

Institutional Factors

Along with the library and educational outcome variables, our model also included three institution-level variables: total college or university expenditures on instruction, total expenditures on academic support, and total expenditures on student services. While we have little interest in these variables *per se*, they serve two useful functions. First, they provide a benchmark for comparison, allowing us to gauge the comparative impacts of libraries. Second, these variables allow us to control for general institutional effects on graduation and retention rates.

Why is control important? The answer speaks to a central problem in causal analysis. We want our independent variables to be correlated with our dependent variables—for example, we seek to show that higher library usage is associated with higher graduation rates. Unfortunately, however, we frequently also find correlation among our *independent* variables. This correlation among independent variables can bias our results. Consider the following hypothetical example:

Figure 1

Independent Variables

Library Hours

Academic Support

Expenditures

--observed correlation--

Dependent Variable

Graduation Rates

If we observe a statistical correlation between increased library hours and higher graduation rates, does this mean that library hours are responsible for this desirable outcome? Not necessarily. While that may be the case, it could be that part, or all, of this observed correlation

actually reflects the effect of overall academic support expenditures. In other words, the observed correlation is reflecting the effect of these support expenditures, because library hours and academic expenditures are correlated with each other. If this is the case, then the observed correlation between

library hours and graduation rates will misstate the actual effect of library hours.

Fortunately, controlling solves this problem. When we hold the academic support variable constant (in effect, removing its effect from our statistical analysis), we know that the observed correlation does indeed show the true effect of library hours. Accordingly, inclusion of the institutional factors as control variables in our model is critical for obtaining accurate results.

Results

Following the institutional classification scheme used by IPEDS, we report our results for three types of academic libraries: those at public universities, those at not-for-profit private colleges and universities, and those at two-year public community colleges.

Our results are presented in what may seem an unfamiliar form. Generally speaking, quantitative statistical procedures produce results in some kind of direct correlational form. Since most statistics fall on a 0–1 scale, correlations might range between .1 (a weak correlation) to .5 (a strong correlation in most social science-type studies); however, that is not the case here. Because our dependent variables are expressed as percentages (i.e., percent of students retained year-to-year and percent of students graduating for each college or university), we used a “probit” procedure designed for this kind of data.

Our probit results tell us three important things:

- which of the library factors are associated with improvements in student graduation and retention rates
- the magnitude of these associations
- the relative strength of these library factors *vis a vis* one another, and *vis a vis* the three broader institutional variables

These results are most clearly expressed in percentage form. In Table 1, results are reported for each independent variable that has a statistically significant effect.⁶ These results show the percentage difference between libraries at the 25th and 75th percentiles. These percentiles were chosen because they represented clear, easily understandable comparison points and because they were intuitively reasonable for our analysis. Using comparison points closer to the middle would offer little variation, while using points closer to the ends of the scale would leave us comparing unrepresentative “outlier” libraries.

To interpret the results, consider serial expenditures. A public university library whose serial expenditures were at the 75th percentile (meaning the library spent more on serials, per student, than three-quarters of all public university libraries) was associated with a 7.56 percent higher graduation rate than a library whose serial expenditures were at the 25th percentile (meaning the library spent more on serials, per student, than one quarter of all public university libraries).

Table 1
Library Effects on Graduation and Retention Rates: Four-Year Public Universities
Differences between Schools at the 25th and 75th Percentiles (percentages)

Ind. Variable	Graduation Rates	Retention: 2007–2008
Book Expenditures	---	---
Serial Expenditures	7.56	2.95
AV Material Expenditures	-1.31	-.79
Library Hours	5.12	2.27
Gate Count	1.49	1.99
General Circulation	4.48	1.2
Reference Transactions	.08	-.11
E-Reference Services (Yes/No)	---	2.78

Ind. Variable	Graduation Rates	Retention: 2007–2008
Attendance at Library Presentations	1.07	---
Information Literacy Index	1.64	1.35
Instruction Expenditures	-1.58	4.02
Academic Support Expenditures	.44	---
Student Services Expenditures	2.04	---

“---” = result not statistically significant Pseudo R2 = .0426 Pseudo R2 = .0265, n = 544 n = 543, Prob chi2 < .001
(Note: An explanation of table notation is provided in the Methods Appendix).

Year-to-year retention shows a somewhat similar result in Table 1. Here a public university library whose serial expenditures are at the 75th percentile is associated with a 2.95 percent higher retention rate than a public university library whose serial expenditures are at the 25th percentile.

Results for most of the other library variables are interpreted in the same manner; however, two library variables have a slightly different interpretation. Results for the e-reference variable show the percentage differences between libraries that offer electronic reference and those who do

not.

Results for the information literacy index show the differences between libraries that scored 0 and those that scored 5 on this five-point scale of institutional information literacy effort (for more information on this scale, see the Methods Appendix).

Results for private colleges and universities and two-year community colleges are reported in Tables 2 and 3 respectively. The interpretation of these tables follows the same approach.

Table 2
Library Effects on Graduation and Retention Rates: Four-Year Private Universities
Differences between Schools at the 25th and 75th Percentiles (percentages)

Ind. Variable	Graduation Rates	Retention: 2007–2008
Book Expenditures	---	---
Serial Expenditures	4.3	2.51
AV Material Expenditures	---	---
Library Hours	6.14	4.68
Gate Count	.81	.59
General Circulation	1.4	.29
Reference Transactions	-.44	---
E-Reference Services (Yes/No)	-2.55	---
Attendance at Library Presentations	.1	---
Information Literacy Index	-1.04	---

Ind. Variable	Graduation Rates	Retention: 2007–2008
Instruction Expenditures	4.72	4.93
Academic Support Expenditures	1.32	.78
Student Services Expenditures	-.68	-1.28

“---” = result not statistically significant n = 1014 Pseudo R2 = .0536 n = 1008 Pseudo R2 = .0379
 Prob chi2 < .001

Table 3

**Library Effects on Graduation and Retention Rates: Two-Year Comm. Colleges
 Differences between Schools at the 25th and 75th Percentiles (percentages)**

Ind. Variable	Graduation Rates	Retention: 2007–2008
Book Expenditures	-.25	---
Serial Expenditures	-.5	-.65
AV Material Expenditures	1.03	---
Library Hours	-2.62	---
Gate Count	---	-.38
General Circulation	-.21	---
Reference Transactions	-.45	-.32
E-Reference Services (Yes/No)	---	---
Attendance at Library Presentations	---	---
Information Literacy Index	-1.08	---
Instruction Expenditures	3.08	1.29

“---” = result not significant n = 854 Pseudo R2 = .0136 n = 858 Pseudo R2 = .0014
 Prob chi2 < .001

Discussion

Public and Private Not-for-Profit Colleges and Universities

For the colleges and universities examined, our findings suggest that selected aspects of libraries show identifiable associations with graduation and retention rates. Most effects fall within two or three percentage points, ranging higher in some cases. Two library factors stand out here. Library hours showed effects ranging from 2.27 to 6.14 percent, and library serial expenditures showed effects from 2.51 to 7.56 percent. Library impacts generally are stronger on graduation rates than year-to-year retention rates, and stronger at public universities than at private not-for-profit colleges and universities (with library hours a notable exception to the latter generalization).

As is evident in the tables, scattered effects show negative signs, suggesting in these cases that libraries are associated with lower rates of graduation and retention in these areas. Negative signs are not a desirable result here, but they are not entirely unexpected. First, some “noise” in statistical results is common, and most of these negative effects are small. Second, in some cases, these negative results may be intuitively plausible. For example, if audiovisual expenditures support entertainment more than academic purposes, then the negative signs for this variable in Table 1 might not be surprising.

Two-Year Community Colleges

In contrast to the results for colleges and universities, results for two-year public community colleges show little evidence of library effects. We

find more negative signs, smaller effects—generally under one percent—and more nonsignificant entries. This too may not be surprising. Public community colleges typically have open-enrollment admissions, and larger numbers of non-degree seeking students, with more fluidity in their student populations. Thus graduation and retention scores may represent less valid indicators of academic progress for this category of schools. If this is the case, it is not surprising that clear library effects failed to emerge.

Interpretation and Reporting

We would offer several cautions regarding the interpretation and reporting of these results. The reported percentages compare effects from the 25th to 75th percentiles, but other ranges might show somewhat different effects. Second, while these models are reasonable, employing the best available variables from the IPEDS and ALS surveys, additional variables (should they become available) might support a firmer analysis. Finally, these results only present a snapshot for one recent year: 2008. Completing analyses for a longer span of years would strengthen confidence in these findings.⁷

Accordingly, at this point we would refrain from making precise statements, e.g., “students at public universities with more library open hours are over five percent more likely to graduate than students at public universities with fewer library hours.” A more nuanced general statement would be preferred, perhaps suggesting that “preliminary evidence suggests that stronger libraries and library programs are associated with improvements in student graduation and retention rates at public and private not-for-profit colleges and universities.”

Cautions aside, however, we believe these findings offer solid, if preliminary, grounds for encouragement, at least for the four-year institutions. In general, these are satisfying results. Aggregate models of this type—where libraries are just one among many factors affecting broader outcomes—would not necessarily be expected to yield such clear or consistent effects.

A key question involves the size of the library

effects. While there is no hard and fast rule for interpreting effect sizes, several perspectives may be useful. First, library hours and serial expenditures showed strong effects; retention and graduation rate changes in the four- to seven-percent range would certainly seem impressive. Second, while the impacts of most other factors may seem small, it is useful to remember that libraries receive only a small percentage of college and university resources. Accordingly, even with the effects observed here, the library may still offer a high return on investment. Finally, many of the library variables performed well *vis a vis* the broader (and more resource-intensive) institutional variables: expenditures on instruction, academic support, and student services.

More specifically, our findings would seem to go beyond offering general validation for academic libraries to offering support for several academic library practices. As indicated, the strongest effects were observed for library hours and serial expenditures. The findings for serials are consistent with academic libraries’ strong embrace of electronic serial databases and with reports of high e-serials use. It is reasonable to interpret our results as suggesting that investment in these digital resources is paying off on two crucial educational outcomes.⁸ At the same time, the strong performance of the library hours variable attests to the value of the traditional “bricks and mortar” library; this suggests that students draw value from increased access to physical library materials and services. Since these increased hours most likely represent later closing times, or extended hours on weekends, our findings suggest that library support for these often lightly attended time periods may have measurably positive effects.

Finally, while we are encouraged by our findings for the four-year institutions, we are not necessarily discouraged by the results for two-year public community colleges. While the community college analyses did not show evidence of library impacts, we suspect that this is primarily a data issue. Community colleges have unique missions, distinct from four-year institutions, and in this sense, the IPEDS seems oriented more toward the latter. If this is the case, our community college analyses did not constitute a fair test, and a sound assessment of library value in this setting awaits more appropriate data.

Future Research

While encouraging, our findings represent only a starting point, and it will be important to pursue further work. Where do we go from here? Most straightforwardly, it would be useful to extend the range of our analysis. The 2008 data provides a useful snapshot, but extending the analysis across a range of years—say 2000 to 2010—would produce a broader foundation for conclusions about library effects on graduation and retention rates, as well as an opportunity to assess changes over time.

More broadly, it would also be desirable to go well beyond this. At the aggregate level, the most likely extensions would involve assessment of a wider range of library factors and a broader range of educational outcomes.

Independent Variables

In its current form, the Academic Library Survey is a valuable assessment resource. As our analysis shows, the survey contains a variety of useful variables, reported in standardized form. However, the ALS items also fall short of addressing recent developments in the academic library.

We would suggest two basic changes. First, the ALS could benefit from addressing important library initiatives. Consider our findings demonstrating the strong effects of e-serials. Given widespread reports that users like the convenience of electronic access, and reports that journal use has risen dramatically, our results suggest that improving ease of use has yielded desirable educational outcomes. If this is correct, it might be useful to examine the effects of library advances like federated search interfaces. Additionally, some current ALS areas could be measured in a finer-grained fashion. Perhaps e-reference services could be broken down into e-mail and chat variables. Analyzing the effects of these factors could provide further evidence for library value and help to validate important library programs.

Second, beyond the expansion of the existing ALS variable set, there is an evident need for better measurement of library instruction and information literacy efforts. The current ALS survey measures library instruction with a single variable, which records the number of attendees

at library presentations. Information literacy is assessed with the five questions discussed previously (again, these are fully described in the Methods Appendix). The latter set of variables is useful, but it largely measures library and institutional “buy in” to information literacy programs. Given the inevitable gaps between rhetoric and reality, it would be useful to have variables assessing actual implementation of these kinds of programs. Improvements in this area will be vital since showing the value of these signature library initiatives is crucial.

Whatever their value, however, additional variables would have the undesirable effects of increasing survey length and placing greater demands on the library administrators who supply the ALS data. One way to address this would be to introduce a sampling scheme for the Academic Library Survey. An “experimental survey” design—where all libraries provide data on core variables, with random samples of libraries answering different subsets of additional survey questions—would help keep survey length manageable. The survey’s web format and large sample size and the NCES’ survey research expertise should make this a feasible approach.

Dependent Variables

Turning to the dependent variables, extending the analysis beyond retention and graduation rates will also be important. However, advances here are likely to be somewhat circumscribed, limited to educational outcomes that are measured in standardized fashion across institutions.

These kinds of measurements are found in at least three areas. In the student achievement category, one might use scores on standardized admissions tests for graduate and professional schools. In terms of student engagement, another critical area, the National Survey of Student Engagement (NSSE) survey might show that libraries have a role to play in this area. In terms of student learning, standardized tools like the Collegiate Learning Assessment may also be useful. It might be possible to add a specialized information literacy element to some of these instruments, and other assessment data may be available as well.

Assessment Management Systems

Whatever the specific focus taken by future studies, it will be important to take a systematic approach. If library assessment is to realize its full potential for demonstrating library value, assessment will have to move beyond a patchwork of *ad hoc* data and measures and devise systematic approaches. Hence we echo ACRL's *Value of Academic Libraries* report in calling for organized assessment systems.

Conclusion

As a "first cut" at a statistically sophisticated, fine-grained, aggregate-level academic library impact assessment, this study suggests that numerous library factors can have a positive effect on the key educational outcomes of student graduation and retention. As mentioned, this analysis offers preliminary validation for a key point in the ACRL's *Value of Academic Libraries* report, its suggestion that aggregate-level, nationally standardized data can help to establish the value of the academic library. This is a useful and encouraging first step, and it can serve as a model for further work to come. We see this kind of analysis as a complement to qualitative and institution-specific studies, and we strongly suspect that the beneficial effects of academic libraries will fully emerge only through a combination of various types of analysis.

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Notes

1. Association of College and Research Libraries, *Value of Academic Libraries: A Comprehensive Research Review and Report*, researched by Megan Oakleaf (Chicago: Association of College and Research Libraries, 2010), accessed September 12, 2012, http://www.acrl.org/value/?page_id=21.
2. Association of College and Research Libraries, "Standards for Libraries in Higher Education," June 2004, accessed March 5, 2008, http://www.ala.org/ala/acrl/acrlstandards/ALA_print_layout_1_170127_170127.cfm; however, no longer available online.
3. Association of College and Research Libraries, "Standards for Libraries in Higher Education," 2011, accessed September 12, 2012, <http://www.ala.org/acrl/standards/standardslibraries>.
4. Marks Emmons and Frances C. Wilkinson, "The Academic Library Impact on Student Persistence," *College & Research Libraries* 72, no. 2 (March 2011): 128–149.
5. Elizabeth M. Mezick, "Return on Investment: Libraries and Student Retention," *The Journal of Academic Librarianship* 33, no. 5 (September 2007): 561–566.
6. Statistically significant at the .05 level.
7. Another potential limitation is less serious. As indicated, the Pseudo R-squared measures ranged from .0265 to .0536 for the four-year schools and from .0014 to .0136 for community colleges. These scores are low, and thus this might seem to suggest that the model was flawed. However, use and interpretation of Pseudo R-squared measures is controversial, with some methodologists advising against their use. Accordingly, while we take these Pseudo R-squared measures as an indication to counsel caution regarding our results, they do not seriously undermine our findings.
8. While the serials expenditure variable combined spending for both electronic and print materials, the former comprised the majority of the total cost.

Methods Appendix

Data

Independent Variables

Multiple graduation rate variables were available in the IPEDS data set; we selected total reported graduation rate as the broadest and thus most representative measure. The retention variable measured retention of full-time students from fall 2007 to fall 2008.

Dependent Variables

ALS Variables Employed—Our report label for variable and the ALS variable description(s)

1. Book Expenditures

Expenditures for books, serial back files, and other materials (one-time purchases)

Expenditures for electronic books, electronic serial back files and other electronic materials (one-time purchases)

2. Serial Expenditures

Expenditures for current serial subscriptions

Expenditures for electronic serials

3. Audio-Visual expenditures

Expenditures for audiovisual

4. Library Hours

Hours open in a typical week

5. Gate Count

Gate count in a typical week

6. General Circulation

General circulation transactions

7. Reference Transactions

Reference transactions in a typical week

8. Electronic Reference

Library reference service by e-mail or the web

9. Attendance at Library Sessions

Total attendance at all presentations

10. Information Literacy Implementation Scale

Summed index of five items: items coded 0 (absent) or 1 (present)

Institution has:

- Definition of information literacy or of an information-literate student
- Incorporated information literacy in the institution's mission
- Incorporated information literacy in the institution's strategic plan
- Campus-wide committee to implement the strategic plan for information literacy
- The strategic plan formally recognizes the library's role in information literacy instruction

Note: The information literacy implementation scale was constructed by summing the five institutional information literacy variables from the Academic Libraries Survey. This created an additive, 0–5 scale. Libraries that reported taking none of these steps scored a

“0” and those that reported taking all steps scored a “5.”

Standardization of Independent Variables

For variables that are affected by institution size, e.g., expenditures, use of the “raw” variables would be problematic. Expenditures will tend to be higher for larger institutions and this would bias our results (in effect, variation in expenditures would be reflecting institution size rather than actual spending differences across libraries). Accordingly, and following general practice, these variables were standardized by dividing them by total student enrollment. This allowed us to compare the effect of per capita expenditures across libraries. (We also ran an analysis standardizing these variables by full time equivalents, but the results were substantially similar, so only the total enrollment-adjusted variables are used here.)

Three independent variables did not require standardization—presence of electronic reference services, degree of information literacy implementation, and library hours.

These variables do not vary by institution size. Presence of electronic reference services is a dichotomous variable, recorded as a simple “yes” (1) or “no” (0) for each institution.

Similarly, the 0–5 information literacy implementation index is standard across all schools. And finally, of course, hours and time are the same for everyone.

Data Adjustments

Obvious data entry mistakes were removed from several variables—e.g., a reported enrollment of over 300,000 students—but no other outliers were Winsorized or removed.

Statistical Analysis

Since IPEDS graduation and retention data are reported in group form, as a percentage for each academic institution, we used probit procedures for grouped data. Given the small effects that were expected, probit was preferred to logit since percentage change results would be more easily interpretable than odds ratios in this situation.

Probit models were estimated with Stata 11, using the “bprobit” procedure. Percentage changes were calculated using the Stata “margins” procedure, with “atmeans” selected.

Table Notation Explained

Statistical significance assessed at the .05 level

Prob chi-squared < .001 This test reports the likelihood ratio. This is generally assumed to be significant for large sample sizes.

We report the default Pseudo R-squared measure included in the Stata bprobit output. Though

Stata documentation is incomplete, this appears to be the McFadden’s Pseudo R-squared.

Tracking Academic Outcomes: What LibQUAL+® Tells Us about How Users View Information Literacy Outcomes

Raynna Bowlby

Library Management Consultant and Simmons College, USA

Daniel O'Mahony

Brown University, USA

Abstract

This paper reviews the results of the LibQUAL+ survey questions related to information literacy outcomes for the period 2003–2011 and provides an overall descriptive summary, identifies trends over time, and analyzes differences between user groups and institution types.

Introduction

In September 2010, just before the last Library Assessment Conference, the Association of College & Research Libraries (ACRL) announced the release of *Value of Academic Libraries: A Comprehensive Research Review and Report*, developed by Megan Oakleaf.¹ In the past two years, as well as at the current Library Assessment Conference, the library community has shifted the focus of its assessment efforts so that demonstrating the value of academic libraries and the contributions of libraries to institutional goals and outcomes have become the drivers of many assessment activities. As 2010–2011 ACRL President Lisa Hinchcliffe noted when the report was published, “documenting the evidence we have for the impact of academic libraries on student, faculty, and institutional success will enable library leaders to respond proactively to calls for accountability and return on investment.”²

The crux of the ACRL initiative and the refrain of other library colleagues in recent years have been to focus on outcomes. Robert Dugan, Peter Hernon, and Danuta Nitecki, for example, noted about student learning outcomes that “academic libraries may assess if students learn from their use of library resources and services. In this context, it is possible to assess the outcomes of an interaction between the library and the user to determine what has the student learned in terms of skills, values,

and attitudes.”³

Libraries also can utilize a complementary approach, as described by these authors: “impact outcomes are oftentimes concerned with user satisfaction, opinion, and perceptions . . .”⁴ Joseph Matthews underscored that there are two kinds of measures in assessment—direct and indirect. “Direct measures are performance based and focus on the actual work . . . produced” whereas “the intent of indirect measures is to provide assessment data that reflects . . . *perceptions* regarding the extent of and value of . . . experiences.”⁵ One recommendation Oakleaf made for university, college, and community college librarians who wish to demonstrate value was to “determine what libraries enable students, faculty, student affairs professionals, administrators, and staff to do . . . collect information about the impact libraries have on their target audiences.”⁶

When it comes to user perceptions, academic librarians have one of the most highly used and rigorously tested instruments available to the higher education community—LibQUAL+. LibQUAL+ is “a suite of services that libraries use to solicit, track, understand, and act upon users’ opinions of service quality,”⁷ offered by the Association of Research Libraries (ARL). More than 1,200 libraries have participated in LibQUAL+ and users have completed more than 1.6 million surveys over the past decade.⁸

The main components of the LibQUAL+ survey are quantitative data yielded from the 22 core items and qualitative data provided by users in the form of open-ended comments. Sandwiched between

these primary elements are three questions about frequency of library use (on premises and electronically) and use of non-library information gateways (such as Yahoo! and Google); three questions about satisfaction with treatment, with support and with overall quality of service; and five questions about information literacy outcomes.

Even though the LibQUAL+ survey has included five survey questions about information literacy outcomes for nearly a decade, discussion of this aspect of the survey has been practically non-existent throughout the community of LibQUAL+ institutions. Since the mid-1990s when Texas A&M University started using the SERVQUAL instrument to collect service quality perceptions of samples of library users, Colleen Cook, Fred Heath, Martha Kyrillidou, and Bruce Thompson among others have conducted extensive research in relation to the development and testing of the LibQUAL+ protocol.⁹ Additionally, numerous library professionals have shared their own data analyses and perspectives through countless peer-reviewed journal articles and conference presentations, including many at previous Library Assessment Conferences.¹⁰ Yet despite this voluminous bibliography, the authors could identify scant research that focused on the LibQUAL+ information literacy outcomes questions.

Year	Number of U.S.-Based Institutions Administering LibQUAL+
2003	214
2004	112
2005	152
2006	168
2007	121
2008	107
2009	101
2010	87
2011	95
Total	1,157

This research presents a baseline review of this underutilized area of the LibQUAL+ survey and will lead to a better understanding in the library

assessment arena of how users perceive the library's contribution to their academic outcomes. Further, it will place these perceptions in the context of the larger environment supporting academic outcomes in higher education.

Descriptive Analysis of LibQUAL+ Information Literacy Outcomes Questions

The LibQUAL+ survey includes the following items which are referred to as information literacy outcomes questions:¹¹

- The library helps me stay abreast of developments in my field. (LibQUAL+ survey question O1);
- The library aids my advancement in my academic discipline. (LibQUAL+ survey question O2);
- The library enables me to be more efficient in my academic pursuits. (LibQUAL+ survey question O3);
- The library helps me distinguish between trustworthy and untrustworthy information. (LibQUAL+ survey question O4);
- The library provides me with the information skills I need in my work or study. (LibQUAL+ survey question O5).

Respondents are asked to rate their level of general satisfaction with each outcome on a scale from 1 to 9, with 1 being "strongly disagree" and 9 representing "strongly agree."

For the purposes of this study, the authors examined the outcomes data collected from 2003 through 2011 from the administration of LibQUAL+ by U.S.-based universities, colleges, and community colleges. This represented 1,157 survey administrations from 636 unique institutions for a total of approximately 660,000 respondents. Three institutions administered annual LibQUAL+ surveys through the entire nine-year period studied, while 350 institutions administered a single LibQUAL+ survey during this period.

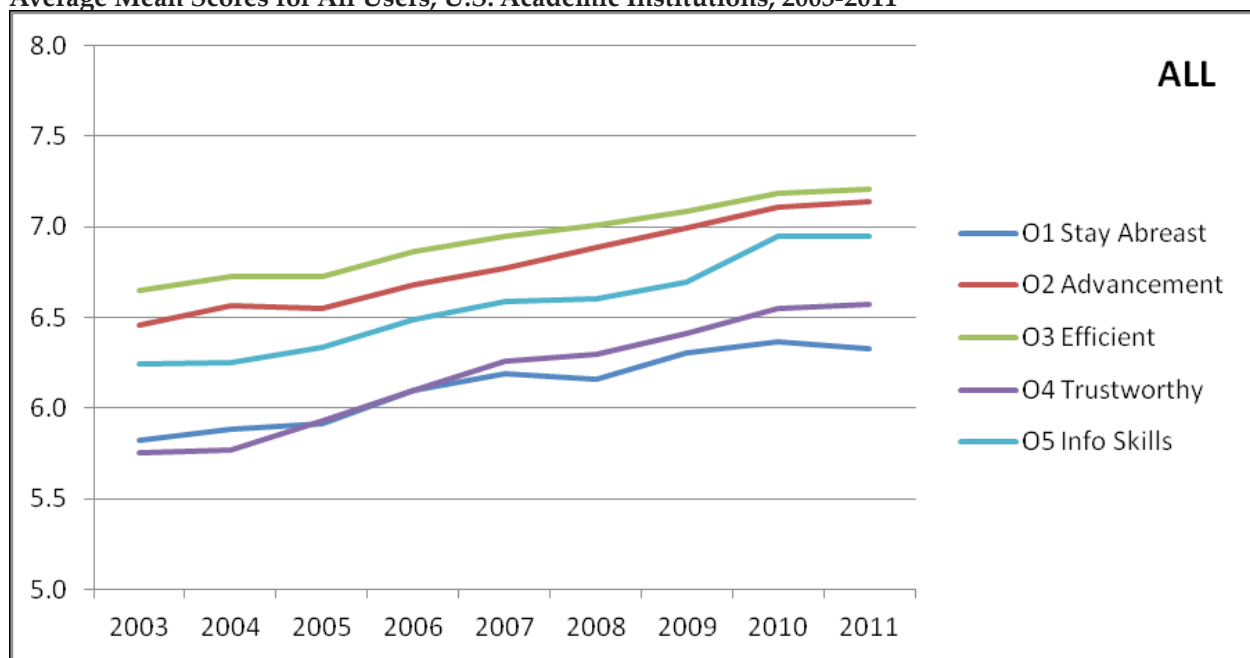
The respondents by user group included a total of 98,150 faculty, 136,435 graduate students, 381,884 undergraduate students, 32,964 staff, and 10,053 library staff. One caveat for the data analysis for this study is that it was necessary for the authors to rely on institutions' mean scores (as opposed to individual respondents' scores) and in most cases compare the averages of mean scores. A

table showing the average mean scores for the five LibQUAL+ information literacy outcomes questions across all user groups is included as Appendix A.

Spanning all years of survey administration for these U.S. institutions, the total body of all respondents expressed the highest satisfaction with the library for the outcome "Enables me to be more efficient in my academic pursuits" (Outcome 3), followed by "Aids my advancement

in my academic discipline" (Outcome 2) and "Provides me with the information skills I need in my work or study" (Outcome 5). These three outcomes also were rated the highest by all three distinct primary user groups of faculty, graduate students, and undergraduates. For the past five years, satisfaction with the library for the outcome "Helps me distinguish between trustworthy and untrustworthy information" (Outcome 4) has exceeded satisfaction with the outcome "Helps me stay abreast of developments in my field" (Outcome 1).

Figure 1. LibQUAL+ Information Literacy Outcomes Questions: Average Mean Scores for All Users, U.S. Academic Institutions, 2003-2011



Possibly the most interesting observation about overall satisfaction with outcomes was the positive longitudinal trend. All users expressed increased satisfaction with all of the library outcomes over the past nine-year period. The highest outcome satisfier, "Enables me to be more efficient in my academic pursuits" (Outcome 3), had the lowest overall increase as it progressed from its lowest point of 6.65 in 2003 to a score of 7.21 in 2011 (a difference of 0.56 in average mean scores or 8.4%). By contrast, the outcome with the lowest average mean score in 2003, "Helps me distinguish between trustworthy and untrustworthy information" (Outcome 4), showed the highest overall increase over nine years, from 5.75 in 2003 to 6.57 in 2011 (a difference of 0.82 in average mean scores or 14.3%).

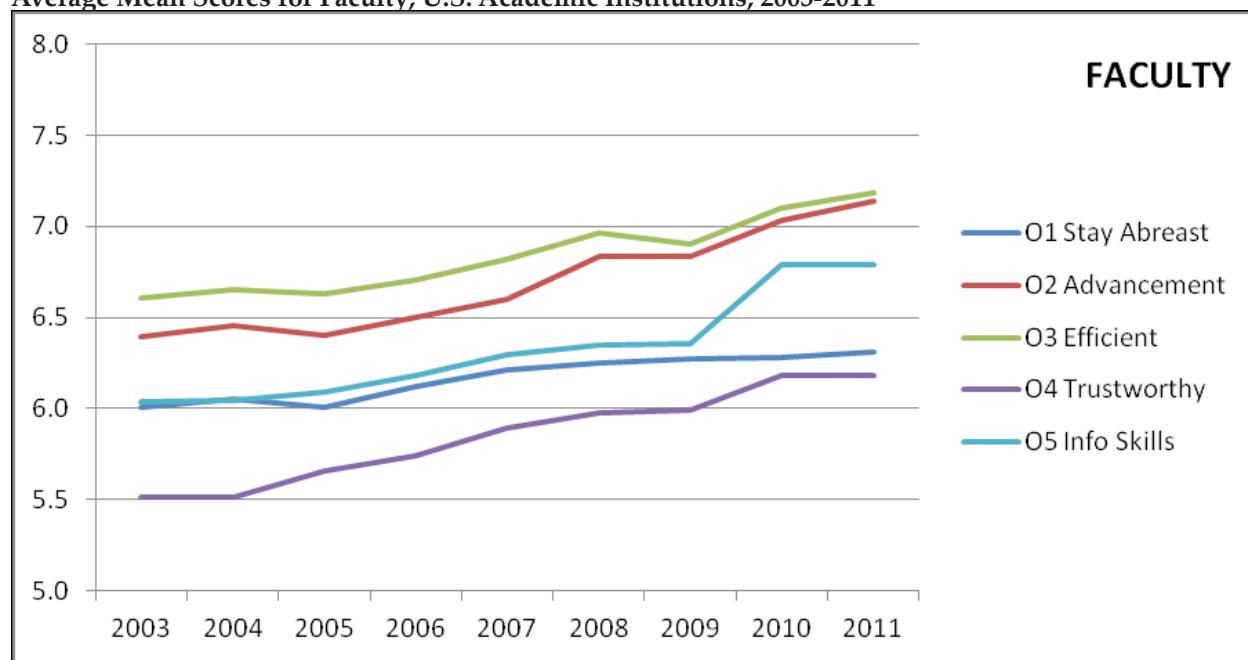
A possible question for additional research would be to place this positive trend in context: Do users' apparent increased satisfaction with these areas parallel or match a more general longitudinal positive trend for LibQUAL+ as a whole? Have perception scores on the 22 core items experienced similar positive upward progression? Has improvement been evident in the three areas of general and overall satisfaction?

Consideration of Differences Among User Groups

Of course, users are not all alike, and experience with LibQUAL+ and other user surveys demands that results be examined more granularly, such as

by distinct user groups.

**Figure 2. LibQUAL+ Information Literacy Outcomes Questions:
Average Mean Scores for Faculty, U.S. Academic Institutions, 2003-2011**



Faculty

As noted above, the two items of highest satisfaction with the library by all respondents were the outcome “Enables me to be more efficient in my academic pursuits” (Outcome 3) followed by the outcome “Aids my advancement in my academic discipline” (Outcome 2). Both of these outcomes also were rated the highest by faculty. Interestingly, third place for faculty for most of the nine-year period was “Provides me with the information skills I need in my work or study” (Outcome 5). While this mirrored the results for all respondents, faculty satisfaction showed a visible increase in 2010 which was maintained the following year. Questions for additional research would be to explore the possible factors that led to this bump in satisfaction, determine whether it corresponds to any increases in other LibQUAL+ measures, and examine whether there are lessons or applications for other areas. Moreover, it may be worthwhile, through focus groups or similar means, to ask faculty to describe in more detail their perception about how the library provides information skills for faculty.

Generally speaking, average satisfaction scores for outcomes in the faculty user group were lower than those for undergraduates or graduate students. The single item in which faculty led other user groups in their satisfaction, but only in the early years of this study, was “Helps me stay abreast of developments in my field” (Outcome 1); there has been little improvement in faculty satisfaction on this measure over the intervening years. In fact, over time, graduate student satisfaction with this library outcome has surpassed that of the faculty, and undergraduate satisfaction has increased the most over the nine years.

The outcome with which faculty were least satisfied was “Helps me distinguish between trustworthy and untrustworthy information” (Outcome 4). Indeed, as rated by faculty, this measure consistently received the lowest score of all outcomes questions every year, (from 5.51 in 2003 to 6.11 in 2011).

Figure 3. LibQUAL+ Information Literacy Outcomes Question O1:
"The library helps me stay abreast of developments in my field,"
Average Mean Scores, U.S. Academic Institutions, 2003–2011

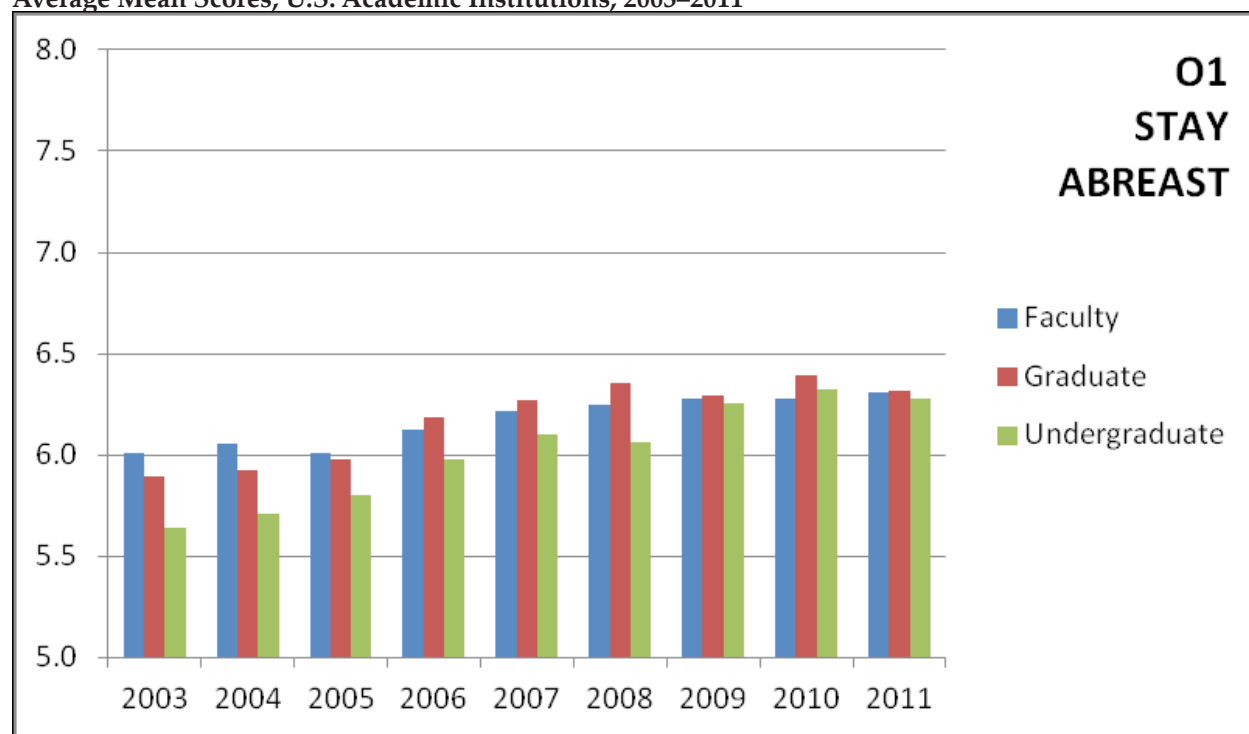
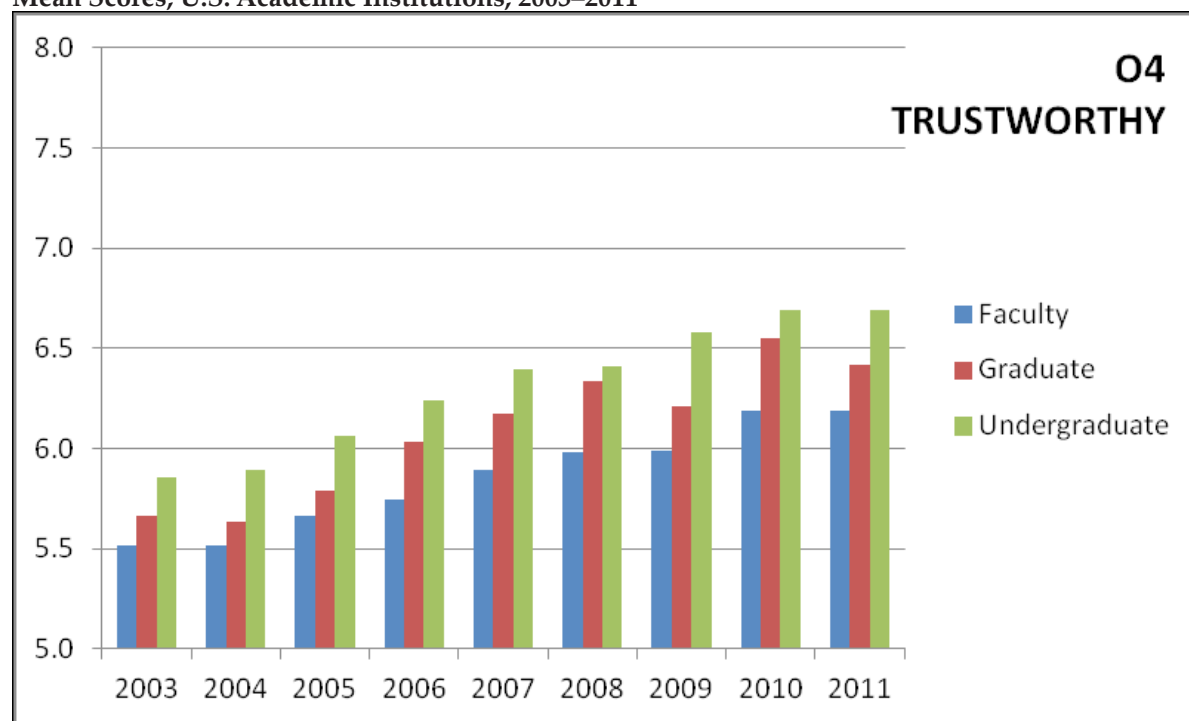


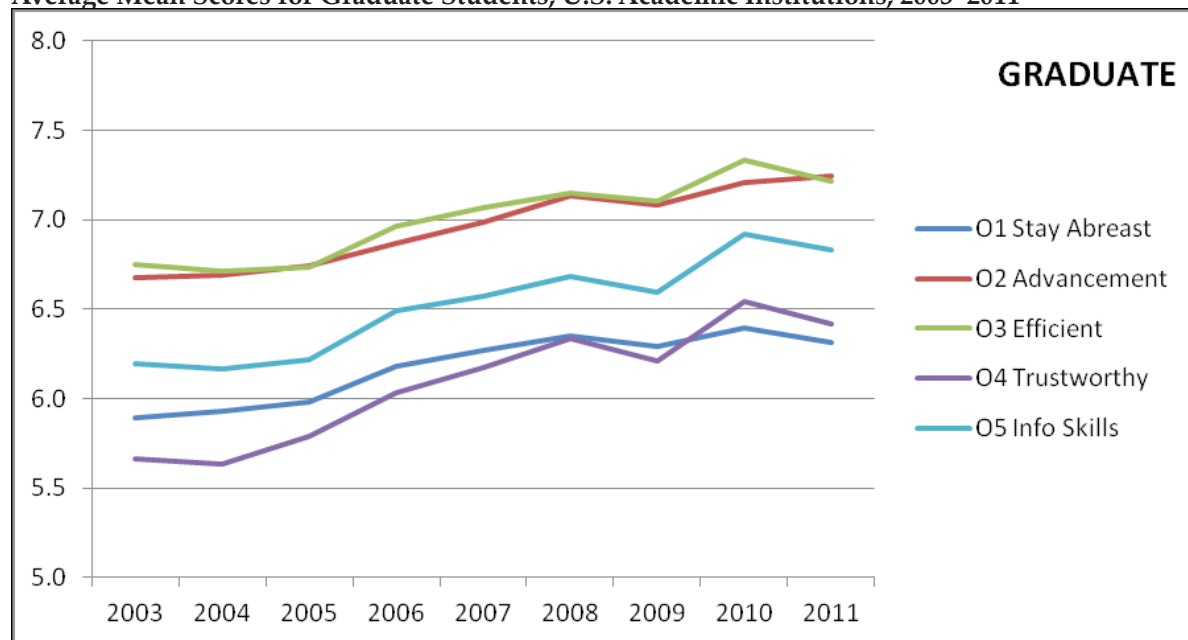
Figure 4. LibQUAL+ Information Literacy Outcomes Question O4:
"The library helps me distinguish between trustworthy and untrustworthy information," Average
Mean Scores, U.S. Academic Institutions, 2003–2011



It is interesting to note that among the three primary user groups, undergraduates consistently expressed the highest satisfaction on the outcome

“Helps me distinguish between trustworthy and untrustworthy information” (Outcome 4).

Figure 5. LibQUAL+ Information Literacy Outcomes Questions: Average Mean Scores for Graduate Students, U.S. Academic Institutions, 2003–2011



Graduate Students

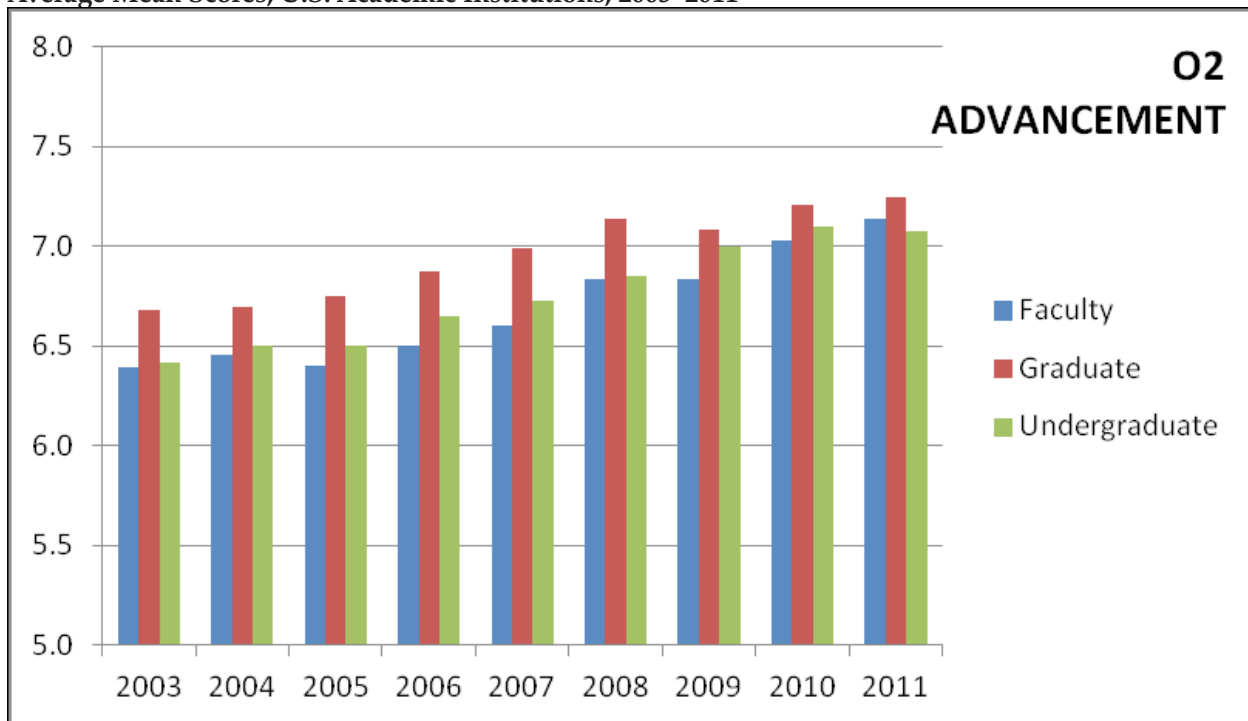
In contrast to faculty, for graduate students the library outcome “Helps me distinguish between trustworthy and untrustworthy information” (Outcome 4) did not maintain the lowest satisfaction score throughout the nine-year study period; it surpassed “Helps me stay abreast of developments in my field” (Outcome 1) in the last two years.

For graduate students, as for all of the user groups, the same two outcomes received the highest satisfaction ratings—“Enables me to be more efficient in my academic pursuits” (Outcome 3) and “Aids my advancement in my academic discipline” (Outcome 2). It is interesting to note that graduate students gave these two items almost identical ratings throughout the past nine years, and, in all but one year, graduate students’ satisfaction in both of these outcomes exceeded the other primary user groups.

Figure 6. LibQUAL+ Information Literacy Outcomes Question O3: "The library enables me to be more efficient in my academic pursuits," Average Mean Scores, U.S. Academic Institutions, 2003–2011



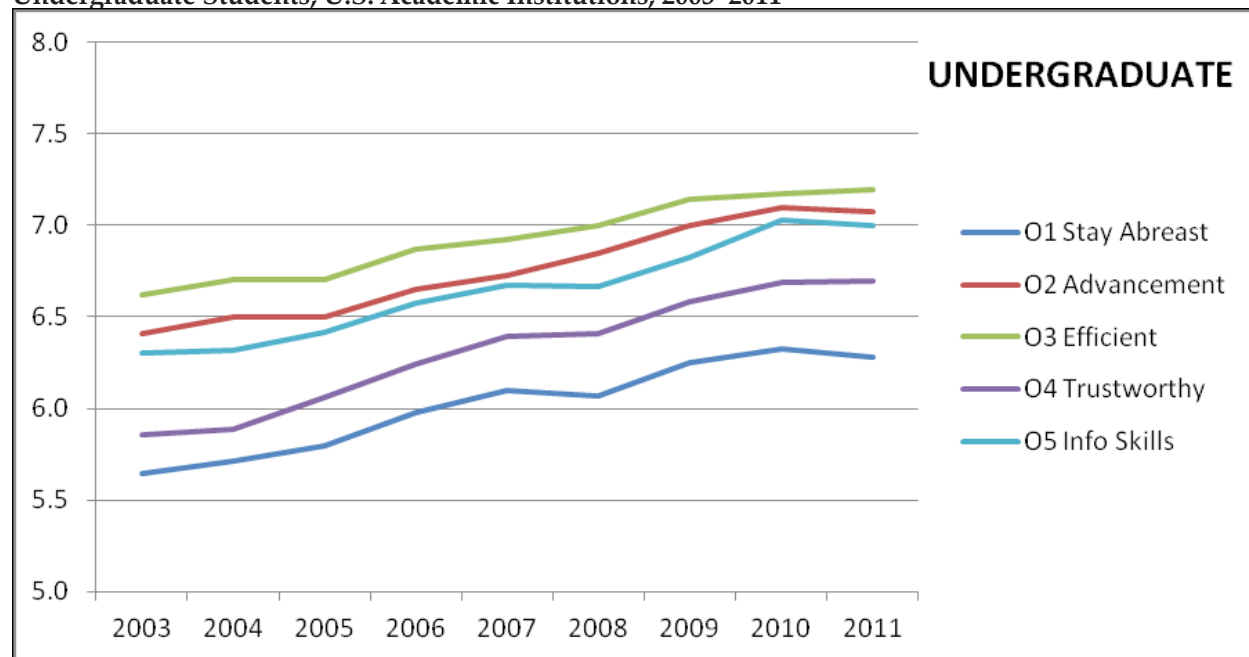
Figure 7. LibQUAL+ Information Literacy Outcomes Question O2: "The library aids my advancement in my academic discipline," Average Mean Scores, U.S. Academic Institutions, 2003–2011



Like faculty, satisfaction with the library outcome “Provides me with the information skills I need in my work or study” (Outcome 5) ranked third

for graduate students and, also like faculty, had a visible increase in satisfaction in 2010.

Figure 8. LibQUAL+ Information Literacy Outcomes Questions: Average Mean Scores for Undergraduate Students, U.S. Academic Institutions, 2003–2011

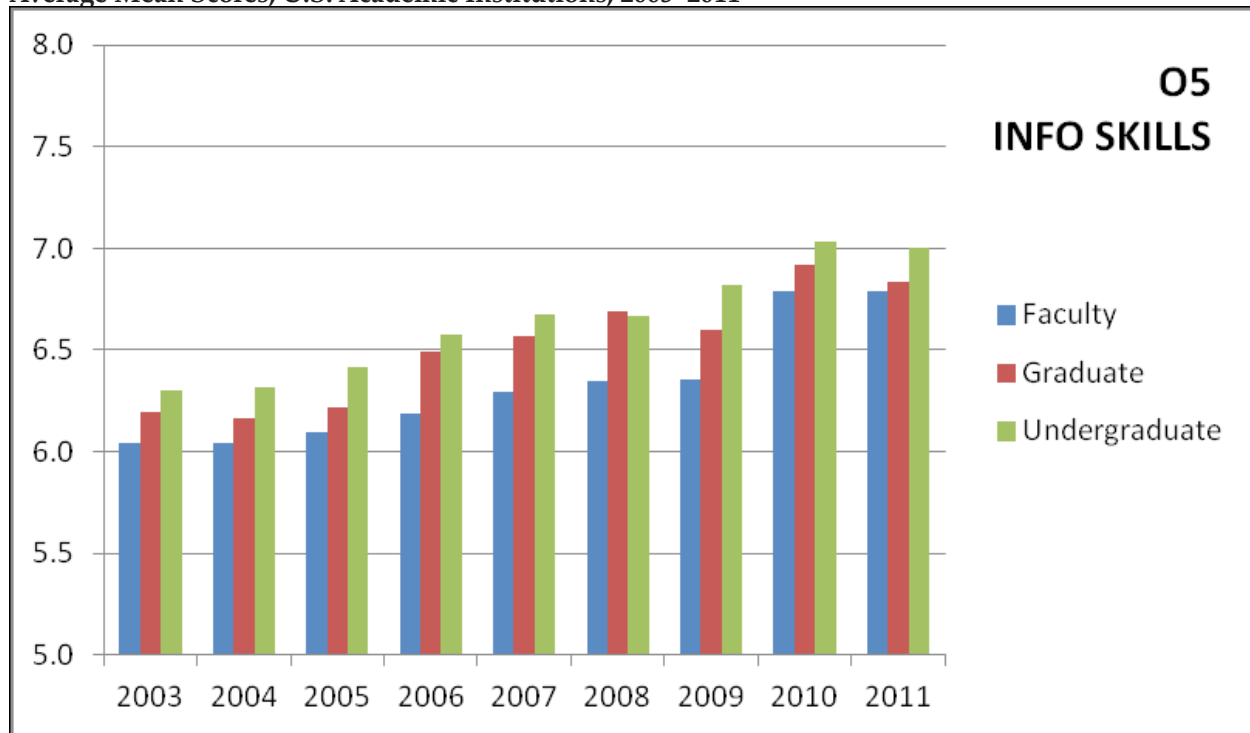


Undergraduate Students

As with the other two primary user groups, undergraduate students rated their top satisfaction with the outcome “Enables me to be more efficient in my academic pursuits” (Outcome 3), followed by the outcome “Aids my advancement in my academic discipline” (Outcome 2) and the outcome “Provides me with the information skills I need in my work or study” (Outcome 5). Given

the emphasis the library profession has placed on information literacy for over a decade, it is worthwhile to note that undergraduates rated this “skills” outcome higher than the other primary user groups for all years of the study except one. Also encouraging is the overall increase in the average scores for this outcome over the nine-year period (a difference of 0.70 or 11.1%).

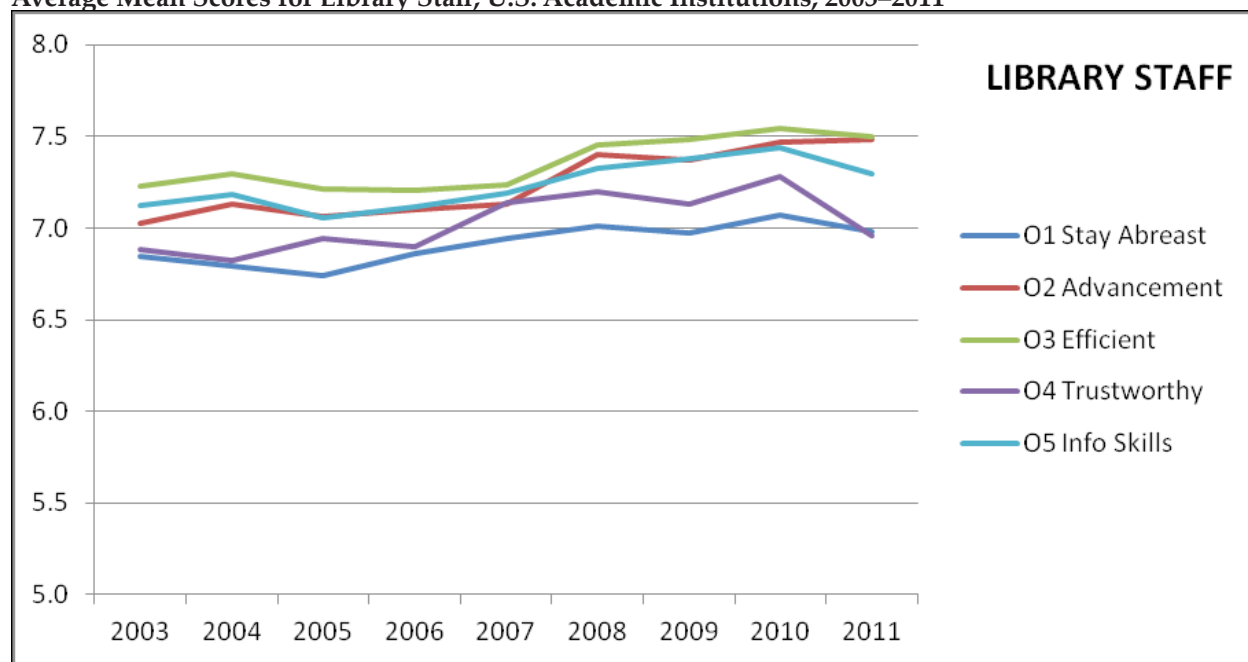
Figure 9. LibQUAL+ Information Literacy Outcomes Question O5:
"The library provides me with the information skills I need in my work or study,"
Average Mean Scores, U.S. Academic Institutions, 2003–2011



The relative order of undergraduates' outcomes scores remained consistent over the nine years of this study, and undergraduates were the only primary user group that always rated satisfaction

with the library outcome "Helps me distinguish between trustworthy and untrustworthy information" (Outcome 4) above "Helps me stay abreast of developments in my field" (Outcome 1).

**Figure 10. LibQUAL+ Information Literacy Outcomes Questions:
Average Mean Scores for Library Staff, U.S. Academic Institutions, 2003–2011**



Library Staff

Giving consideration to the LibQUAL+ responses of Library Staff for information literacy outcomes is riddled with ambiguity. When a Library Staff member responds to a user survey it begs the question: Has the staff member answered as a library *user* him/herself, or has the staff member provided his/her perception of how a *primary user* or *client* would respond? And if the latter, which user, in what circumstances, et cetera? Perhaps due to this uncertainty, the results that emerged from the ratings by Library Staff of satisfaction with library outcomes were significantly *different*—and we use that word intentionally—than those of the three primary user groups (i.e., faculty, graduate students, and undergraduate students). The most obvious difference was that the satisfaction ratings given to all of the outcomes by Library Staff were much higher than the ratings of all other user groups. Looking separately at the scores for each user group and each question, responses from Library Staff resulted in the top three average mean scores in every year of this nine-year study, and the top four scores in six years of the study. The scores from Library Staff also had a much narrower range across all of the items and across all nine years of the study. For various years, the average mean scores for some of the outcomes were practically indistinguishable from one another.

Consideration of Differences Among Institution Types

The authors also examined the LibQUAL+ library outcomes data collected in a single sample year—2010—in order to consider differences in responses from faculty and undergraduates by type of institution. For the purposes of this study, the institutions with LibQUAL+ responses in 2010 were sorted according to the basic categories of the Carnegie Classification of Institutions of Higher Education: Associate's Colleges, Baccalaureate Colleges, Master's Colleges and Universities, and Doctorate-granting Universities.

This data set represents survey administrations from 86 unique institutions for a total of nearly 41,000 respondents. The respondents by user group included 5,257 faculty, 8,813 graduate students, and 24,330 undergraduate students. One caveat for the data analysis for this part of the study is the relative small number of Associate's Colleges in the sample (only two institutions representing a total of 108 respondents).

Users at Baccalaureate, Master's degree, and Doctorate institutions appeared to have a similar overall pattern of satisfaction with library outcomes. Both faculty and undergraduates at

Associate's degree granting institutions appeared to have different patterns of satisfaction with outcomes than their peers at other types of

institutions. (Whether this difference is the result of the smaller sample size for Associate's colleges bears further investigation.)

**Figure 11. LibQUAL+ Information Literacy Outcomes Questions:
Average Mean Scores for Faculty by Carnegie Classification, 2010**

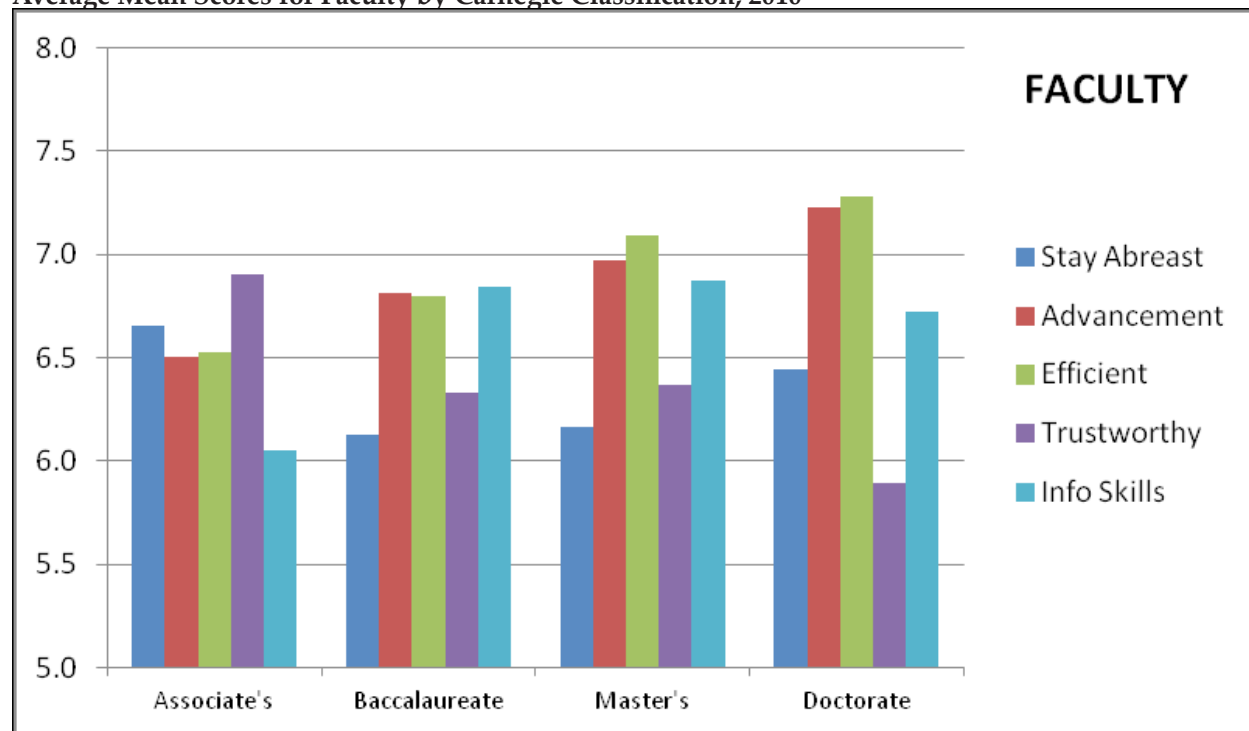
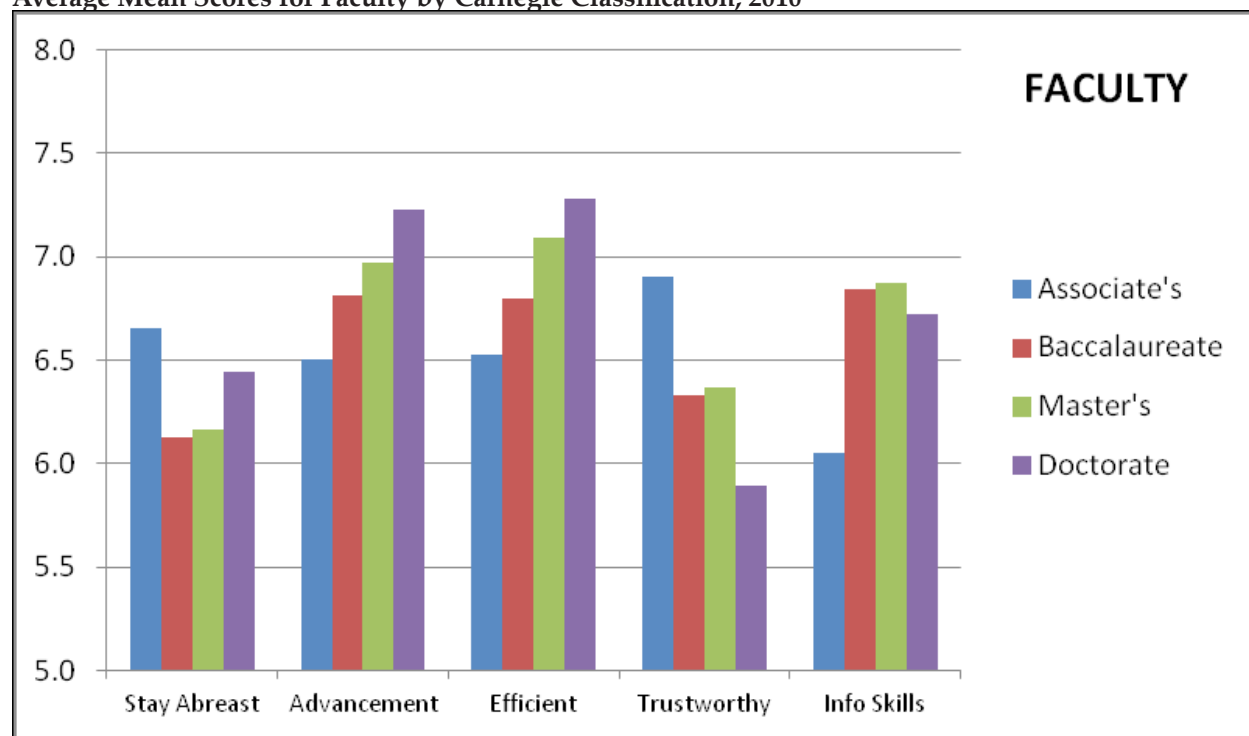


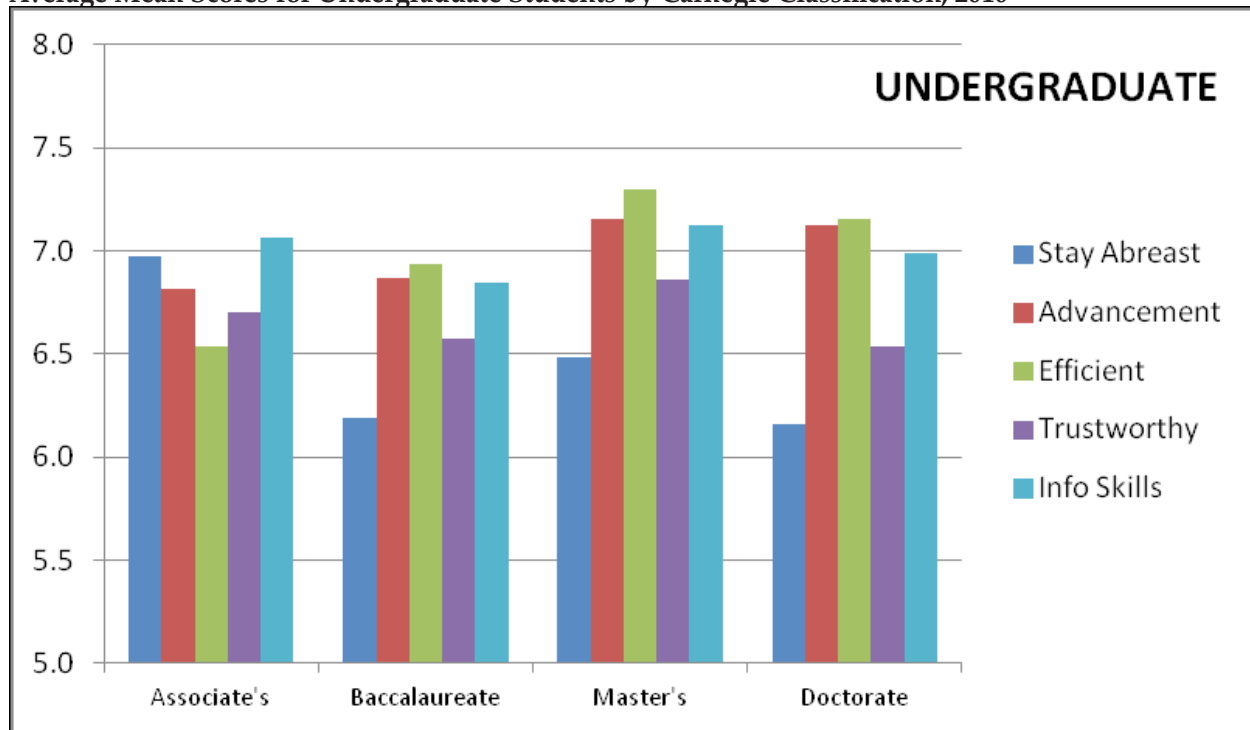
**Figure 12. LibQUAL+ Information Literacy Outcomes Questions:
Average Mean Scores for Faculty by Carnegie Classification, 2010**



Faculty at Associate's degree granting institutions indicated the highest satisfaction with the outcome "Helps me distinguish between trustworthy and untrustworthy information" (Outcome 4), in contrast to faculty at Doctorate institutions who consider this the outcome for which they were least satisfied.

Faculty at Associate's degree granting institutions also had higher satisfaction than faculty at other types of institutions for the outcome "Helps me stay abreast of developments in my field" (Outcome 1), and they were not as satisfied as faculty at other types of institutions with the outcome "Provides me with the information skills I need in my work or study" (Outcome 5).

**Figure 13. LibQUAL+ Information Literacy Outcomes Questions:
Average Mean Scores for Undergraduate Students by Carnegie Classification, 2010**



As with faculty, there were also differences in the satisfaction with outcomes between undergraduate students at Associate's degree granting institutions and their peers at other types of institutions. Like the faculty at their institutions, undergraduates at Associate's degree colleges placed their satisfaction with the outcome "Helps me stay abreast of developments in my field" (Outcome 1) higher than undergrads at other institution types.

Relationship to Information Literacy Discussion

The leaders of library assessment, at this Conference and elsewhere, stress that "relevant data and user feedback are routinely collected, analyzed, and used to set priorities, allocate resources, and make decisions" and that "continually striving for improvement . . . should be the basic tenet of the library."¹² So an essential precept is not simply that it may be beneficial to track how respondents to the LibQUAL+ survey evaluated satisfaction with library outcomes, but what can service providers and administrators in academic libraries actually do with this information? What is the benefit gained for the investment of time of 1.6 million users who responded to these questions? Some examples of

use and application are emerging.

Jeanne Brown and Cory Tucker used LibQUAL+, among multiple data sources, to provide guidance and goal setting and prioritization for the agendas for liaison librarians at the University of Nevada, Las Vegas. They examined data for the disciplines of art, architecture, business, and hotel administration to "enrich and inform liaison perceptions of the behavior and priorities of their constituents and assist liaisons with establishing annual goals." Within the LibQUAL+ data, these researchers focused on the outcomes questions when they looked at items where the mean for the discipline was below the average for all users. At UNLV, fine arts was below average on two of the five information literacy outcomes: "Aids my advancement in my academic discipline" (Outcome 2) and "Enables me to be more efficient in my academic pursuits" (Outcome 3), while users in business and hotel administration scored below average for all disciplines in every category of information literacy outcomes. Brown and Tucker concluded that "these data suggest that information literacy and instruction would be appropriate target areas" for the respective liaison librarians.¹³

The well-respected survey conducted by Steve Hiller and colleagues at the University of Washington includes a set of questions not unlike the LibQUAL+ outcomes questions. Faculty and students are asked to rate the library's contribution—on a scale of 1 to 5, from “minor” to “major”—to a number of ways in which the library impacts their academic work:¹⁴

- Keeping current in your field;
- Finding information in related fields or new areas;
- Being a more productive researcher;
- Enriching student learning experiences;
- Overall academic success;
- Making more efficient use of your time.

Three of the ways in which the library contributes to and impacts academic life as described by UW align closely with the LibQUAL+ outcomes; i.e., “Helps me stay abreast of developments in my field” (Outcome 1); “Aids my advancement in my academic discipline” (Outcome 2); and “Enables me to be more efficient in my academic pursuits” (Outcome 3). In describing the 2007 UW survey, Hiller reports:

For the first time we asked an “impact” question on the Libraries’ contribution to faculty and student work in a number of areas. Faculty responded that the Libraries made a major contribution to finding information they needed, being a more productive researcher, enriching student learning experiences and making them more efficient with their time. Graduate students also rated the Libraries as a major contributor to their academic success. We intend to follow up this positive response with focus groups and interviews to gain more specific information on library contributions.¹⁵

With inspiration from Jeanne Brown and Steve Hiller, others in the academic library assessment community may begin to probe whether the LibQUAL+ outcomes questions may provide insight on the impact that the library has on its primary users.

Conclusion

This study has outlined some observations from almost a decade of responses to the five LibQUAL+ information literacy outcome questions. The 22 core LibQUAL+ questions were the product of

extensive research and have benefited from a decade of continued investigation and scrutiny. Considerably less rigor appears to have gone into the development of the five LibQUAL+ questions that target users’ satisfaction with the library’s role in information literacy outcomes. As indirect measures that focus on users’ perceptions, it is important to keep in mind that the LibQUAL+ information literacy questions address “impact outcomes” rather than target any direct change in the actual behaviors or skills of users, or the effectiveness of information literacy programs carried out by libraries. Further, their capacity for providing valid and reliable results is yet to be tested. These are serious factors that should be considered when attempting to use data derived from the LibQUAL+ information literacy outcomes questions.¹⁶ Nevertheless, with 1.6 million total respondents (and counting—the information literacy outcomes questions are a part of the new LibQUAL+ Lite protocol as well), the authors hope that there can be some value found in considering ways to utilize these data as one source of information among multiple assessment methods. As the ACRL *Value of Academic Libraries* report states:

... as librarians learn about library value—that is, what library services and resources enable users to do, what outcomes libraries enable users to achieve—they improve. When academic librarians learn about their impact on users, they increase their value by proactively delivering improved services and resources—to students completing their academic work; to faculty preparing publications and proposals; to administrators needing evidence to make decisions. Indeed, the demonstration of value is not about looking valuable; it’s about being valuable.¹⁷

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End Notes

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Appendix A

Averages of Mean Scores for LibQUAL+ Information Literacy Outcomes Questions for U.S.-Based Institutions, 2003-2011									
	2003	2004	2005	2006	2007	2008	2009	2010	2011
All	6.18522	6.23890	6.29076	6.44562	6.55039	6.59065	6.69874	6.82955	6.83961
O1 Stay Abreast	5.82486	5.88401	5.91254	6.09618	6.18903	6.15584	6.30441	6.36477	6.32985
O2 Advancement	6.45806	6.56493	6.54828	6.67792	6.76940	6.88392	6.99084	7.10878	7.13807
O3 Efficient	6.64950	6.72189	6.72328	6.86543	6.94721	7.00802	7.08810	7.18168	7.20682
O4 Trustworthy	5.75051	5.76969	5.93165	6.10083	6.25602	6.29964	6.41391	6.54863	6.57457
O5 Info Skills	6.24318	6.25397	6.33807	6.48772	6.59027	6.60585	6.69644	6.94392	6.94873
Faculty	6.11223	6.14420	6.15831	6.25157	6.36550	6.47445	6.47195	6.67697	6.72267
O1 Stay Abreast	6.00646	6.05401	6.00827	6.12397	6.21426	6.24778	6.27460	6.27874	6.31195
O2 Advancement	6.39196	6.45481	6.39861	6.50240	6.60189	6.83440	6.83374	7.03119	7.13758
O3 Efficient	6.60724	6.65314	6.62995	6.70478	6.82310	6.96507	6.90436	7.10074	7.18168
O4 Trustworthy	5.51480	5.51441	5.66083	5.74119	5.89128	5.97783	5.98937	6.18437	6.18539
O5 Info Skills	6.04070	6.04465	6.09387	6.18551	6.29698	6.34716	6.35767	6.78981	6.79310
Graduate	6.23584	6.22789	6.29353	6.50900	6.61492	6.73348	6.65936	6.88246	6.80527
O1 Stay Abreast	5.89562	5.92768	5.98154	6.18274	6.26811	6.35139	6.29556	6.39677	6.31382
O2 Advancement	6.67600	6.69376	6.74516	6.87042	6.99074	7.13754	7.18464	7.20819	7.24247
O3 Efficient	6.74697	6.71628	6.73314	6.96444	7.06968	7.15315	7.10870	7.33748	7.21910
O4 Trustworthy	5.66507	5.63518	5.78857	6.03468	6.17618	6.33778	6.21033	6.54729	6.41778
O5 Info Skills	6.19553	6.16654	6.21926	6.49272	6.56988	6.68754	6.59759	6.92265	6.83263
Undergraduate	6.16594	6.22406	6.29801	6.46237	6.56258	6.59842	6.75942	6.86387	6.84830
O1 Stay Abreast	5.64198	5.71077	5.79970	5.97651	6.10032	6.06555	6.25288	6.32518	6.27870
O2 Advancement	6.41165	6.49745	6.50204	6.64958	6.72391	6.85049	6.99922	7.09436	7.07309
O3 Efficient	6.61873	6.70385	6.70764	6.86903	6.92590	7.00238	7.14073	7.17461	7.19516
O4 Trustworthy	5.85532	5.89072	6.06451	6.24159	6.39093	6.40914	6.58071	6.68893	6.69319
O5 Info Skills	6.30202	6.31750	6.41618	6.57512	6.67181	6.66455	6.82355	7.03159	6.99973
Staff	6.23825	6.14685	6.30439	6.40952	6.53169	6.43894	6.68373	6.78645	6.70326
O1 Stay Abreast	6.01250	5.99139	6.11524	6.21571	6.32557	6.23544	6.49229	6.59871	6.39046
O2 Advancement	6.33278	6.29453	6.43237	6.48434	6.65149	6.57491	6.83560	6.96484	6.83428
O3 Efficient	6.55005	6.45529	6.65949	6.68841	6.81955	6.71907	6.89795	7.03061	6.91397
O4 Trustworthy	5.93578	5.77472	5.91371	6.11963	6.32360	6.19919	6.50463	6.50597	6.59308
O5 Info Skills	6.37012	6.21833	6.40112	6.53949	6.53824	6.46612	6.68816	6.83120	6.79095
Library Staff	7.02326	7.04535	7.00265	7.03725	7.12821	7.27775	7.26733	7.36257	7.24294
O1 Stay Abreast	6.84787	6.78980	6.73857	6.86307	6.94087	7.01334	6.97554	7.07439	6.98196
O2 Advancement	7.02720	7.12906	7.06064	7.09725	7.13389	7.39794	7.37091	7.47018	7.48179
O3 Efficient	7.23154	7.29572	7.21514	7.20829	7.23283	7.45700	7.48045	7.54675	7.49895
O4 Trustworthy	6.88413	6.82581	6.94327	6.89889	7.13927	7.19582	7.13004	7.28363	6.96143
O5 Info Skills	7.12553	7.18633	7.05564	7.11873	7.19419	7.32464	7.37970	7.44069	7.29600

Note: Calculations of averages based on mean scores for 1,157 U.S.-based academic institutions that administered the LibQUAL+ survey from 2003 to 2011. Data of mean scores provided by the Association of Research Libraries.

An Implementation of LibQUAL+® Triads at York University

Aaron Lupton, Marcia Salmon, and Dany Savard
York University, Canada

Abstract

LibQUAL+ Triads offers a unique opportunity for libraries to produce evidence that substantiates the link between services and highly valued outcomes. In April 2012, York University Libraries took part in a pilot implementation of LibQUAL+ Triads to examine how the new protocol could produce a different view of library service quality assessment. This paper considers how LibQUAL+ Triads might enhance the utility of LibQUAL+ tools for librarians and also reflects on the potential and observed merits of LibQUAL+ Triads.

Introduction

Throughout the past 10 years, York University Libraries has carried out LibQUAL+ surveys in order to measure its performance in three broad areas: Library as Place, Information Resources, and Affect of Service. The survey also allows the Libraries to gather feedback on what services and resources its student and faculty population value most. At York, past implementations of the LibQUAL+ survey have proven that such repeat exercises in service evaluation, along with targeted institutionally initiated assessment projects, provide a strong and dependable record of performance for the Libraries. With its distinctive value proposition, a pilot of the new LibQUAL+ Triads protocol offered York University Libraries the potential to access a new view of its patrons' perceptions of library service. Considering the useful information produced by LibQUAL+ surveys for York University Libraries in the past, this paper aims to explore whether the Triads experience might enhance the utility of LibQUAL+ tools for librarians in the long run. To examine this question, the potential and observed merits of LibQUAL+ Triads will be considered along with evidence from the actual pilot of the survey at York University Libraries.

LibQUAL+ Triads: An Overview

As a service quality evaluation tool, LibQUAL+ Triads offers a unique opportunity for libraries

to produce evidence that substantiates the link between services and highly valued outcomes. LibQUAL+ Triads is the third protocol option within the LibQUAL+ suite, which also includes LibQUAL+ Long and LibQUAL+ Lite. Like the Long and Lite survey instruments, LibQUAL+ Triads assesses library service quality in the academic library from the library user's perspective.¹ Also, like both previously designed instruments, LibQUAL+ Triads explores service quality dimensions by dividing its questions into the three subscales of Affect of Service, Information Control, and Library as Place. In terms of questionnaire structure, however, LibQUAL+ Triads presents a departure from the structure found with the other options from the LibQUAL+ suite. This significant difference is explained by taking into consideration the theory behind the innovative choices in questionnaire design found within LibQUAL+ Triads.

As Thompson and Kyrillidou claim in their introductory paper to the new protocol, LibQUAL+ Triads is meant to offer a more granular examination of performance with respect to primary user service quality desires or perceptions.² To achieve this, LibQUAL+ Triads collects perceived or desired level of library service by leading users through a questionnaire that is based on the ipsative measurement concept. Ipsative measurement essentially refers to the notion that data is to be collected in a manner where a particular response to a given item will then limit the choices one has on other items.³ On the LibQUAL+ Triads questionnaire, this imposed level of restriction is carried out by forcing users to determine perceived or desired level of service by ranking an item first, second, and third. The protocol yields data on six LibQUAL+ core items, which are presented repeatedly to the respondent in combinations of three items at a time for each triad. Altogether, the survey leads the respondent through 20 such combination triads that ask the same questions: "At which one of the following 3

things is your library doing BEST? And at which one of the following 3 things is your library doing WORST?"⁴

Figure 1: LibQUAL+ Triads – Triad Example from 2012 York University Libraries Pilot

Service Quality Triad # 7 of 20

At which one of the following 3 things is your library doing BEST ("1st")?
At which one of the following 3 things is your library doing WORST (3rd")?
And at which one of the following 3 things is your library doing NEITHER BEST NOR WORST ("2nd")?
Please note that your choices are stored (and cannot be changed) once you leave a given web page.

13.

Best	Worst	
○ 1st ○ 2nd ○ 3rd	○ 1st ○ 2nd ○ 3rd	A library Web site enabling me to locate information on my own
○ 1st ○ 2nd ○ 3rd	○ 1st ○ 2nd ○ 3rd	Employees who deal with users in a caring fashion
○ 1st ○ 2nd ○ 3rd	○ 1st ○ 2nd ○ 3rd	Employees who have the knowledge to answer user questions

The LibQUAL+ Triads questionnaire directs students to view the academic library as a “forced-choice”⁵ environment where their perceptions of library services are meant to be ranked repeatedly according to limited rank choices of 1st, 2nd or 3rd. Unlike the normative measurements of the LibQUAL+ Long and LibQUAL+ Lite, where users are asked to rate an aspect of service on a scale of 1 (worst) to 9 (best), LibQUAL+ Triads respondents are made to prioritize perceptions of service according to a restricted ranking system.

LibQUAL+ Triads will soon build in a procedure for computing intraindividual score reliability coefficients to help screen out user responses that are untrustworthy.⁶ As this procedure could not be implemented against the set of results produced through the Spring 2012 pilot implementation of LibQUAL+ Triads at York University Libraries, this paper will not discuss the advantages or disadvantages of the use of intraindividual score reliability coefficients within the LibQUAL+ Triads protocol.

Background Information on York University and York University Libraries

York University is an interdisciplinary and comprehensive university located in Toronto, Ontario, Canada. The York University community includes over 60,000 faculty, staff, and students. In 2011, the York University community included approximately 48,589 undergraduate students and 5,918 graduate students.⁷ York University

has two campuses: the main campus is located in northwestern Toronto, and the Glendon campus is a bilingual French and English campus located north of downtown Toronto. York University is a commuter university with approximately 80% of its student community residing within the Greater Toronto Area.⁸ Approximately 57% of undergraduate students at York University are receiving a liberal arts education.⁹

There are five libraries on the two campuses of York University. The five libraries are Scott Library, Peter F. Bronfman Library, Leslie Frost Library, Osgoode Library, and Steacie Library. The Scott Library is the Humanities and Social Sciences Library and is the largest of the five libraries. Peter F. Bronfman Library is the Business Library. The Leslie Frost Library is located on the Glendon campus and offers bilingual service in French and English. Osgoode Library is the law library, and the Steacie Library is the Science and Engineering Library. York University Libraries collection includes over 45,000 electronic journals, 300,000 electronic books, 2.5 million print volumes, and significant holdings in film, music, maps, archival materials and microforms. Approximately 3.5 million people entered York University Libraries in the 2009/2010 academic year. There were 10 million uses of electronic resources and a half-million circulated items at York University Libraries in the 2009/2010 academic year. In the same year, approximately 125,000 reference questions were answered and 25,000 students attended information literacy sessions at the York Libraries.¹⁰

Previous Implementations of LibQUAL+ Surveys at York University Libraries

The LibQUAL+ Long survey has been implemented at York University Libraries four times in 2002, 2004, 2007 and 2010. However, in 2010 York ran a blended survey that included 44.20% instances of the LibQUAL+ Long survey and 55.80% instances of the LibQUAL+ Lite survey. Across all implementations, librarians and library administrators at York have been able to draw actionable items from survey findings that, in conjunction with evidence from other internal assessment initiatives, have led to constructive change at York University Libraries. For example, as a result of the large negative gap between perceived and minimum level of service in the area of Library as Place in the 2002 LibQUAL+ survey, the Libraries improved service in this area by creating a modern reading room with soft seating at the Scott Library, increasing the number of group study rooms from 6 to over 25 across all libraries, creating designated quiet zones in the Scott Library, and modifying existing space at the Scott Library in order to increase seating by 15%.¹¹ A series of change initiatives at the Libraries was also informed by the 2004 and 2007 LibQUAL+ results, and in 2010 the Libraries were able to leverage LibQUAL+ findings to make improvements in two of the three dimensions: Information Control and Library as Place. The improvements to Information Control included creating a Learning Commons that provides an integrated and collaborative approach to providing students with opportunities to learn library research, writing, and learning skills, while the improvements in Library as Place included the launch of 24-hour library service and 300 additional library study spaces.¹²

Methodology

York University Libraries participated in the Spring 2012 pilot of the LibQUAL+ Triads survey, which ran for one week, from April 1–8, 2012. The York University Libraries LibQUAL+ Triads Working Group met to decide which groups from the York University community would be selected to participate in the LibQUAL+ Triads pilot, while giving special consideration to future plans for implementation of the regular LibQUAL+ survey in 2013. In the end, this working group decided to limit participation in the LibQUAL+ Triads pilot to samples of the undergraduate and graduate

population that were to be later excluded from York University Libraries' implementation of the regular LibQUAL+ Long survey scheduled for 2013. Faculty were not included in the LibQUAL+ Triads pilot to avoid the potential for survey fatigue with LibQUAL+ in 2013.

The sample used for the LibQUAL+ Triads Pilot consisted of 2,600 undergraduate students and 600 graduate students. The total sample size was 3,200. The undergraduate student sample used for the LibQUAL+ Triads pilot was the same as the undergraduate sample used for the LibQUAL+ 2010 implementation. The graduate student sample used in the LibQUAL+ Triads Pilot was half of the sample of graduate students used in the 2010 implementation of LibQUAL+ at York University Libraries.¹³ In short, the undergraduate student sample represented over 5% of the undergraduate student population and the graduate student sample represented over 10% of the graduate student population.

On April 1, 2012, all selected participants received an e-mail invitation from York University Libraries inviting them to participate in the LibQUAL+ Triads online survey. All participants had the option to enter a draw to win one of two \$50 gift cards to the York University Bookstore. Participants in the LibQUAL+ Triads pilot were encouraged to report any issues regarding the survey to an e-mail address that was monitored by a member of the LibQUAL+ Triads Working Group.

Survey Results

York University Libraries' implementation of LibQUAL+ Triads produced 155 completed surveys, with a split of 106 surveys completed by undergraduate students and 49 completed by graduate students.

In terms of academic discipline, the category under which the largest number of respondents self-identified was Social Sciences at 19.35%, while Engineering/Computer Science and Law tied at 1.29% for the smallest number of student respondents. These participation rates by discipline closely mirror rates documented during the last implementation of the full LibQUAL+ 2010 survey at York University Libraries.¹⁴

Figure 2: York University Libraries—Respondents by Customized Discipline

Discipline	Respondents n	Respondents %
Business	10	6.45
Education	9	5.81
Engineering / Computer Science	2	1.29
Environmental Studies	4	2.58
Fine Arts	24	15.48
Health	22	14.19
Humanities	12	7.74
Law	2	1.29
Other	17	10.97
Science / Math	19	12.26
Social Sciences	30	19.35
Undecided	4	2.58
Total:	155	100.00

Comparing the mean rankings for each of the six item questions posed in the triads, we saw close matches between both undergraduate and graduate student populations. As with previous

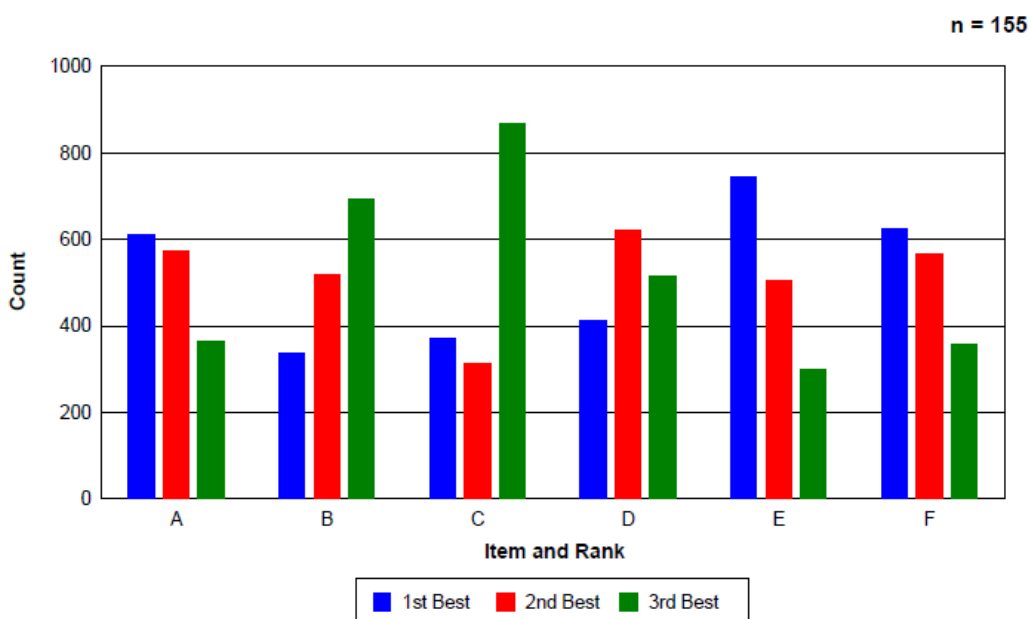
implementations of LibQUAL+ at York, we saw the lowest-ranking question item demonstrate concerns with space in the Libraries.

Figure 3: York University Libraries Triad-level Summary—Mean Rank by Question Items

Question Item	Mean Ranking - All	Mean Ranking - Undergraduates	Mean Ranking - Graduates
The electronic information resources I need	1.84	1.83	1.86
Employees who deal with others in a caring fashion	2.23	2.29	2.09
Library space that inspires study and learning	2.32	2.16	2.67
Making electronic resources accessible from my home or office	2.07	2.13	1.93
A library Web site enabling me to locate information on my own	1.71	1.72	1.69

Question Item	Mean Ranking - All	Mean Ranking - Undergraduates	Mean Ranking - Graduates
Print and/or electronic journal collections I require for my work	1.83	1.86	1.76

Figure 4: York University Libraries Triad-level Summary—Counts & Ranks by Question Items



Legend

- A = The electronic information resources I need
 B = Employee who deal with users in a caring fashion
 C = Library space that inspires study and learning
 D = Making electronic resources accessible from my home or office
 E = A library Web site enabling me to locate information on my own
 F = Print and/or electronic journal collections I require for my work

The Triads Experience

Based on our pilot implementation of the LibQUAL+ Triads, there are two major observations that can be made about the utility of this tool as a complement or alternative to the traditional survey tools from the LibQUAL+ suite. First, from a review of the comments offered by participants in the survey, there were no indications of a problem with redundancy in the structure of the questionnaire. Within the Triads survey implemented at York, each of the six question items ("The electronic information resources I need," "Employees who deal with others in a caring fashion," "Library space that inspires study and learning," "Making electronic resources accessible from my home or office," "A

library Web site enabling me to locate information on my own," and "Print and/or electronic journal collections I require for my work") figured in 10 of the 20 triads respondents had to answer in order to complete the survey. Considering this amount of repetition, the balance of question items from the four subscales that applied in this LibQUAL+ Triads survey seems to have addressed the issue of redundancy to a fair extent.

Second, the ranking system found in the LibQUAL+ Triads survey presents librarians and library administrators with a redefined measure of service quality. Instead of the 1 to 9 rating system found in the two previous LibQUAL+

protocols, LibQUAL+ Triads directs participants to rank question items on a scale of 1 to 3. When all results have been analyzed, this new system leads reviewers to make decisions based on a mean ranking for each of the six question items for each survey population (such as undergraduate students and graduate students populations at York University). Within the restricted structure of this protocol, respondents are arguably providing a less polarizing set of results than they could with the other two survey instruments. In our case, the degree of utility of this ranking measure compared to that of a mean rating score has, so far, proven to be similar. As with previously obtained LibQUAL+ rating scores, the mean rankings for perceived level of satisfaction are actionable measures that could be leveraged to improve library services in low-ranking areas. However, the results of this pilot implementation did suggest that assessing desired levels of service as well as perceived levels through LibQUAL+ Triads could present especially impactful measures for librarians and library administrators to work with. As Thompson and Kyrillidou suggest, the choice to restrict participants to a limited ranking system in the LibQUAL+ Triads protocol is substantiated by the notion that ipsative measurement guides users to consider what they are evaluating within the frame of a “real-world ecology” or a world in which “people must selectively make difficult choices.”¹⁵ Therefore, if one would prefer to qualify the library as a “forced-choice”¹⁶ world where limited resources and competing priorities are the norm, the use of ipsative measurement to determine what respondents realistically desire most in terms of services is a very attractive proposition indeed. Therefore, as we consider future implementations of LibQUAL+ Triads at York, a single assessment of desired levels of service or combined assessment of perceived and desired levels of service would be ideal.

Participant Reactions to the Survey

Like LibQUAL+ 2010, one of the benefits of the LibQUAL+ Triads survey is the comments section, which allows respondents to provide feedback—positive or negative—that otherwise is not captured in the sequence of questions and answers. In some ways the comments section is the most valuable part of the instrument, in that it gives the institution feedback on specific strengths and weaknesses that can potentially be addressed.

When York ran LibQUAL+ Long in 2010, a local analysis of the comments was performed by creating a coding scheme, and that was then used to rank the types of negative comments received and to track their frequency. In this way, we were able to capture what was most important to library users. Because the response rate for LibQUAL+ Long in 2010 and Triads in 2012 were quite different, comments were compared by percentages. Importantly, our 2012 survey saw no faculty members being surveyed, which meant that comments collected did not in any way reflect faculty concerns. Therefore, the comments were not directly comparable. In 2010 the most frequent complaint was related to study space/seating (17% of comments), followed by noise (13%), and then inadequate computers (8%). Using the same coding scheme, the most frequent comments that appeared in LibQUAL+ Triads were study space/seating (29%), followed by staff complaints (17%), and followed by noise (10%). The fact that study space ranked high amongst complaints in both iterations was expected as this is a well-known problem at York that is difficult to address. Noise is another common problem with the library, and so comments in this area were also expected. The fact that inadequate computers dropped from 8% to 4% could be attributed to the replacement of desktop PCs in 2012. Staff complaints in this case were more difficult to interpret as it was not always clear whether respondents were referring to circulation desk staff, reference desk staff, or reference librarians. Nevertheless, the rise in complaints could perhaps be attributed to numerous changes to reference desk staff since LibQUAL+ 2010 was run.

In terms of changes in the frequency of specific comments, the largest increase was in study space/seating (17% in 2010 and 29% in 2012, a rise of 12%) and staff complaints (7% in 2010 and 17% in 2012, a rise of 10%). Another increase occurred in the comments on “not enough staff.” This comment did not appear in 2010 but accounted for 4% of comments in 2012. The fact that patrons are recognizing that there is not enough library staff likely feeds into the complaints about staff service.

As for decreases in complaints, the largest were both related to collections. Electronic journal collections complaints dropped by 7% and overall collections comments dropped by 6%. Considering this, it could be argued that increased purchases

of electronic journal and electronic book packages since 2010 have filled perceived gaps in library collections. However, it is likely that the lack of collection-related complaints can be attributed to the fact that the majority of Triads responses came from undergraduates, and that these concerns were more likely to come from faculty and graduate students. With this in mind, it is recognized that since there is no way of tying specific comments to individual responses, a link between status and comment cannot be observed in our analysis.

Next Steps and Conclusion

Results from the pilot implementation of the LibQUAL+ Triads survey at York have proven that the new protocol offers much promise in the way of giving librarians new and insightful measures of patron satisfaction and desired levels for library services. For example, York's survey results clearly indicate that patrons perceive library space and employees as two areas in which the library is performing least successfully, and so follow-up assessment could take place to investigate the exact nature and extent of these weaknesses. In this case, however, since LibQUAL+ Triads was conducted as a pilot investigation with a limited sample population, no firm action will take place based on the results of this study. Nevertheless, we are interested in exploring how the computing of intraindividual score reliability coefficients within the new protocol might help increase the reliability of the survey results it produces. Will the results of LibQUAL+ Triads prove to be that much more reliable than those of LibQUAL+ Long and LibQUAL+ Lite based on this new information? As LibQUAL+ Triads continues to be developed as an assessment tool, this is a question that will continue to influence our perspectives on the implementation of library service quality surveys at York University Libraries.

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Closing the Loop: How are LibQUAL+® Results Being Communicated to Stakeholders?

Nancy Cunningham
University of South Florida, USA

Meg Scharf
University of Central Florida, USA

Abstract

According to Sarah Watson (in *Tertiary Education and Management*, volume 9, number 2, 2003), the most demanding and essential part of “closing the loop” with assessment is not just using the data for process/learning improvement by libraries and librarians. It is informing students that their input has been translated into action. If students do not see action resulting from their feedback, they could become unwilling to participate in the assessment process. What are current and best practices of libraries to display and disseminate LibQUAL+ survey results to students? The purpose of this project is to gather data through surveying libraries and reviewing library websites to determine if and how libraries are “closing the loop” by communicating to stakeholders, especially students, the results of feedback gathered through the administration of LibQUAL+.

Indeed, the majority of those valuable responses to which Dr. Kyrillidou refers come from student library patrons who have taken the time to share their perceptions and offer comments that we have carefully analyzed and reflected upon to eventually put their feedback into action. It is these student library patrons for whom we should strive to “close the loop.” “Closing the loop” of the LibQUAL+ assessment exercise means sharing with them, and other stakeholders, the results of the survey, our reactions to it, and any resulting action (positive or negative) that emanates from the data. Closing the loop is not one report or website posting but rather the dissemination of results in strategic and student-centered ways to strengthen the relationship between the library and student stakeholders in the ongoing assessment process.

Background

Since it was initiated in the year 2000, the LibQUAL+ survey has been administered in over 20 countries at more than 1,000 different types of libraries and collectively has gathered responses from over one million library patrons. Standing on the shoulders of SERVQUAL, it is the library world’s first attempt to systematically gather patron perception data on collections, services, and facilities across the country and the globe. In the 2011 LibQUAL+ Survey Results, Martha Kyrillidou, Senior ARL Director of Statistics and Service Quality Programs, reflected on how three distinct partnerships have been built as a result of LibQUAL+. These include, “one between ARL and Texas A&M University, a second among the participating libraries and their staff, and the third one comprising the thousands of users who have provided their valuable responses over the years.”¹

Closing the Loop

According to Watson’s 2003 article in *Tertiary Education and Management*, the most demanding and essential part of “closing the loop” with assessment is not just analyzing the data for meaning, it is sharing the results with students and in addition, putting their feedback into action.² The process of gathering feedback, though anonymous, is an act of relationship building between library administrators, staff, and student patrons. If students do not see (or can’t find) survey results, they could become apathetic and perhaps unwilling to participate in the library’s assessment activities. Building bonds with student patrons can be a challenge even at the smallest institution. How do we honor and sustain this student-library relationship by “closing the loop” and sharing assessment results in a variety of timely, meaningful, and accessible ways? What are current and best practices of libraries to display

and disseminate LibQUAL+ results to students?

The purpose of this project was to gather data on how libraries are communicating to students the results of feedback gathered through the assessment instrument, LibQUAL+. This study began with a thorough review of the websites of 150 academic libraries that administered the LibQUAL+ survey either in 2010 or 2011. The front page, site indexes, posted documentation, including annual reports or newsletters, and, if available, site search features were used to determine if the LibQUAL+ survey results or other assessment results were published, or if actions taken in answer to assessment results were listed or published. To better understand any other assessment feedback libraries are providing to students, a survey was sent out to the assessment librarian, dean, or director of 100 LibQUAL+ participating US libraries to solicit additional information. The survey asked about impediments to “closing the loop,” such as a lack of time, reluctance to deal with negative student feedback, or hesitation to answer assessment responses on topics that are beyond the control of the library. Review of the websites was completed during summer 2012, and follow-up telephone interviews were conducted with willing survey participants.

Disseminating the Results: LibQUAL+ Recommendations

In the 2012 LibQUAL+ Survey Checklist, item number 28 encourages the dissemination of survey results, while at the same time stating that participant libraries “should not use other libraries’ data IN ANY WAY that would compromise or harm the reputation of other institutions.”³ The suggestion leaves the method up to the library to best communicate results according to its culture, needs, and goals. The LibQUAL+ document provides a link, however, to participant institutions’ websites, which provide examples of how results have been shared.⁴

In addition, in articles outlining LibQUAL+ best practices (e.g., Hoseth, 2008) and LibQUAL+’s own documentation, the planning of a “Library Summit” is encouraged.⁵ The summit concept, first presented in 2007 by LibQUAL+ founding contributor Fred Heath, gathers stakeholders for a half-day or full-day event to discuss survey results in small groups and encourages

brainstorming for suggestions to improve library services and collections. Summit benefits are outlined in the LibQUAL+ documentation and include the generation of many positive outcomes and activities such as goodwill, demonstrating assessment outcomes, personal investment, outreach, fresh ideas, more data, buy-in, and climate change. Both Clemson University and the University of Texas at Austin were cited as libraries that are working with ARL to help libraries plan their own summit event.⁶

Results from Our Survey of LibQUAL+ Participants

From an initial list of 250 US libraries who have administered LibQUAL+ over the last four years, 100 libraries were randomly selected and solicited to take our survey. We received 39 responses.

The purpose of the survey was four-fold: first, to determine if and how the library communicated LibQUAL+ results; second, to determine the medium used; third, to gauge the perceptions of the survey respondent (e.g. library dean, or assessment librarian) on the importance of communicating results to particular stakeholder groups; and fourth, to solicit comments, suggestions, and ideas about the methods used to share results to determine best practices.

The survey instrument was created using SurveyMonkey and contained a total of 16 questions (Appendix 1, Closing the Loop Survey). Data was collected from respondents with a guarantee of anonymity. No names of individual respondents, libraries, or institutions will be shared in this analysis. However, aggregate results will be shared with those respondents who requested a summarized version of the data, as well as in this paper.

Respondents to our survey included deans or library directors (14), associate deans or directors (10), assessment librarians (4), and reference librarians (4). The 39 responding libraries represented small, medium, and large academic research and specialized libraries (e.g., medical). The number of libraries that administered LibQUAL+ in the following years were:

2012—8

2011—20
 2010—21
 2009—10
 Multiple years before 2009—17
 All years since inception—2

Communicating LibQual+ Results

Forty-seven percent (16) of the responding libraries indicated that there was “wide dissemination of results to all library staff, university departments, and faculty and students” (Appendix 1, Closing the Loop Survey). Thirty-seven percent (13) indicated that the results were distributed to only some university units and library staff. Eleven libraries indicated in the comments section, however, that they posted results in a library newsletter, blog, or on the website but did not actively “push” out the results to students or faculty. One respondent indicated, “We put the full reports on our website, but did not ‘push’ widely beyond that.” All libraries indicated results were shared with library staff, and over 90% of respondents indicated results were shared with their university administration. Over 79% of respondent indicated they shared results with students, and over 75% indicated they reported results to faculty. Only 38% (15 libraries) reported that they shared results with community users outside the university.

Because of the many libraries that have administered LibQUAL+ since 2002, we wondered

if the dissemination and communication of results has diminished or expanded over time and which parts of the survey results were shared. Twenty-three libraries (59%) reported that their communication of the results to stakeholders has increased. No library reported that it decreased. Thirteen libraries (33%) reported that there was no change in the how they communicated results over the years to stakeholders. One library reported, “very little communication of results the first two times, which was one reason the Library did not issue LibQUAL+ again for many years.” The majority of the respondents (56%) shared the data and the comments, and 37 percent shared the numerical data only.

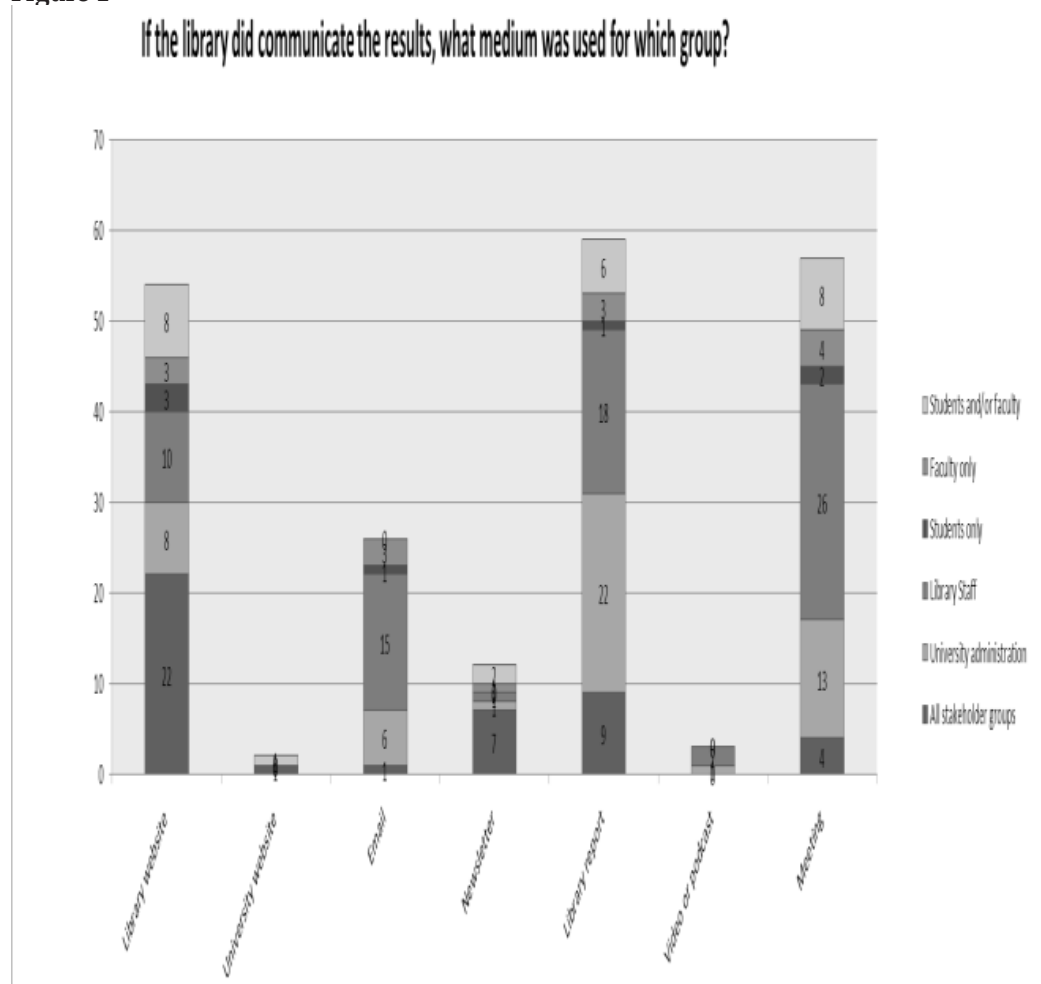
To understand which media libraries selected to communicate LibQUAL+ results to each stakeholder group, we asked the respondents to list those media used. The majority used the meeting format for library staff, the report format for university administration, and the library website (the most passive form) as the mechanism to share results with students. One respondent reported, “Again the only ‘formal’ communication has been to library staff, but everyone has access through the library’s website. As other entities on or off campus have enquired about our results, we have shared it with them as well either via a report or e-mail.”

If the library did communicate the results, which medium was used for which group?

Table 1

Answer Options	Answer Options	Students and/or faculty	Faculty only	Students only	Library Staff	University administration	All stakeholder groups	Response Count
Library website	Library website	8	3	3	10	8	22	28
University website	University website	1	0	0	0	0	1	2
Email	Email	0	3	1	15	6	1	18
Newsletter	Newsletter	2	1	0	1	1	7	10
Library report	Library report	6	3	1	18	22	9	30
Video or podcast	Video or podcast	0	0	0	2	1	0	2
Meeting	Meeting	8	4	2	26	13	4	33
Other (please specify)	Other (please specify)	Other (please	Other (please	Other (please	Other (please	Other (please	8	8
answered question							39	39
skipped question							0	0

Figure 1



Feedback

While 21 libraries out of 39 indicated they did not provide a mechanism for students and faculty to provide feedback on the results, 17 libraries indicated they did provide a mechanism for general feedback through the use of suggestion boxes, focus groups, Facebook posts, and assessment blogs. Libraries reported that feedback influenced the development of strategic priorities, budget requests, and funding initiatives. When asked if the feedback resulted in project funding, one library stated, "Not directly, but results helped

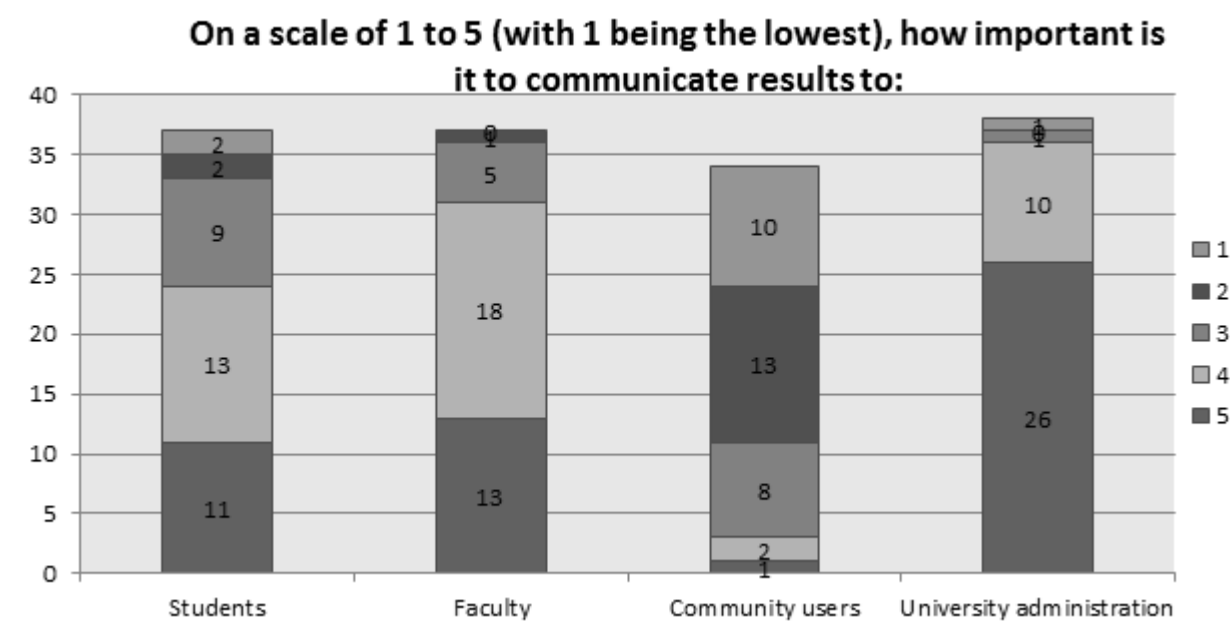
to provide 24/7 quiet space frequently mentioned as desired by students on EVERY survey year."

By far, responding libraries indicated that university administrations were the most important stakeholder group with which to communicate results, followed by faculty and then students. Most libraries indicated that community users outside the university were the lowest priority for communicating results. The chart below illustrates the results from this question.

Table 2

On a scale of 1 to 5 (with 1 being the lowest), how important is it to communicate results to:						
Answer Options	1	2	3	4	5	Response Count
Students	2	2	9	13	11	37
Faculty	0	1	5	18	13	37
Community users	10	13	8	2	1	34
University administration	1	0	1	10	26	38
Other (please specify)						5
<i>answered question</i>						38
<i>skipped question</i>						1

Figure 2



Many libraries that chose not to communicate LibQUAL+ results indicated that there was not enough time or they wanted to protect the privacy of individual staff mentioned in the comments. One library stated, "Truthfully, I don't think they expected it. We planned to put something in the student newspaper, but publication was suspended." Another library stated, "No new information from the previous year; also actions speak, so some changes were obvious." Two of the libraries responding stated that they either did not have sufficient understanding of the results or results seemed inconclusive as reasons why they did not share results with student stakeholders.

Review of Library Websites

During August, 2012, 151 US library websites, randomly selected from institutions that administered LibQUAL+ in 2011 and 2010, were searched for evidence of LibQUAL+ results, in an effort to find out how those results were conveyed on the sites. In addition to scanning the sites with particular attention to "About the Libraries," "Feedback," and "News," we examined site indexes and conducted searches using the "Site Search" when such features were available. When these features were not available, we used Google and searched under the library's name and "LibQUAL+." Often this search strategy led to pages not directly linked to the library's site.

As part of the investigation into how and if results were accessible from the library's or institution's website, we also noted when the institution's main home page provided a direct link to the library's website. Ninety-five of these libraries, or 62.9%, did have a direct link from the institution's main home page. Fifty-six, or 37%, of these libraries did not have their home page directly linked to the institution's main home page but on lower level pages under "Academics" or "Quick Links." Access to the content of six libraries' home pages was only possible through a search using Google. Although the collection of this particular data is tangential to the project, it can be speculated that it impacts on the effectiveness of sharing results via the library's website. Direct links to the library's website from the main institutional home page may result in higher site traffic, and thus increased visibility of library news and reports that display LibQUAL+ results.

Eighty-four of the 151 library websites, or 55.6%, showed no evidence of LibQUAL+ results in any form. It must be acknowledged that for some of these libraries, results may have been posted immediately following the administration of the survey and subsequently removed. However, the time and effort needed for review and analysis of the scores and comments, and the time needed to implement changes and improvements suggested by the results would seem to necessitate communication over a period of time. Websites, however, would not necessarily include internal communication or communication to advisory boards, committees, forums, and other face-to-face gatherings.

Sixty-seven library websites, 44% of those reviewed, displayed the results of LibQUAL+ in

some form. Thirty of these libraries posted the results notebooks for one or more iterations of the survey. The majority were posted without explanation or interpretation of the results. This seems to suggest that some libraries decided that anyone who is really interested will read the results notebook. Perhaps some felt the best way to make the results notebook available to faculty and staff is to post it on the library website where it is easily found. Posting the results notebook would seem to lend transparency to the assessment process. We were unable to discern if any additional explanation or interpretation was provided to stakeholder groups about the contents of the results notebook when only a direct link was posted without any additional information.

Eleven libraries discussed or announced something about LibQUAL+ in varying degrees of detail on a blog. Most of these presented a general overview of the results, while a few quoted and summarized comments and provided a review of the scores. Part or all of the LibQUAL+ results of eight libraries could be found on an assessment website, one which either belonged to the university or was exclusively a library assessment website. Six libraries developed information pages using "LibGuides," which contained comments, scores, or both; responses from the library; and sometimes other assessment information. These pages were clearly directed at library stakeholders groups, perhaps to encourage discussion and feedback. Some of the information on these guides included actions taken and improvements made to services, facilities, and resources. Five libraries summarized results in annual reports posted on the websites.

The following table provides a breakdown:

Table 3

Total number of library websites reviewed	151
No evidence of results on website (at time of review)	84 (56%)
Evidence of results in some form	67 (44%)
Presentation of results on website	
- Library blog/newsletter	12
- Library report	6
- Assessment website	8
- Libguide page	6
- Link to results notebook or commentary	35

Perhaps worth mentioning is that there was information to be found on a number of sites that remained from the administration of the survey: invitations to participate, FAQs for survey participants, and announcements that the LibQUAL+ survey would be open to respondents on certain dates. Some websites that had no information about the results had postings about statewide and national meetings and presentations that included LibQUAL+ topics and librarians from those institutions who had presented or attended.

Telephone Interviews

We followed up the survey and the website review with telephone interviews with five library directors/assessment librarians from the 84 institutions that had no evidence of sharing results on the website. At these institutions, LibQUAL+ results were disseminated internally, in the library, and externally, to the university administration. Two library directors stated in telephone interviews that, in addition to internal library analysis and actions suggested by the LibQUAL+ results, the university administration and the provost were the key stakeholder targets of communication. One stated, "Honestly, I do not think these are meaningful to our students. Actions, what we do, how we use what they told us is more important than putting this up on our site." In a follow-up question about posting the comments, he continued, "I don't think the students would read them. Our administrators read them." Another library director explained that a report was prepared and given to administrators, and librarians and staff discussed the results at meetings. When asked about student advisory boards and potentially discussing results with

student groups, this director stated that the student advisory board had been disbanded. This library did not meet on a routine basis with other student groups.

None of the librarians who were interviewed by telephone voiced a concern regarding sharing negative comments. One was pleased to share the negative comments about collections, because, for university administration, the much-loved three-year-old library building had a "halo effect" upon all the library's services and collections. These librarians were pleased to see that the perceived gaps in library resources, for example, by stakeholders such as graduate students were being seen by university administrators together with detailed comments.

The five interviewees expressed the view that focusing on communication of results to student participants, on the website or in meetings or other venues, was not a priority. Communication with university administrators and actually making improvements or providing facilities, resources, and improvements indicated by the survey responses were their priorities.

Best Practices for Sharing LibQUAL+ Results

Best practices are always those that ultimately fit and serve the culture and environment of the institution and each stakeholder group. "My provost really likes the numbers, but no one else does," stated one library director, indicating that for that library, the most important group with which to share results are university administrators

responsible for budget allocations. For another library, a long-standing relationship with student government or a faculty senate committee determine how results will be shared and the best mechanism to use to accomplish this.

In the course of this project, however, several methods and strategies have emerged in what we would like to identify as “best practices” in the sharing of LibQUAL+ results to student stakeholders. Some of these strategies have been successful in teaching students library skills but not used in sharing results. Nonetheless, we believe they merit consideration as a best practice. Other strategies evidenced are tried-and-true promotion and information sharing strategies libraries have used for decades.

1. Target your student audience. Identify specific student groups within the larger student population (instead of sending a mass communication to all students).

Unless you have a very small student body, we found that libraries had the most success in “getting the word out” when key student groups were identified and targeted for communication. These may include student government members, members of academic sororities/fraternities or clubs, library student advisory boards, students enrolled in research intensive courses and library student workers.

2. Choose active, multiple “push” mechanisms to get out the news of student LibQUAL+ results.

Short messages using social media technology with links to detailed and contextualized results proved very effective for some libraries. Facebook posts for the library’s “fb friends” and tweets call attention to the importance of the results. Many students do not place a value on e-mail content and only engage with e-mail to communicate with their faculty or perform a bureaucratic function required by the university. We have found that e-mail blasts, while technologically simple to perform, may not be the best way to “push” important LibQUAL+ results to students.

Another idea provided by an assessment librarian is to include a link to the results information as an addition to the standard circulation message students receive when they check out materials, or append the link when responding to a student complaint or question. While this is not particularly active, it is yet another way to push out an easily accessible link to students unaware that the library is actively sharing their feedback.

3. Create fun, fun, engagement opportunities to share results.

The LibQUAL+ Summit conducted by the University of Texas and Clemson University, among others, does offer the opportunity to gather students, faculty, and librarians in small groups to discuss results and brainstorm ideas. A less formal approach may include the creation of a half-day student-only event where discussion of results occurs in the larger context of planning programming, services, and collections to produce a student vision of the library’s future.

No libraries we reviewed or surveyed used YouTube as a venue to share LibQUAL+ results. The use of YouTube as a communication venue to share results creatively may result in greater feedback. Libraries might want to consider soliciting students to create their own videos and place them on YouTube, to better disseminate importance LibQUAL+ findings.

4. Keeping it up to date.

Keep passive communication mechanisms, such as blogs, newsletters, reports, LibGuides, and websites with details about the results, up to date and archive older information about assessment activities to demonstrate responsiveness. Tag these information items so students can easily find them in a site search.

5. Contextualize and synthesize results.

Links to the results notebook may be great for administrators, faculty, and library staff, but

it is unlikely that students will take the time to read and understand these. Use simple, straightforward language and summarize and contextualize the results within the needs of the library, but directly relate this to students. Carefully publish selected comments that speak to and for a number of students and represent trends in challenges or opportunities.

6. Prepare and mobilize your library staff.

Sometimes library administrators overlook the role library staff can play in communicating results to student workers under their supervision. Prepare and mobilize library staff to understand key findings and know how to communicate these findings to their own student workers who look to them for guidance and instruction in all things “library.” Student library workers communicate to their own large networks of friends and classmates news about their work environment. What better way to get the word out but by effectively leveraging these student-library-staff relationships in a positive way to share results and get feedback?

Conclusion

This project was inspired by our belief that “closing the loop” through sharing assessment results, specifically LibQUAL+ results, strengthens the relationship between students and the library. At the beginning of the project we suspected, although we possessed no data to prove it, that the act of sharing LibQUAL+ results with students might have an impact on student participation in other assessment activities. We also believed that some libraries, many of which heavily use social media to communicate, would strive to share results with students in new ways and use it as a mechanism to strengthen relationships and encourage active engagement with the library. Data from the website reviews, telephone interviews, and online surveys demonstrated that this was not necessarily the case, and there was no evidence to support our initial assumptions.

Although our survey was not designed with this objective in mind, we found no evidence to conclude that providing feedback to students in any way influences future response rates or student participation in other library assessment activities.

A review of the library literature indicated there is no study with the objective to find data to support a correlative relationship. While one article did discuss student survey fatigue, there was no discussion of the impact of sharing survey results and future participatory action from students in assessment. This is an area for further study.

While our survey revealed that most libraries place a high value on communicating results to students and 79% of our 39 library survey respondents do share results with students, most use very passive means to accomplish this by posting results on websites, sometimes without adequate information explaining its meaning or the resulting action by the library. Face-to-face meetings and forums that invite active participation and more feedback appear to be reserved for university administrators and library staff. While ARL encourages the planning and implementation of a Library Summit to include all stakeholders, such as students, only a few libraries have done this.

While it is understandable that targeting university administrators first is a priority for sharing results because of their budgetary influence over the library, libraries may be missing an opportunity by only posting results on the website or in a newsletter for students to find. First, the use of active, push mechanisms to get to the word out about LibQUAL+ results is both cost effective and strategic. Second, creative use of student-friendly technologies such as YouTube makes the sharing of results interesting and can increase student engagement with the library. Finally, leveraging the act of sharing of results as a way to engage students can open the door for more targeted, future assessment activity based on initial LibQUAL+ findings. The practice of creatively “closing the loop” with students using LibQUAL+ findings can be part of a library’s multifaceted effort to build and sustain our relationships with changing generations of students.

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Appendix 1: Closing the Loop Survey

This short survey forms part of a study to understand how libraries are communicating LibQUAL+ survey to stakeholders such as students and faculty.

Your information is confidential. Your responses will be aggregated with those of other respondents to present an overview of best practices for communicating LibQUAL+ results to stakeholders. At the end of the survey, you will be asked if you would like us to share the results with you.

Thank you for your time,

Nancy Cunningham (nancy@usf.edu)—Director of Academic Services at the University of South Florida

Meg Scharf (meg@ucf.edu)—Associate Director for Communication, Assessment, and Public Relations at the University of Central Florida

***1. Which of the following years did your library participate in administering the LibQUAL+ Survey?**

- ☐ 2009
- ☐ 2010
- ☐ 2011
- Other years? (please specify)

2. In general, how do you characterize the library's communication of the results in your last LibQUAL+ implementation?

- ☐ Limited communication of results only inside the library among selected staff and administration
- ☐ Communication of results to all library staff
- ☐ Communication of results distributed to some university units and library staff
- ☐ Wide dissemination of results to all library staff and university departments, faculty and students
- Other (please add comment)

3. If your library has administered LibQUAL+ more than once, has the communication of the results changed over time (i.e. expanded, decreased)?

- ☐ Yes, the library's communication of results to staff and stakeholders has expanded
- ☐ Yes, the library's communication of results has decreased
- ☐ No, our communication of the results has not changed over time
- ☐ We have only implemented LibQUAL+ once
- Please add an additional comment if necessary (please specify)

4. To whom did the library communicate the LibQUAL+ results from the last implementation? (Check all that apply)

- ☐ Students
- ☐ Faculty

- ☐ University administration
- ☐ Library staff
- ☐ Community outside the university
- Other (please specify)

5. If the library did communicate the results, what medium was used for which group?

	Students and/ or faculty	Faculty only	Students only	Library Staff	University administration	All stakeholder groups
Library website	☐	☐	☐	☐	☐	☐
University website	☐	☐	☐	☐	☐	☐
Email	☐	☐	☐	☐	☐	☐
Newsletter	☐	☐	☐	☐	☐	☐
Library report	☐	☐	☐	☐	☐	☐
Video or podcast	☐	☐	☐	☐	☐	☐
Meeting	☐	☐	☐	☐	☐	☐
Other (please specify)						

6. If the library did share the results with individuals and groups outside of the library, what parts of the results were shared?

- ☐ Comments from respondents
- ☐ Data
- ☐ Data and comments

Other (for example, summarized results or comments)

7. Did the library provide a way for students and faculty to give feedback about the results?

- ☐ Yes
- ☐ No

8. If the library provided a mechanism for feedback, how did you solicit and collect the feedback?

9. If the library solicited feedback, how was the feedback used (did it facilitate any project funding, for example)?

10. On a scale of 1 to 5 (with 1 being the lowest), how important is it to communicate results to:

	1	2	3	4	5
Students	☐	☐	☐	☐	☐
Faculty	☐	☐	☐	☐	☐
Community outside the university	☐	☐	☐	☐	☐
University administration	☐	☐	☐	☐	☐
Other (please specify)	☐	☐	☐	☐	☐

11. If your library did not communicate the results to outside stakeholders such as students, what would be some of the reasons?

- ☐ Small response rate
- ☐ Negative feedback
- ☐ Protect privacy of staff mentioned in the comments
- ☐ Not enough time
- ☐ Did not have sufficient understanding of results or results seemed inconclusive
- Other (please specify)

12. What is your position?

13. What is the name of your institution and library?

***14. If we need more information, may we contact you by phone?**

- ☐ Yes
- ☐ No
- Other (please specify)

15. Would you like us to share the results of our survey with you?

- ☐ Yes
- ☐ No
- Please provide your e-mail address:

16. Is there anything else you would like us to know about your library's communication of LibQUAL+ results?

LibQUAL+® Triads Pilot: Results from the University of Manitoba Libraries

Marie Speare
University of Manitoba, Canada

Abstract

The University of Manitoba participated in the LibQUAL+ Triads project in the spring of 2012. The LibQUAL+ Triads protocol provides another approach to identify how well libraries are meeting user needs, in particular for questions/items that score close to one another. This paper describes the results and user response to the pilot survey. Rankings of the perceived means from the 2007 and 2010 LibQUAL+ surveys are compared to the results received for the Triads project. This paper provides an assessment of the Triads survey and thoughts for improving the protocol.

Background on the LibQUAL+ Triads Survey

The LibQUAL+ Triads survey is the newest LibQUAL+ protocol that is being developed as part of the LibQUAL+ suite. The LibQUAL+ Triads protocol can be used to determine how users rank their desired or perceived levels of library service.¹ As noted in the Fall 2011 issue of *LibQUAL+ Update*, the LibQUAL+ Triads survey offers the following benefits:

- Defining priorities for questions/items that score close to one another so libraries can act on those priorities that are MOST important to users;
- Easing respondent burden as it takes less time than the established LibQUAL+ long form; and
- Providing valid data by computing *intraindividual* score reliability coefficients to aid in screening out user responses that are not trustworthy.²

The LibQUAL+ Triads protocol uses ipsative measurement, “a rank-order scale in which a particular rank can be used only once.”³ Survey respondents in this type of measurement are asked to rank their responses to a question from best to worst.⁴ The LibQUAL+ Full and LibQUAL+ Lite surveys use a normative scale that asks participants to rate their responses on a scale of 1 to 9 and to

indicate their desired, perceived, and minimum service levels for each question. In the Triads perception protocol, three statements are grouped together and then survey respondents are asked to rank which of the items the library is doing best at, which is the worst and which is neither best nor worst. Users cannot provide any ties; they need to decide which question rates higher. Each combination of three items is presented to the survey respondent and the items are arranged in a different order throughout the survey. Each combination of two items (e.g. Library space and website) appears four times. This repetition allows for the Pearson correlation coefficient to be used to determine if the scores are reliable and consistent.⁵

The pilot project included six statements that appear in the Full or Lite version of LibQUAL+ (Figure 1). In order for all possible combinations of the six statements to be shown, a total of 20 service quality triads were required. An example of a Triad question is included in Figure 2. As can be seen from the sample question, the Spring 2012 pilot focused on perceived levels of service.

University of Manitoba Triads Survey—Implementation and Results

The University of Manitoba Libraries participated in the LibQUAL+ Triads pilot in the spring of 2012. This pilot was the second iteration of the survey; a small number of libraries also participated in the Triads project in the fall of 2011. The survey was implemented by the Libraries’ Assessment Committee.⁶

The survey began March 28, 2012, and ran for three weeks. In addition to the initial invitation to participate in the survey, three reminder notices were sent. A random sample of 1,500 undergraduates, 600 graduate students and 500 faculty members was selected to participate in the

survey. Since the survey was in a pilot stage, the samples used were smaller than usually selected for the Full or Lite LibQUAL+ surveys. A small

incentive of entering a drawing for one of two \$50 bookstore gift certificates was offered.

Figure 1—Triad Questions

Questions included in the pilot survey
Employees who deal with users in a caring fashion.
Employees who have the knowledge to answer user questions.
Print and/or electronic journal collections I require for my work.
The electronic information resources I need.
Library space that inspires study and learning.
A library Web site enabling me to locate information on my own.

Figure 2—Sample Triad Question

Service Quality Triad # 1 of 20

At which one of the following 3 things is your library doing **BEST** ("1st")?

At which one of the following 3 things is your library doing **WORST** (3rd")?

And at which one of the following 3 things is your library doing **NEITHER BEST NOR WORST** ("2nd")?

Please note that your choices are stored (and cannot be changed) once you leave a given web page.

7.

Best Worst

☐ 1st ☐ 2nd ☐ 3rd

A library Web site enabling me to locate information on my own

☐ 1st ☐ 2nd ☐ 3rd

Employees who have the knowledge to answer user questions

☐ 1st ☐ 2nd ☐ 3rd

The electronic information resources I need

A total of 284 surveys were completed with a response rate of 10.9%. Additional surveys were accessed but not finished. There were 107 undergraduates, 122 graduate students, 49 faculty, and 6 staff members that responded. Examples of the charts included in the Triads Results Notebook⁷ are included in Figures 3, 5, and 7. In addition, the mean ranking for each question was provided in the Results Notebook. The survey also included three general satisfaction questions that were the same as those included in the other LibQUAL+ surveys. This report will focus on the results from the Triads section of the survey only.

The results in the charts represent all of the respondent answers without the removal of any inconsistent answers. The charts included in Figures 3, 5, and 7 indicate the number of first best, second best, and third best answers for each question on the survey. All user groups listed

"library space that inspires study and learning" as the third best item more frequently than any other item. The results from the other questions were not as easy to interpret. Although some questions were rated more frequently as first best there were also several respondents that indicated the same item to be second or third best as well. Since the mean ranks take into account the number of first best, second best, and third best responses, the mean ranks were used to determine the overall result. The mean ranks were then categorized from 1 to 6 with 1 being the highest value (Figures, 4, 6, and 8).

Undergraduate Student Results

Undergraduate results are detailed in Figure 3. Figure 4 includes the mean ranks for each question and how these are ranked from 1 to 6 with 1 being the highest rank. The library website question received the highest number of first best answers and the highest mean rank. The questions: "the

electronic information resources I need” (mean rank=1.95), “print and/or electronic collections I require for my work” (mean rank=1.96) and “employees who have the knowledge to answer user questions” (mean rank=1.94) had very similar responses. Employees who deal with users in a

caring fashion had the highest number of second best and third best responses and the overall mean rank was second lowest of all the questions. Library space that inspires study and learning was ranked third best most frequently and resulted in the lowest mean rank.

Figure 3—Undergraduate Triad Results

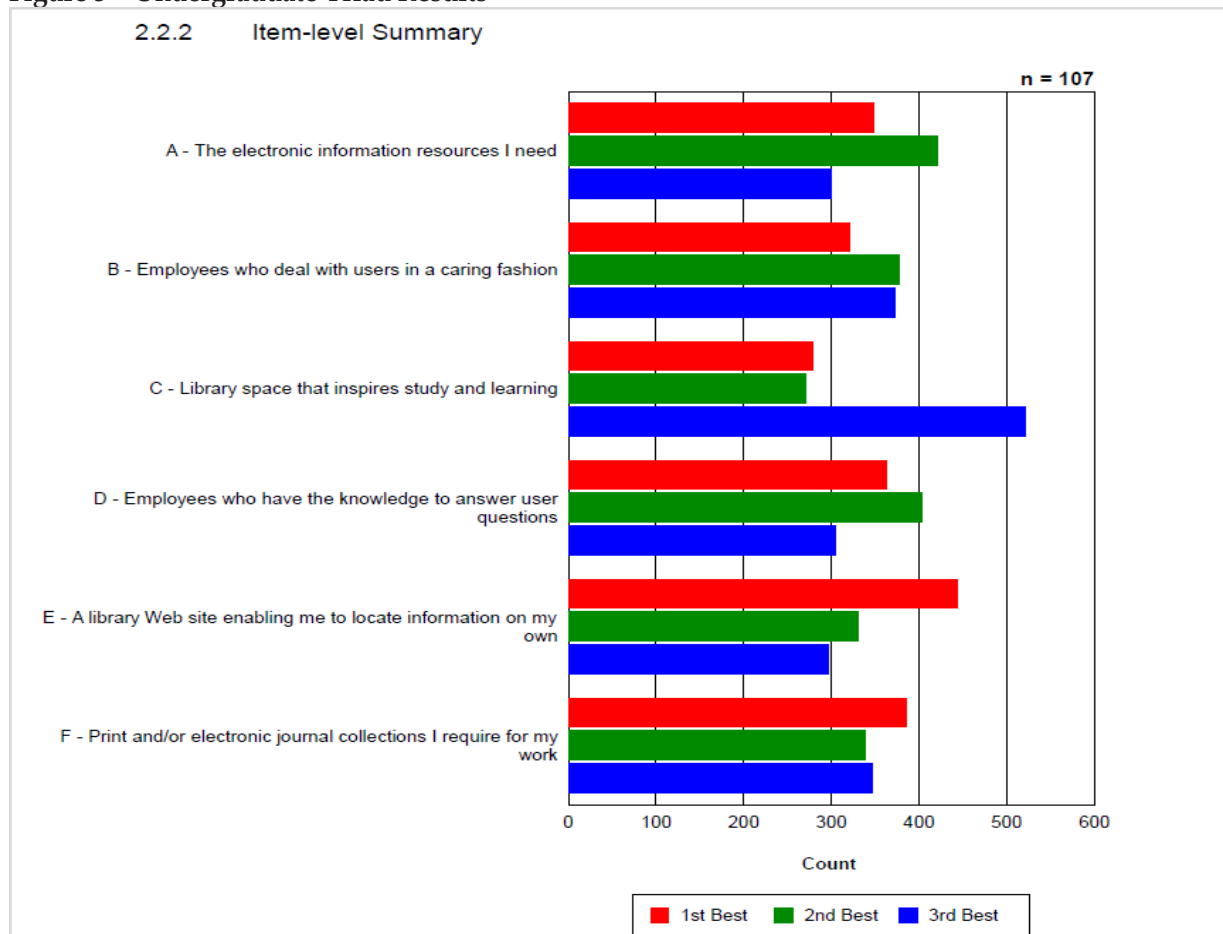


Figure 4—Mean Rank for Undergraduates

Survey Question	A- The electronic information resources I need	B- Employees who deal with using in a caring fashion	C- Library space that inspires study and learning	D-Employees who have the knowledge to answer user questions	E- A library Web site enabling me to locate information on my own	F-Print and/or electronic journal collections I require for my work.
Mean Rank	1.95	2.05	2.23	1.94	1.86	1.96
Rank (best=1)	3	5	6	2	1	4

Graduate Student Results

As can be seen from Figure 5, “Print and/or electronic journal collections I require for my work” received the highest number of first best answers. This question also received the highest mean rank (Figure 6). “A library website enabling me to locate information on my own” received the next highest number of first best answers but when the second and third best answers are taken into

account, the questions about the library website and electronic information resources ended up with very similar mean rankings, with 1.84 and 1.83, respectively (Figure 6). The mean ranking for the two questions related to library employees were fourth and fifth out of the six questions. Graduate students also ranked library space lower than all the other questions.

Figure 5—Graduate Student Results

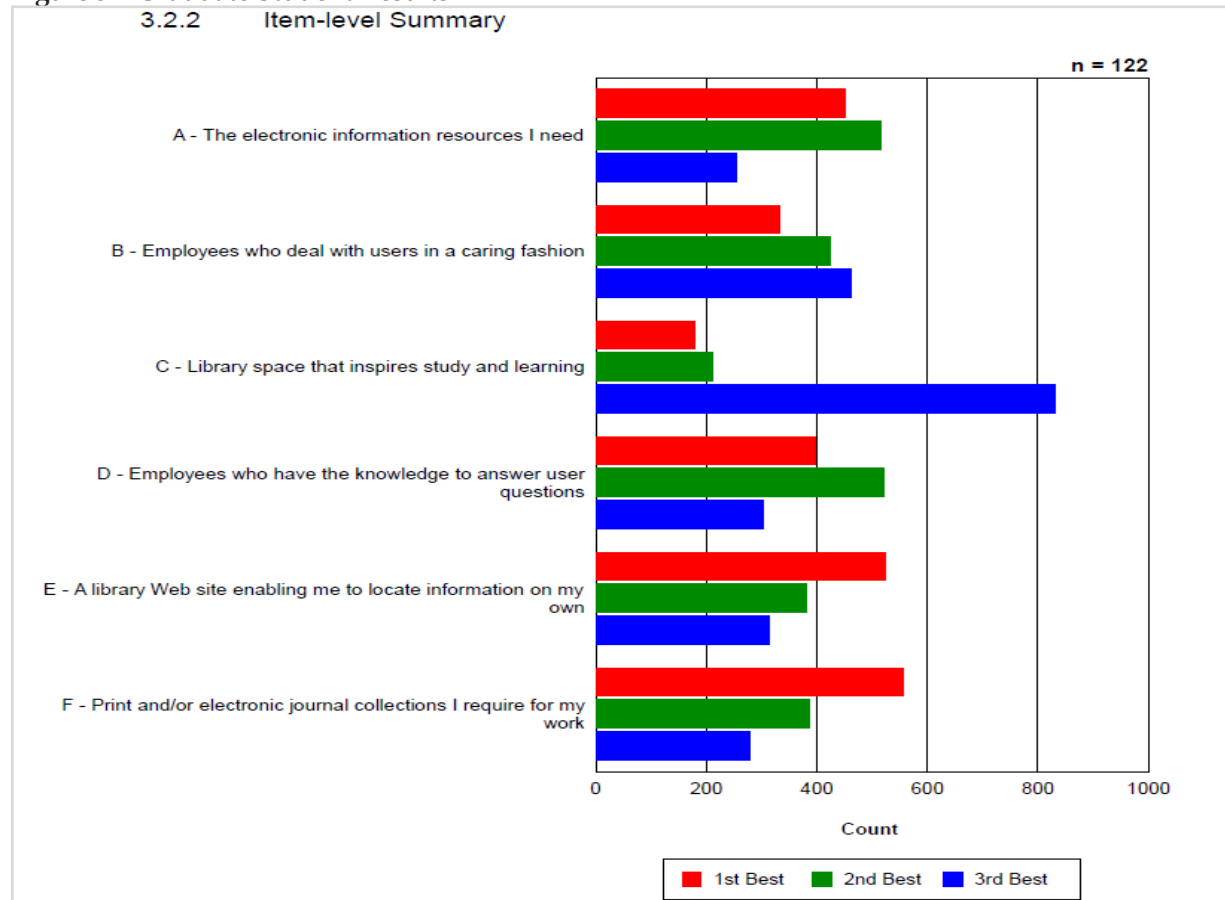


Figure 6— Mean Rank for Graduate Students Survey Question	A- The electronic information resources I need	B- Employees who deal with using in a car- ing fashion	C- Library space that inspires study and learning	D- Employees who have the knowledge to answer user questions	E- A library Web site enabling me to locate infor- mation on my own	F-Print and/ or electronic journal collec- tions I require for my work.
Mean Rank	1.84	2.10	2.53	1.92	1.83	1.77
Rank (best=1)	3	5	6	4	2	1

Faculty Results

The question on “Print and/or electronic resources

I require for my work” and “Employees who have the knowledge to answer user questions”

had very similar numbers of first best answers but when the second and third best answers are taken into account the question on employee knowledge ended up with the highest mean rank at 1.77 (Figures 7 and 8). The next highest mean rank was for print and/or electronic journals collections. The third and fourth highest mean ranks were for electronic information resources and caring employees. The number of first best

answers for the electronic information resources item and the caring employees question differed only by one response but when the second and third best answers were included in calculating the mean rank, the question on electronic information resources was ranked slightly better than caring employees. The second lowest ranked item was for the library website and the lowest ranked item was for library space (Figures 7 and 8).

Figure 7—Faculty Results

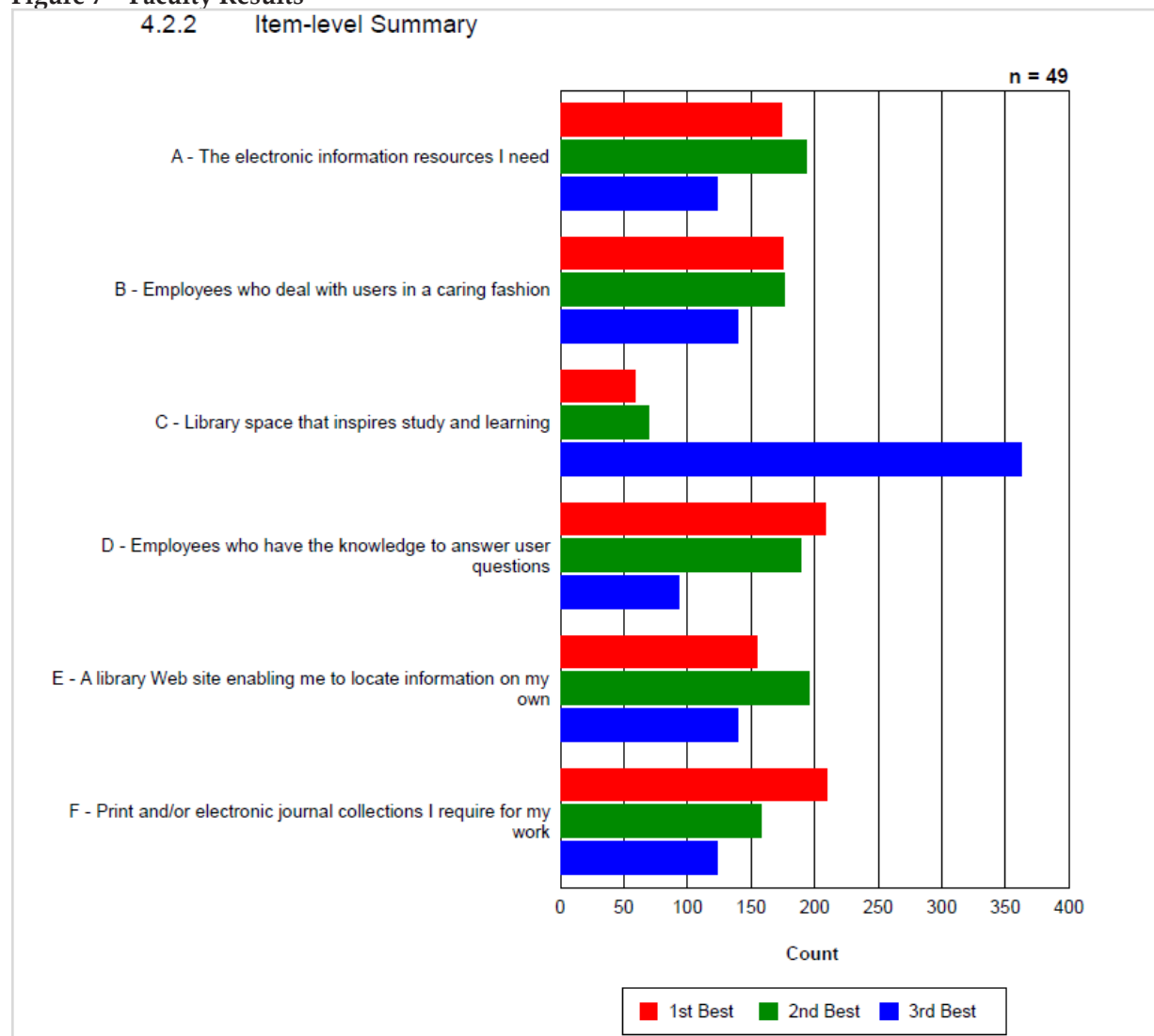


Figure 8—Mean Rank for Faculty

Survey Question	A- The electronic information resources I need	B- Employees who deal with using in a caring fashion	C- Library space that inspires study and learning	D-Employees who have the knowledge to answer user questions	E- A library Web site enabling me to locate information on my own	F-Print and/or electronic journal collections I require for my work.
Mean Rank	1.90	1.93	2.62	1.77	1.97	1.82
Rank (best = 1)	3	4	6	1	5	2

Comparison to Previous LibQUAL+ Results

The LibQUAL+ Triads results were compared to the perceived means of the past two LibQUAL+ surveys, which were run in 2010 and 2007. In 2010 the U of M Libraries ran the Lite version of the survey. The LibQUAL+ Full survey was used in 2007. The perceived means for each question were then ranked from highest to lowest. Figures 9–11 show the ranking of the perceived means for the 2010 and 2007 survey results, as well as the results of the Triads survey ranked from highest to lowest using the mean rank for the questions provided in the results notebook. The questions with the highest rank are listed as number one in the charts.

When comparing the Triads results with the LibQUAL+ 2010 and 2007 results, it was not expected that all the questions would be ranked in a similar fashion since the surveys were not run in the same year and changes have taken place that might influence respondent answers. For instance, the library website and electronic resources have changed since the last LibQUAL+ survey was run, so the perception of how the libraries are performing might differ on the Triads results. However, there have been fewer changes in library space and employee service.

Even though the way the library is perceived may have changed from the time that the survey was run in 2010, some patterns were noted with the LibQUAL+ 2010 and 2007 results. Library space consistently remained as the lowest ranked item for all user groups. Another trend noted was that “Employees who deal with users in a caring fashion” and “Employees who have the knowledge

to answer user questions” had the highest perceived means for all user groups in both years as well. The other questions varied in their ranking between user groups and from 2007 to 2010.

The survey responses from the LibQUAL+ 2007 and 2010 surveys and the Triads surveys results were similar for the library space question. All user groups on both the LibQUAL+ and the Triads surveys indicated that their perceived level for library space was lower than the other questions included on the survey.

User response on the Triads survey dealing with the question: “Employees who deal with users in a caring fashion” differed from the previous LibQUAL+ surveys. While the rank of the perceived means in the LibQUAL+ surveys for this question was either first or second in 2010 and 2007, the ranking of this question was lower in the Triads survey. When comparing the mean ranks on the Triads survey, graduate and undergraduate students rated caring employees fifth and faculty rated the question fourth. Since the perceived means for the LibQUAL+ 2010 and 2007 surveys for caring employees was ranked higher than the questions dealing with the library collection and the library website, this result was unexpected. There are no apparent reasons as to why our users would change the way they view the library employees. One comment received by a graduate student provided some insight on this discrepancy as they stated, “I do not think that the NJML staff is not caring, it just seemed to end up as my third choice for most questions.”

The employee knowledge question on the Triads

survey was ranked higher than caring employees by all user groups, and responses were a little more similar to the previous LibQUAL+ surveys. In the two previous LibQUAL+ surveys, all user groups ranked employee knowledge either first or second.

In the Triads survey faculty members ranked employee knowledge the highest, undergraduate students ranked employee knowledge second and the question was ranked fourth by graduate students.

Figure 9—Comparative Ranking of Undergraduate LibQUAL+ and Triad Survey Results⁸

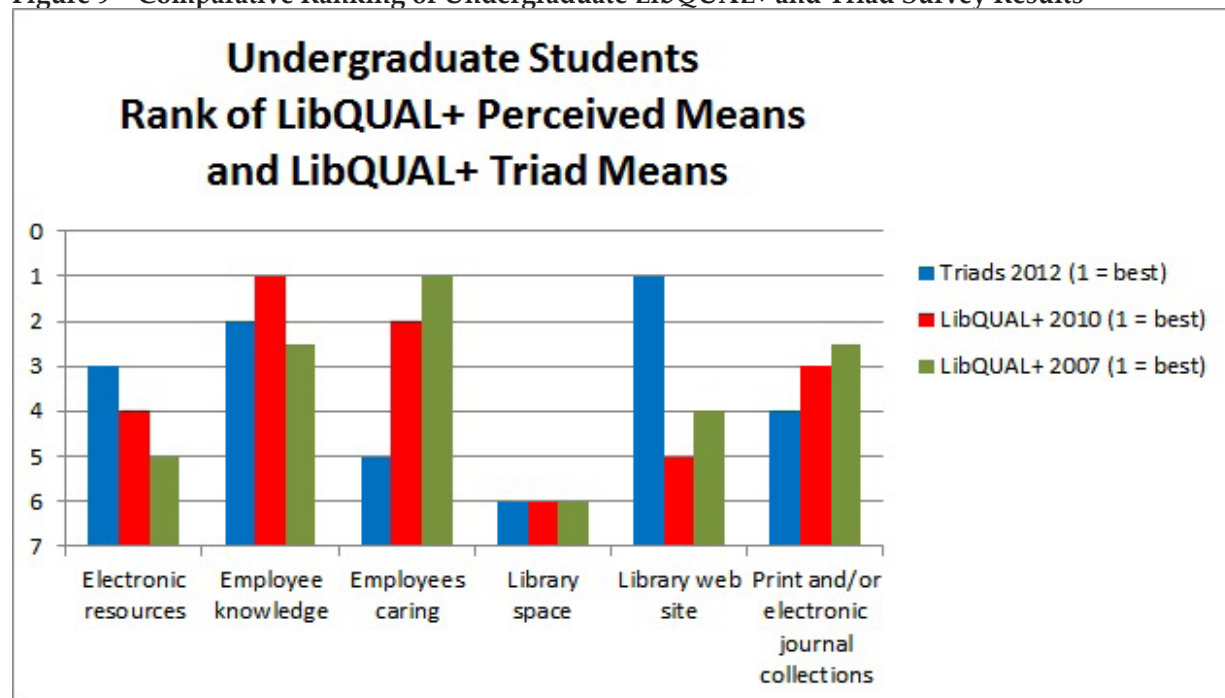


Figure 10—Comparative Ranking of Graduate LibQUAL+ and Triad Survey Results

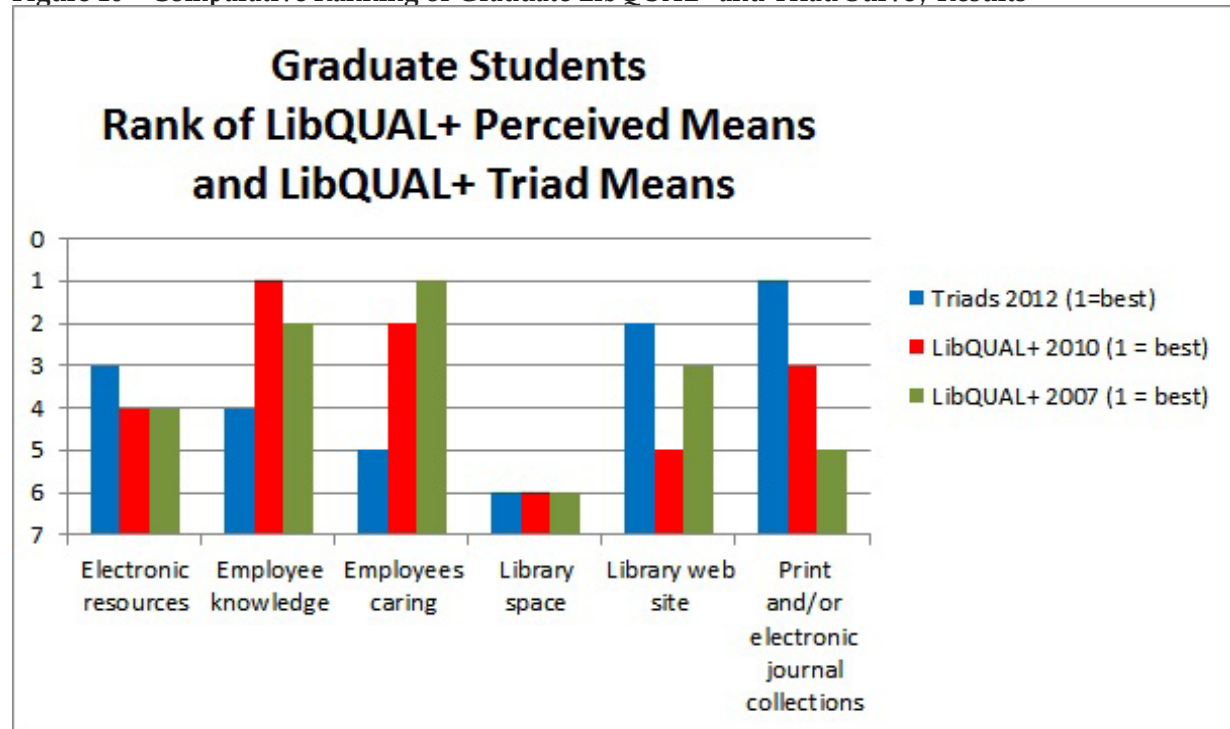
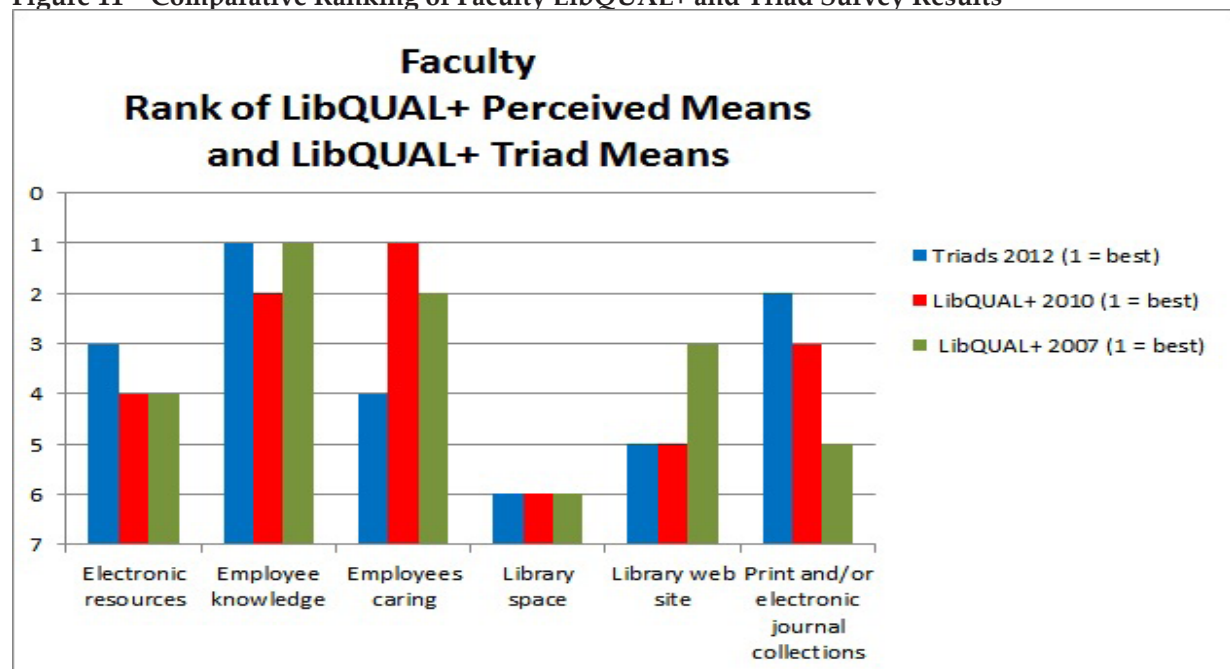


Figure 11—Comparative Ranking of Faculty LibQUAL+ and Triad Survey Results



User response to the survey

The survey appeared to be easier for survey respondents to figure out how to answer compared to the LibQUAL+ Full and Lite survey, as no questions were asked on how to complete the

survey. Comments received by e-mail and in the comments section of the survey focussed on the difficulty of answering an item being ranked that had not been used by the respondent, being required to select best to worst answers, and the

overall design. Comments were also received about the repetitive nature of the survey even though the introductory e-mail did indicate that the questions may seem to be repetitive.

Comments included:

- "I believe the results from my responses on this survey will be misleading as a result of being required to choose 'best' to 'worst' answers."
- "... this triad survey is a rather frustrating endeavour. It offers no baseline or comparative info besides realizing at some point that it wasn't really a ranking system but rather a mess of priorities. . . Anyhow, more useful to ask might have been—what matters to you most? What are your needs? Are we serving THOSE well? What could we do better?"
- "The survey was annoying in its repetition and I don't think my answers will do it justice."
- "This survey was repetitive. Why not ask your 5 or 6 statements all at once and rank them—20 questions repeating items over and over and over. I thought of quitting. Very bad design."
- "I am unable to complete this survey as there is no 'I have never used that aspect of the library' option and there is no way to get to the next question. . ."
- "I don't spend a lot of time in the library space, so tend to rank the space last."
- "I attempted the survey but did not complete it, not because I don't understand the format, but because I am not comfortable with it (i.e., forced responses)."
- "I was not able to complete the Libraries Survey when it first came out but I am now trying to complete it. I find it extremely confusing and frustrating. Is it really supposed to create a series of question combinations (seems like 5–6 questions keep getting rotated in different order) for the entire survey? . . . I will try to complete the survey (I'm currently on question 14) but I'm doubtful as to the usefulness of my responses."

Assessment of the LibQUAL+ Triads Project

The results received from the Triads project were difficult to interpret. The only clear result was that the library space was ranked lower than the other questions on the survey. With the use of the physical library decreasing for several users due to the increasing number of electronic resources,

the library space question may have been ranked last as it is not used as often but it could also be due to the fact that users desire a more physically appealing space. It is interesting to note that the undergraduate students who do tend to use the physical library included more first best and second best responses to the library space question than graduate students and faculty.

Several of the questions that had a high number of first best answers also received a high number of second or third best responses as well. In order to compare the results for the other questions, the mean rank was examined as it takes into account the number of first best, second best and third best responses. However, several of the mean ranks were very close to each other, so it was difficult to determine clear priorities from the results. For the most part the survey results indicated that the employee questions were ranked lower than the perceived performance feedback the U of M Libraries has received on the Full and Lite versions of LibQUAL+.

Results of the Triads survey also seemed to indicate that the satisfaction with the print and/or electronic journal collection was higher than with some of the other questions on the survey. Although the perceived means in the 2010 LibQUAL+ survey were also fairly high for this question, the results indicated that the graduate students and faculty still wanted more journals as the perceived mean was below their minimum service level. In fact, results from past LibQUAL+ surveys indicate that faculty in all ARL libraries are dissatisfied with the journal collection.⁹ Knowing this fact, it is difficult to know how to interpret the Triads survey results without any other baseline for comparison.

The results received from the Triads pilot included all of the responses without removing any from respondents who provided inconsistent answers. The Triads design allows for the possibility of removing inconsistent responses by calculating intraindividual reliability coefficients that may affect the survey results. The Association of Research Libraries will be looking at the data from the pilot project to see how the coefficients can be used to filter out unreliable responses.

One drawback to the survey is its repetitive nature. While it is desirable to be able to determine if

the responses are consistent, this repetition may encourage users to randomly select items instead of consistently ranking them. This issue has been noted by other researchers working with triad surveys. William Jacoby, who has compared the triad approach to rank order surveys with ranking without triads, noted:

While the method of triads provides a great deal of information about value choices, the approach still requires a lengthy battery of survey items each of which probably requires a great deal of cognitive effort on the part of the respondents. Furthermore, the number of triads increases geometrically with the number of values. The repetitive nature of the triads may induce response sets or have other detrimental effects on respondent cooperation. Therefore, it is very unlikely that they could be used as a standard method of collecting data on value choices.¹⁰

One suggestion to improve the Triads survey would be to reduce the number of questions included in the survey. By reducing the number of questions from 6 to 5, the number of triads on the survey could be reduced from 20 to 10, which would also reduce the repetition survey respondents have noted. Another option is to use the survey to determine the desired values instead of perceived values as it may be easier for respondents to clearly differentiate those items that are more highly desired. The ability for an institution to select questions from a list that could be added to the survey would also be useful in order to focus on issues of local concern. Another suggestion would be to include an initial question in the survey to indicate services that the survey respondent has used, such as using the physical library, so that the survey could be tailored to include only items that they have experienced and/or possibly exclude them from the survey because of lack of experience.

Conclusion

The LibQUAL+ Triads project offers a different way to determine priorities for libraries. While this type of information is desirable for decision-making purposes, more work on the survey design is required in order to get clearer results. The survey results from the University of Manitoba Libraries pilot project did not provide clear priorities for the library, except for the library

space item. The results were difficult to interpret, and several questions had similar mean ranks. Part of the problem may have been the fact that inconsistent responses were not removed from the results. Although information on user response time for the Triads survey was not provided to pilot members, the survey did appear to take less time than the Full LibQUAL+ survey and was easier to understand. At this point, however, the Lite or Full versions of the LibQUAL+ survey are preferred due to the inclusion of questions that ask for the perceived, desired, and minimum levels of service that allow libraries to determine areas where user needs are and are not being met. Nevertheless, the Triads project is an interesting concept, and it will be intriguing to find out what the results of the survey will reveal once more development has taken place, and it can be shown that the results are based on consistent responses.

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Endnotes

1. Bruce Thompson and Martha Kyrillidou, "An Introduction to the LibQUAL+® Triads Protocol: Using Ipsative Measurement to Assess Highly Desired Outcomes," Paper presented at the 9th International Conference on Performance Measurement in Libraries and Information Services, York, England, August 2011), 7, http://www.libqual.org/documents/LibQual/publications/LQ_triad.pdf.
2. "LibQUAL+® Update. Fall 2011," http://www.libqual.org/documents/LibQual/publications/LQUpdate_Fall2011.pdf.
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4. Thompson and Kyrillidou, "An Introduction to the LibQUAL+® Triads Protocol," 7.
5. Ibid., 9.
6. The University of Manitoba Libraries Assessment Committee members were Betty Braaskma, Kristen Kruse, Angela Osterreicher, Gary Strike, Pat Nicholls, and Marie Speare (Chair).

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7. *LibQUAL+® Triads, Manitoba Pilot—Spring 2012, Results Notebook* (Washington, DC: Association of Research Libraries/Texas A & M University, 2012).
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 9. Jim Self, "Statistics & Measurement: Bound for Disappointment: Faculty and Journals at Research Institutions," *ARL: A Bimonthly Report on Research Library Issues & Actions*, no. 257 (04, 2008): 7–11; and Jennifer Rutner and Jim Self, "Still Bound for Disappointment? Another Look at Faculty and Library Journal Collections," in *Proceedings of the 2010 Library Assessment Conference: Building Effective, Sustainable, Practical Assessment* (Washington, DC: Association of Research Libraries, 2011), 297–309.
 10. William G. Jacoby, "Measuring Value Choices: Are Rank Orders Valid Indicators?" Paper presented at the 2011 Annual Meetings of the Midwest Political Science Association, Chicago, IL, March 2011, 10, http://projects.iq.harvard.edu/cces/files/jacoby_measuring_value_choices-1.pdf.

User-defined Valued Metrics for Electronic Journals

Katherine Chew, James Stemper, Mary Schoenborn, and Caroline Lilyard
University of Minnesota, USA

Abstract

Purpose: Building on the work done by California Digital Library (CDL), the University of Minnesota Libraries are developing a set of user-defined value-based electronic journal usage metrics. User value is assessed in three overall categories: (1) utility or reading value, (2) quality or citing value, and (3) cost effectiveness. In addition to analyzing vendor-generated usage metrics, also included were Affinity String data, derived from the University of Minnesota's central authentication system that anonymously captures a user's academic department and degree program or position at the university and combined with vendor-generated usage data, provides a granular picture of journal use down to the title level. Collection management librarians and library users can benefit from a viable, more accurate metric for use and value of library resources than cost-per-download, which would ensure that the most needed/valued resources are available to further research and learning.

Methodology: Metrics were identified that are utilized to determine e-journal retainability: OpenURL link resolver requests for article views, COUNTER-compliant downloads, JCR Impact Factors, Eigenfactors, local citations from Thomson Reuters Local Journal Use Reports and Affinity String requests for article views. Two years of usage data were assessed using Pearson correlation coefficients to compare the different metrics. Affinity String data is correlated with the results to determine any discipline or degree level differences. A composite score is assigned to each journal to assess its overall value in comparison to other journals within the same broad subject category.

Findings: This project found that SFX click-throughs is a more consistent predictor than COUNTER downloads of the journals our faculty will cite in their articles, with Eigenfactor a more consistent predictor of citation behavior than Impact Factor.

Introduction

For years, libraries have searched for the perfect usage metrics to help make tough decisions on what journals to retain when budgets get tight. Download statistics do not tell the whole story; just because an article is downloaded does not mean it is later read, liked, or cited and cost per use or download does not always resonate with faculty. Available usage metrics all have their own unique limitations: OpenURL link resolver statistics may not capture all the downloads, and COUNTER-compliant data is not available from all publishers or vendors. Value metrics such as Impact Factors are based on a short time window that does not reflect the citation patterns of all disciplines, and they can be manipulated to some extent. The goal of our project is that by combining and comparing a variety of usage metrics, the value that our users assign to our collection through their decisions about which journal articles to download, read and cite can be more accurately determined.

Background

The academic library community has been grappling with the issue of determining metrics for electronic journal collection management since publishers began to provide online access to full-text scholarly articles in the late 1990s. The literature reflects increasingly sophisticated attempts to capture the significant data involved in electronic journal usage. Homegrown, open-source, and commercial assessment systems exist to capture citation metrics, data collection usage, and other information. No definitive method has been determined to most effectively address these metrics. In difficult economic times, this information is more critical than ever. In order to make wise decisions about resource management the profession needs pertinent information and data about e-journals.

Early findings in a 1998 article in *Serials Librarian*, "Inferring user behavior from journal access figures,"¹ outlined different measures of e-journal

usage, drawing from the BUBL Journals service data for a 6-month period. The “search to browse” ratio (SBR) was considered. The study concluded that the SBR “provides a more meaningful measure than a simple access count, but numbers alone will never provide a complete picture of what users are doing and what they want from a service.”

This theme of needing to see the bigger picture resonates throughout the literature. The article “Evaluative usage-based metrics for selection of e-journals,” in *College and Research Libraries*² draws on existing work in the print world (Meyers and Fleming’s “reasonably equitable quantitative evaluation tool”). The authors developed evaluative metrics for the e-journal world. Average cost per access, average cost per article, and content-adjusted usage enable comparison of collection e-journals with differing content amounts. Coupled to benchmarks, a currently held resource can be compared with a peer product, even when content and value differ. A real-world comparison of Science and Nature site licenses at the University of Maryland illustrates the process.

Studies done in the early 2000s³ provide background on the evolution of setting standards for accessing electronic content using tracking methods. Lui, W., and FM Cox⁴ detail early attempts to organize standards of practice with regards to collecting e-journal use data at the local level.

A Cornell University study in the *Journal of American Society for Information Science and Technology*⁵ set a goal of understanding individual online behavior from individual IP addresses as a surrogate instead of directly measured individual use. Previous user behavior research came from citation analysis, library circulation studies, survey research and publisher usage statistics—all of which have limitations. This study involves IP analysis of 29 online journals from the American Chemical Society. The dataset reveals that a majority of IPs (“users”) targets a small number of journals and article downloads, but a small number have a large effect on total downloads. Numbers of both article downloads and of users were strongly enough related to imply that a user population can be estimated by knowing a journal’s total use.

Another correlate was found in the 2003 article “Usage Statistics for Electronic Journals: An Analysis of Local and Vendor Counts.”⁶ It compared locally-tracked title-level login statistics (pre-SFX) to download statistics supplied by four major publishers. They found that the local login counter’s journal use rankings matched COUNTER statistics 70% of the time, suggesting that local statistics are a viable alternative to vendor statistics.

An IFLA article⁷ reviewed some of the early attempts to develop cost per use data and discusses ways libraries, consortia, and publishers can use unit cost information for management decisions. Findings were from Drexel University, University of Muenster, University of Connecticut, and two major publishers (Emerald and IOPP).

The advent of SFX—an OpenURL link resolver—in 2005 provided a reporting package for statistical data on both successful and unsuccessful article view requests. It cannot comprehensively replace publishers’ use data where they offer it, but is especially valuable for smaller or specialized publishers where no such data is available.⁸

The MESUR project funded by the Andrew W. Mellon Foundation constitutes a systematic effort to define, validate and cross-validate a range of usage-based metrics of scholarly impact. “*Towards usage-based metrics: first results from the MESUR project*,”⁹ indicates MESUR has collected nearly one billion usage events as well as all associated bibliographic and citation data from significant publishers, aggregators and institutional consortia to construct a large-scale usage data reference set. A major benefit of analyzing use data is that it occurs throughout the research process, not just near the end, as occurs with cited references. A more timely reflection of scholarly trends and relationships can result from usage analysis.

Performance measures are being developed over time. An informal survey distributed in May 2010 showed that standardized methods for electronic journal data collection are emerging, but not yet across platform or vendor.¹⁰ Vendors are attempting to provide solutions to the problems associated with gathering and managing consistent usage data across publishers and platforms.¹¹

Standardization is also occurring. In March 2012, Project COUNTER released a draft Code of Practice for Usage Factors: Journals (UFJ). In this proposed standard, the UFJ will be “the Median Value of a set of ordered full-text article usage data for articles published in a journal during a two calendar year Publication Period.”¹² It will be reported annually as an integer, will integrate articles-in-press from the accepted manuscript stage, and will incorporate usage from multiple platforms.

Assessment methods are becoming more sophisticated. California Digital Library (CDL) staffs are objectively measuring the value of a journal title through a combination of metrics. They classify their value measures into three categories: Utility (usage statistics and citations to articles), Quality (Impact Factor and Source Normalized Impact per Paper (SNIP)), and Cost Effectiveness (cost per usage and cost per SNIP). A Weighted Value Algorithm tries to assess the journal’s value in the institutional context, while also factoring in disciplinary differences.¹³ Our project attempts to build on their work by using a similar process and adding in our affinity string data as a means to assess disciplinary differences in journal use.

The Data

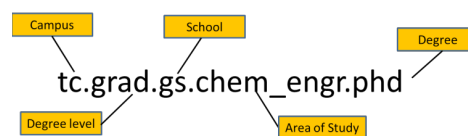
The data for this project was collected from over 4,700 journals that are owned by or are accessible to the University of Minnesota Libraries users. A recent CIBER research report,¹⁴ found that two years of journal usage data is sufficient to provide insight into a journal’s usage patterns. The dataset for this study includes information for the two year period 2009 through 2010. The variables that were collected consist of the following: (1) online use, as tabulated by the library’s OpenURL link resolver, SFX, (2) online use, as reported by publisher COUNTER-compliant reports, (3) University of Minnesota authors publishing activity, from Thomson Reuter’s Local Journal Use Reports (LJUR), (4) Thomson Reuter’s Journal Citation Reports (JCR) Impact Factors, (5) Eigenfactors and lastly (6) locally-generated authentication logs known as Affinity Strings. Cost per use was also calculated for each title for variables 1–4 and included in the dataset.

It should be noted that data could not be collected for all of the variables for every title, as not every publisher is COUNTER-compliant, nor are there

Impact Factors, Eigenfactors or LJUR data for every title in the study due to Thomson Reuter’s limited title indexing. Each journal title also has a subject code attached to it in order to do analysis within broad subject categories.

Some Definitions/Terminology

The variable, *SFX Downloads*, is the OpenURL link resolver count of “click-through” article view requests. When a patron does a search in the library catalog, or in an online database, the results are presented with a University of Minnesota “FindIt”  icon. If the patron clicks on the icon for a journal article, the link resolver counts it as a “request.” A FindIt menu is then presented to the patron with all of the access points available for that particular article. If the patron then clicks on one of the article links, this is counted as a “click-through” and generally is considered a measure of downloads, though based on the publisher’s level of OpenURL compliance (i.e. ability to resolve at the journal, issue, or article level), it may or may not be an automatic download of the article itself. SFX click-throughs do not capture all of the local usage of the journals, as patrons can bypass the FindIt icon by using search engines like Google or by bookmarking journal websites while they are searching or accessing resources within the campus’ library IP ranges. A 2009 log analysis showed that 65% of library site use originated from off-campus.¹⁵ An ongoing study by the University Libraries IT on library use and student success indicates that between 47–74% of undergraduates use online resources, while 65 to nearly 100% of the graduate level students utilize online resources.¹⁶ Anecdotal and affinity string evidence puts faculty online resource use at the same level as that of graduate students.



Vendor Download (COUNTER) is the COUNTER-compliant publisher reporting of downloads of full-text articles. COUNTER (Counting Online Usage of Networked Electronic Resources) is an “international, extendible Code of Practice for e-Resources that allows the usage of online information products and services to be measured in a credible, consistent and compatible way using

vendor generated data.”¹⁷ COUNTER specifies the rules that govern the content, format, data processing and delivery for a set of defined e-resource usage reports that can be quickly and easily comprehended. The COUNTER reports used in this study are known as Journal Report 1, number of successful full-text article requests. Publisher-supplied COUNTER reports capture more of journal usage than SFX downloads, as publishers’ record activity via library authorized IP addresses (including off-campus use via our proxy server IP). This records activity from search engines like Google and bookmarked sites. However, not every publisher uses COUNTER or is COUNTER-compliant, whereas, every University-licensed journal title does trigger SFX download counts. Many publishers are increasingly compliant with the SUSHI standard as well (Standardized Usage Statistics Harvesting Initiative); locally, this allows our collections support staff to automate much of the gathering of usage data from these publishers, as our electronic resource management (ERM) system can send pre-programmed requests that fill out the vendor-specific login ID/password set without human mediation.

Citation Counts are the number of articles and citations by University authors in journals indexed by Thomson Reuter’s Web of Science and were matched to titles owned by the University of Minnesota Libraries. These counts come from a series of reports purchased from Thomson Reuters and are known as Local Journal Usage Reports (LJUR). The reports have three components. They are “Source” counts per published year per journal title of articles authored by University faculty and staff; “Cited By,” counts per publication year per journal title where University authors cited others’ journal articles in their own papers and “Citing,” counts per year of the citing article per journal title where other authors have cited our University authors’ published works.

Affinity Strings are generated by the University’s Office of Information Technology using information from the University’s human resources management system. All University students, staff and faculty are assigned affinity strings that are based on his or her area of work or study. An example of an affinity string would look like this: ahc.fac.med. This would be the affinity string for a medical school faculty member within the Academic Health Center at the University. A more

complex affinity string may look like this: tc.grad.gs.chem_engr.phd, which translates to a PhD student in Chemical Engineering.

The “tc” indicates the Twin Cities campus of the University, while “grad” and “gs” denotes enrollment in the Graduate School as a grad student, “chem_engr” is the Chemical Engineering program/area of study and “phd” that the student is in the Doctoral degree program.

The Affinity Strings provide a rich lode of information about user behavior, and by aggregating similar affinity strings without personally identifying any user, it does not compromise privacy. They allow for a granular picture of journal use down to the title level. Affinity String data is captured every time a person logs into the University central authentication system with their unique Internet ID to access University Library resources. As with SFX data, not all journal downloads are captured due to some users working within the campus’ libraries IP ranges. However, this limitation has been changing, due to increased computer security measures across campus, which now requires that all campus computers require a log-in, including all staff, faculty and public computers.

Journal Citation Reports Impact Factor, from Thomson Reuters, is a measure of the frequency with which the average article in a journal has been cited in a given period of time relative to other journals in the field. The annual Impact Factor for any particular journal is a ratio between citations and recent citable articles and is calculated based on a three-year period. It is the average number of times published papers in a journal are cited up to two years after publication. The calculation for journal impact factor, where A=total citations in a given year, B=the given year’s cites to articles published the previous two years, C=the number of total articles published in the previous two years and finally D=B/C=the given year Impact Factor.¹⁸ Though highly discipline-dependent and subject to manipulation, as noted, it does provide a sense of journal citation patterns.

Eigenfactor Score, developed by Jevin West and Carl Bergstrom at the University of Washington,¹⁹ is an attempt to calculate the likelihood that a journal is going to be used, or how much time a user

will spend accessing content from that journal. The Eigenfactor Score is based on the number of times published articles are cited from a journal within the past five years of article citations, as oppose to the three years of Impact Factors. Journal self-citations are removed and weight is given to articles from more prestigious journals. The Eigenfactor algorithm tries to account for differences in influence among citing journals and also adjusts for differences in citation patterns among disciplines.

The Questions

Utilizing the CDL's work on developing a set of user-defined value-based metrics, our project framed the following questions:

1. Utility or reading value: Does SFX click-through data combined with Affinity String data provide a "good enough" departmental view of user activities, such that COUNTER-compliant data is expendable?
2. Quality or citing value: which is the better metric for representing value through citation behavior by users—JCR Impact Factor or Eigenfactor? Do either SFX click-throughs or COUNTER downloads sufficiently correlate with local citation patterns via Local Journal Usage Reports (LJUR) or external citations via impact factor metrics? If both of them do, are impact factors expendable?
3. Cost effectiveness or cost value: how should these reading and citing values be combined with cost data to create a "cost-per-activity" metric that meaningfully informs collection management decisions?

Methodology

We began our analysis by combining all of our variables into a single spreadsheet. The journal title list, with publisher imprints, publisher/vendor, format (online/print), ISSN, subject fund code and 2010 invoiced cost was downloaded from the University Libraries' serials agent EBSCO into an Excel spreadsheet. The journal title list was then matched by ISSN to SFX "click-throughs," COUNTER-compliant downloads, LJUR data, JCR Impact Reports, Eigenfactor Reports and Affinity String data and added to the spreadsheet. This allowed us to clean up our data set as much as possible, by identifying journal titles that were missing SFX, COUNTER or Affinity String download data due to mismatches on ISSNs.

Missing cost data generally was due to a title's inclusion in a publisher's bundle (for which a discounted package price was paid for multiple titles) or that the electronic cost was located on the print journal record. Duplicate records were also removed, as well as any title that did not have electronic access in some form, such as print only titles or microform formats.

For the variables *SFX downloads*, *COUNTER-compliant downloads*, *Affinity Strings*, *Impact Factor*, *Eigenfactor*, and all of the *LJUR* reports, averages for the 2009–2010 data years were calculated to allow for variable comparisons.

The data analysis was done using R,²⁰ a freely available integrated software suite that can be run on Microsoft Windows and MacOS. The Excel spreadsheet was converted into an R data file and zero values on the spreadsheet that represented unavailable data (such as a zero in the COUNTER data field of a title that meant "N/A" as opposed to zero downloads) were eliminated. R knows how to handle blank data fields, so those were left alone.

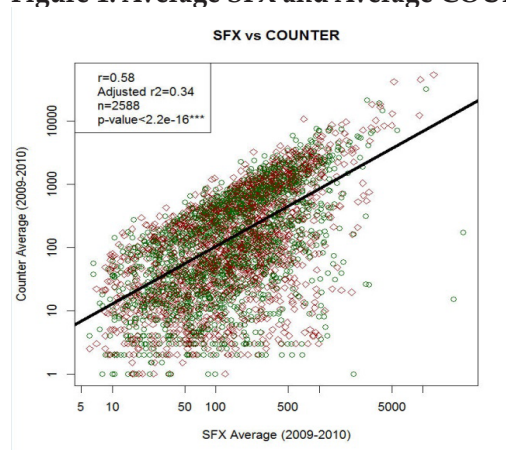
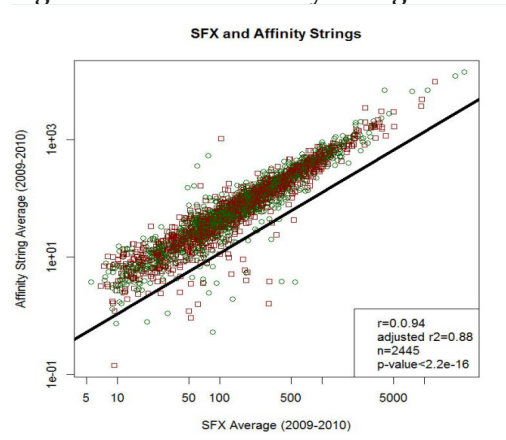
As this project's questions are framed around comparing our variables and their relationships, correlation analysis was the method chosen to examine these relationships, similar to a study conducted in 2006 that compared print and online journal usage using correlation analysis.²¹ A variety of scatter plots/diagrams were created to determine if there were any positive, negative or no correlation relationships between our variables and the significance of these relationships. We looked specifically at Pearson's correlation coefficient (signified by r), the coefficient of determination (R-squared) and p -value. The Pearson's correlation coefficient reflects the degree of linear relationship between our variables, which can range between +1 to -1. A correlation of +1 indicates that there is a perfect positive linear relationship between variables, where -1 indicates a perfect negative linear relationship and zero implies no relationship or association. Though there can be a range of interpretation, depending on the discipline, it is generally accepted that an $r < 0.35$ is considered a low to weak correlation, 0.36–0.67 modest or moderate, 0.68–1.0 strong or high correlations, with anything over 0.90 a very high correlation (Table 1).²²

Table 1: Range of Pearson values

Correlation	Negative	Positive
None	-0.09 to 0.00	0.0 to 0.09
Low	-0.3 to -0.1	0.1 to 0.3
Moderate	-0.5 to -0.3	0.3 to 0.5
Strong	-1.0 to -0.5	0.5 to 1.0

In conjunction with the correlation coefficient, we looked at the coefficient of determination, which is the square of r and is reported as *R-squared*. The coefficient of determination is the proportion or percent of variation in the values of the variables, and or the degree of linear association between

two variables. R-SQUARED is often expressed as a percentage when discussing the proportion variance explained by the correlation. So if an $R\text{-squared}=0.34$, it would mean that 34% of the variance of x to y is explained, but also that 66% is unexplained.²³

Figure 1: Average SFX and Average COUNTER**Figure 2: SFX and Affinity Strings**

And lastly, *p-value*, which is the estimated probability of rejecting the null hypothesis, where the smaller the *p-value*, the more strongly is the rejection of the hypothesis of “no difference,” or in

other words, that the variables have no relationship whatsoever. *P-values* of less than 0.05 can be considered statistically significant, with $p<0.001$ statistically highly significant, or less than one in a

thousand chance of being wrong.²⁴

Results and Discussion

To answer our first question on utility or reading value, whether SFX click-through data combined with Affinity String data provide a “good enough” departmental view of user activities, such that COUNTER-compliant data is expendable, we began by running Pearson correlations between SFX click-throughs, COUNTER downloads and Affinity Strings year by year and then as an average of the two years combined. What we found was that for the SFX/COUNTER average correlation, $r=0.58$, $n=3352$ (sample size), $R\text{-squared}=0.34$ and $p\text{-value}<2.2\text{e-}16$ (Figure 1). All of our correlations’ $p\text{-values}$ were $<2.2\text{e-}16$ (2×10^{-16}), or “statistically highly significant.” Based on our correlation table, the $R\text{-squared}$ value and its accompanying scatter plot show a strong, positive correlation between SFX and COUNTER. Specifically, 34% of the variance in the COUNTER ranking of article downloads from each journal can be explained by the SFX ranking of click-through requests for each journal. Conversely, 66% of the variance in the title rankings reflecting COUNTER article downloads can only be explained by other

factors. In other words, SFX only explains about a third of the variance between the two ranked lists of most/least used journals. It is worth it to take the time to get COUNTER statistics to inform your journal collection management decisions and to encourage vendors who are not yet COUNTER compliant to become so.

The relationship between Affinity Strings and SFX is very strong, as would be expected, with $r=0.94$, $n=2445$, and $R\text{-squared}=0.88$ (Figure 2), but the relationship between Affinity Strings and COUNTER is slightly less than that of SFX and COUNTER where $r=0.54$, $n=1443$, and $R\text{-squared}=0.30$ (Figure 3).

Question number two concerns quality or citing value: Which is the better metric for representing value through citation behavior by users—JCR Impact Factor or Eigenfactor? Do either SFX click-throughs or COUNTER downloads sufficiently correlate with local citation patterns via Local Journal Usage Reports (LJUR) or external citations via impact factor metrics? If both of them do, are impact factors expendable?

Figure 3: COUNTER and Affinity Strings

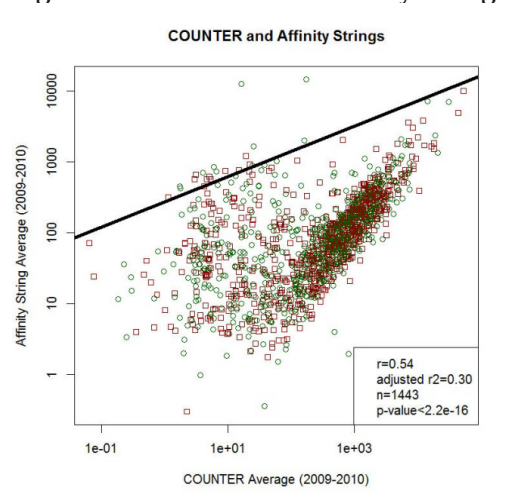
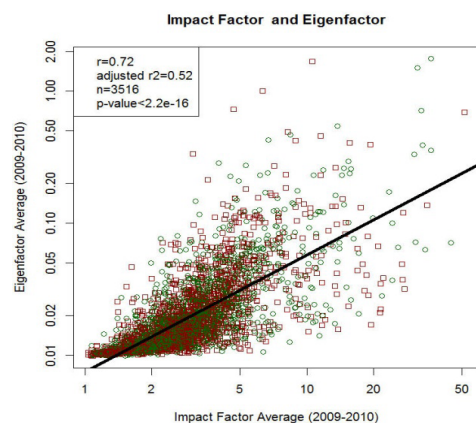
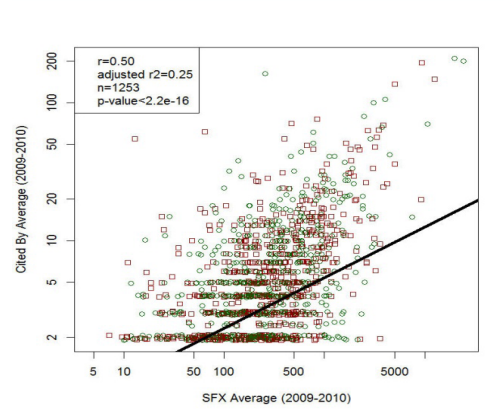


Figure 4: Impact Factor and Eigenfactor

The correlation between the average of the 2009–10 Eigenfactor statistics and the 2009–10 Impact Factor statistics is $r=0.72$, $n=3516$, and $R\text{-squared} = 0.52$ (Figure 4). Like the CDL, we find that Eigenfactor compares favorably to Impact Factor, but in our analysis this is true only about 50% of the time.

Since Eigenfactor data is publicly available on the web, it only costs the staff time to download it and integrate it into your dataset. Still, despite the well-known shortcomings of the Impact Factor metric, it is arguably still worth considering this metric in journal collection management decisions as well.

Figure 5: SFX and Cited By U of M Authors

The correlation between the average of the 2009–10 SFX click-through statistics and the 2009–10 Cited By section of the LJUR is $r=0.50$, $n=1253$, and $R\text{-squared} = 0.25$ (Figure 5). The correlation between the average of the 2009–10 COUNTER download statistics and the Cited By LJUR is $r=0.43$, $n=855$, and $R\text{-squared} = 0.18$ (Figure 6). SFX is thus a more consistent predictor than COUNTER of the journals our faculty will cite in their articles, but not by much. Both are weak, though positive, correlations—COUNTER explaining only 18% of the variance between the two ranked lists of most/least accessed and cited journals, and SFX

explaining only 25% of the variance, and leaving the majority of the variance (75% with SFX, and 82% with COUNTER) to be explained by other factors. Again, it is worth the effort to gather COUNTER stats in addition to SFX.

The correlation between the average of the 2009–10 Eigenfactor statistics and the 2009–10 Cited By LJUR statistics is $r=0.77$, $n=1248$, and $R\text{-squared}=0.59$ (Figure 7). The correlation between the average of the 2009–10 Impact Factor statistics and the 2009–10 Cited By LJUR statistics is $r=0.53$, $n=1248$ and $R\text{-squared}=0.28$ (Figure 8).

Figure 6: COUNTER and Cited By U of M Authors

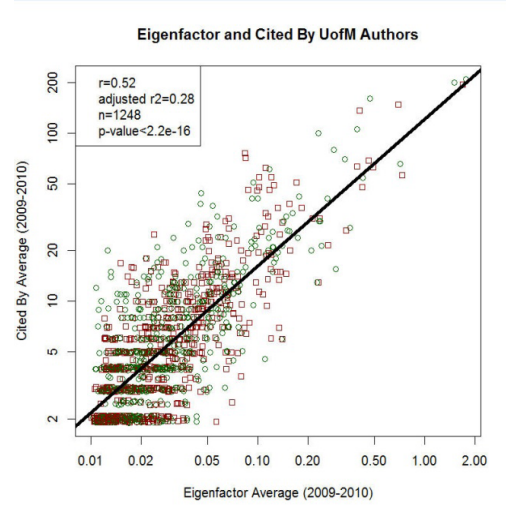


Figure 7: Eigenfactor and Cited By U of M Authors

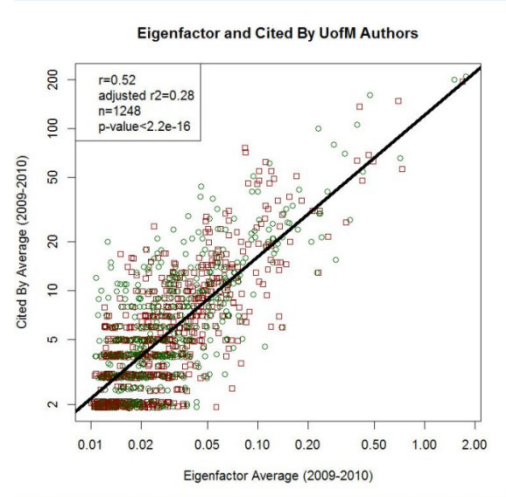
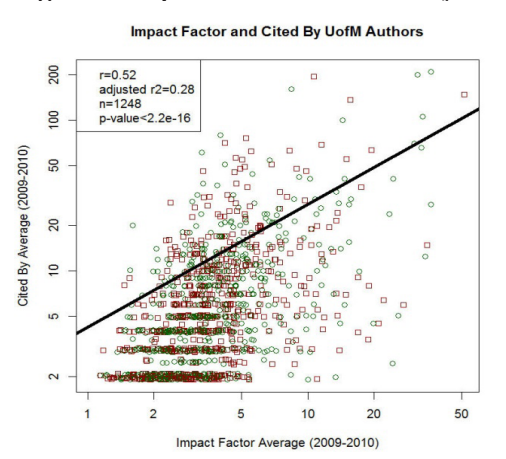


Figure 8: Impact Factor and Cited By U of M Authors



Impact Factor explains only 28% of the variance between the two ranked lists of most/least cited journals, and Eigenfactor explains 59% of the variance. So Eigenfactor explains the majority of the variance, while Impact Factor explains a minority of the variance. Eigenfactor is thus a more consistent predictor than Impact Factor of the journals our faculty will cite in their articles—twice as reliable. Notably, both metrics are better predictors of our faculty's citation behavior than our traditional download statistics. So it is worth going beyond our traditional "cost per use" (i.e. "cost per download") calculations when deciding which journals to keep and which to cancel.

Humphrey School of Public Affairs: A Case-Study Disciplinary View

The Humphrey School of Public Affairs ranks among the top professional schools of public affairs at public universities in the country. The school has approximately thirty faculty, many fellows and a student body of approximately 450 students. Degree programs are generally completed in 2–3 years of study.

The question to answer here is the degree to which faculty, students and staff of the Humphrey School—as opposed to other academic departments—are using the journals subscribed to by the University Libraries on the Public Affairs journal fund. Such information would inform future collection management decisions. The fund includes both newer scholarly and professional journal titles requested by faculty as well as long-standing, core public affairs/administration titles. Large and small, commercial, society, and non-profit publishers are represented in the collection.

Method & Results

A list of the journals in the fund was created in Excel ($n=31$). SFX average for 2009 and 2010 was calculated, as was Affinity String data associated with Humphrey School use of each title. The correlation coefficient of $r=0.77$ and an $R\text{-squared}=0.59$ offer evidence of a strong, positive relationship between the journals on the fund and use by affiliated public affairs researchers.

Specifically, 59% of the variance in the journal title rankings reflecting Humphrey School use can be explained by the SFX journal title rankings reflecting use by all academic departments.

Conversely, 41% of the variance in the title rankings reflecting Humphrey School use can only be explained by other factors.

Discussion

SFX is useful in that it provides evidence that e-journals are indeed getting used, but it does not tell us much more. Correlating this information with affinity user data provides a stronger dataset that illustrates, at least for this discipline, a reasonable relationship between the journals purchased on behalf of an academic department and use by this intended audience.

Conclusion

The foundational question of this project was to determine which readily available journal usage data from various sources provides evidence of value to academic users. Value was assessed in three categories: (1) utility or reading value, (2) quality or citing value, and (3) cost effectiveness.

Our findings from statistical analysis of local journal use assessment indicate that SFX click-through data when combined with affinity string data may indeed provide a "good enough" result. However, the data clearly and strongly demonstrate that the inclusion of COUNTER data strengthens the positive correlation. Thus, obtaining COUNTER data in addition to SFX click-throughs provides a reasonable measure of local reading value and a stronger collection management position. Additionally, knowing the benefits of COUNTER—and demanding it from publishers—can improve the likelihood of broader adoption of this technology across publishers, namely society and smaller presses.

With regards to the second question of our project, which is the better metric for representing value through citation behavior by users—JCR Impact Factor or Eigenfactor, our analysis confirms a favorable relationship—similar to findings of previous studies. However, in our analysis these findings occurred only 50% of the time. While Eigenfactor is free and Impact Factor remains a standard-bearer of journal significance, the results suggest stronger collection development decisions result when both data points are considered.

Further, this project found that SFX click-throughs

is a more consistent predictor than COUNTER downloads of the journals our faculty will cite in their articles, but not by much. It is worth the effort to gather both COUNTER and SFX data to support the strongest information about the journals our faculty use in their own research papers.

The analysis of Impact Factor and Eigenfactor to determine whether one is a better predictor of our faculty's citation behavior, show that Eigenfactor is a more consistent predictor.

The project includes a short discipline snapshot analysis to determine if patterns seen at the larger scale offer meaningful results at the disciplinary level. The example of a public affairs graduate school program shows that SFX click-throughs alone for the titles on this fund are getting used by the intended faculty and students. This offers evidence that a reasonable relationship exists between the journals purchased on an academic journal fund and use by the intended audience. To achieve this result, the use-log data that is collected (in our case, University of Minnesota Affinity String) must identify who is using the materials, not just that the materials are being used. This additional data is critical to gathering relevant results.

And finally, these data demonstrate that taking reading and citing values together provide better information than the traditional "cost per use" metric many have used that simply looks at what is being downloaded.

This project offers further evidence of impact when measures of journal use, broadly defined as incorporating both reading and citing, are compared with disciplinary ties of those actually doing the reading and citing at the local level. Selectors need to go beyond the convenience of quick and easy OpenURL resolver data divided by subscription price calculations if they are to justify increasingly difficult cancellation decisions to faculty and administrators who demand accountability.

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Applying Performance Measurement to Safeguard Budgets: Qualitative and Quantitative Measurement of Electronic Journal Packages

Selena Killick

Cranfield University, United Kingdom

Abstract

In the current financial climate effective performance measurement has become a vital tool for library managers. This paper presents a case study from Cranfield University in the United Kingdom on qualitative and quantitative techniques employed to measure the performance of electronic resources. Cranfield University Libraries have developed a process for systematic and sustainable assessment of its electronic resources. Initially focused on electronic journal packages, the process enables the library service to demonstrate smart procurement to key stakeholders.

Quantitative key performance indicators were developed based on the COUNTER usage statistics, internal financial information and population data. A systematic process for capturing, storing and analyzing usage data was developed. In order to make the process sustainable a template was created to calculate all derived metrics and present the key performance indicators in a format suitable for senior stakeholders.

It was soon discovered that quantitative measures alone would not enable the library to fully assess the performance of the collection. Through academic liaison interviews the library staff embarked upon a process to capture the qualitative information pertinent to the resources. A template was used for each package documenting who is using the resource, how they are using it, and what impact any cancellation would have on the strategic goals of the organization.

The combined approach of both quantitative metrics and qualitative factors enabled the library to effectively demonstrate the value of the electronic journal packages. The results were successfully used to lobby against a proposed

resources cut, safeguarding the electronic journals from budget reductions. Lessons learnt from the development of the process along with next steps are presented.

This paper will be of interest to those involved in library collection management and library staff with a remit in performance measurement. In particular it may assist the development of deeper understanding of measuring the value and impact of electronic library collections, and will also therefore be of value to all those concerned with library strategy and development.

Applying Performance Measurement to Safeguard Budgets: Qualitative and Quantitative Measurement of Electronic Journal Packages

Cranfield University is the UK's only wholly postgraduate university specializing in science, technology, engineering and management subjects. It is one of the top five research-intensive universities. Approximately 4,500 students study at the University every year, supported by around 1,500 staff members. Cranfield Libraries strive to meet the needs of its community through the provision of information and library services at a level expected by its customers. One element of the services provided by the library is its subscriptions to academic journals. Over 36,000 titles are taken on a subscription basis, with over 99.9% of journals available electronically.

Like many university libraries, Cranfield has seen its expenditure on e-journals increase annually at an above-inflation rate. In order to maintain current journal collections, expenditure on other resource formats have been reduced dramatically. A quarter of the information provision budget is spent on databases including abstract and indexing

resources, with expenditure on books now equating to just 8% of the budget. Benchmarking these figures against the University's peer institutions found a similar pattern, with around 70–75% of information provision expenditure spent on Journal subscriptions. Given the huge sums of money that the library spends on journals each year it is important to demonstrate how these collections are supporting the institution in achieving its learning, teaching, research and business goals.

In April 2010 Cranfield Libraries embarked upon a project to develop an evaluation framework for its journal subscriptions. The Library Management Team required a system that enabled informed decision making for subscription renewal or cancellations, and demonstrated smart procurement to senior stakeholders. The system needed to be systematic and sustainable, making the best use of staff resources in an ever time-pressured environment. In order to contextualize the evaluation framework the same methodology was to be deployed for all electronic journal packages to enable internal benchmarking between the individual resources. Previously the library had relied on the cost-per-download

metric as the primary evaluation tool for electronic journals, calculated by dividing the number of downloads within a year by the annual cost of the subscription. Recognizing that this system did not take into account the value of the information to the research community, the new framework needed to incorporate a narrative approach on how information was being used and the impact any cancellation would have. The new approach sought to bring together quantitative and qualitative evaluation methods equally.

A literature search found various approaches to collection performance measurement; the work conducted by Evidence Base in their Analysing Publisher Deal project¹ and the key performance indicators (KPIs) implemented at Newcastle University Library² formed the basis of quantitative KPIs applied at Cranfield. Adapted to local institutional needs, the quantitative metrics were developed to evaluate the size, usage, coverage and value for money for each electronic journal collections. These included the commonplace metrics such as number of titles, number of downloads and cost-per-download; along with descriptive metrics. A full breakdown of the metrics used is shown in Table 1.

Table 1: Quantitative Metrics

	Metric	Description
1	Number of titles in the package	Initially defined as all titles in JR1, altered to reflect all titles in deal.
2	Number of subscribed titles	Number of core titles subscribed to within the deal
3	Number of additional titles	Calculated by subtracting metric 2 from metric 1
4	Total full-text downloads	Total annual downloads from JR1 report
5	Subscribed titles full-text downloads	Total number of annual downloads from the subscribed titles only
6	Additional titles full-text downloads	Total number of annual downloads from the non-subscribed titles only
7	Downloads per student (FTE)	Metric 4 divided by the full-time equivalent number of students
8	Downloads per staff (FTE)	Metric 4 divided by the full-time equivalent number of staff members
9	Downloads per FTE total	Metric 4 divided by the sum of full-time equivalent staff and students
10	Total cost of package	Actual amount charged for the annual subscription
11	Cost of subscribed titles	Annual cost of the subscribed titles only
12	Cost of additional titles	Metric 10 minus metric 11

	Metric	Description
13	Number and % of titles with zero downloads	Number of titles with zero article downloads within an annual period, and the percentage of the collection that represents
14	Number and % of titles with low downloads	Number of titles that had between 1 and 49 article downloads within an annual period, and the percentage of the collection that represents
15	Number and % of titles with medium downloads	Number of titles that had between 50 and 499 article downloads within an annual period, and the percentage of the collection that represents
16	Number and % of titles with high downloads	Number of titles that had between 500 and 999 article downloads within an annual period, and the percentage of the collection that represents
17	Number and % of titles with very high downloads	Number of titles that had over 1,000 article downloads within an annual period, and the percentage of the collection that represents
18	Average number of downloads per title	Metric 4 divided by metric 1
19	Average number of downloads per subscribed title	Metric 5 divided by metric 2
20	Average number of downloads per additional title	Metric 6 divided by metric 3
21	Average cost per title	Metric 10 divided by metric 1
22	Average cost per subscribed title	Metric 11 divided by metric 2
23	Average cost per additional title	Metric 12 divided by metric 3
24	Average cost per FT download (overall)	Metric 10 divided by metric 4
25	Average cost per FT download for subscribed titles	Metric 11 divided by metric 5
26	Average cost per FT download for additional titles	Metric 12 divided by metric 6
27	Average cost per FTE Student	Metric 10 divided by total number of full-time equivalent students
28	Average cost per FTE Staff	Metric 10 divided by total number of full-time equivalent staff
29	Average cost per FTE Total	Metric 10 divided by total number of full-time equivalent staff and students
30	Top-30 titles with the highest number of downloads	List report of the most popular titles within a package
31	Top-30 titles - % subscribed	Percentage of subscribed titles in Top-30 downloaded titles list
32	Zero / low titles - % subscribed	Percentage of subscribed titles with less than 50 downloads within a year

In order to evaluate the journal packages consistently whilst maximizing staff resources, an Excel template was created. Using COUNTER JR1 reports, staff and student population data, and a three-year financial report provided by the library's subscription agent, the template used match formulas working with ISSNs to link title prices with usage and holdings. All calculations were automated as far as reasonably practicable, with output reports being automatically populated when the input data was added to the template. Three main output sheets were designed to meet the different management information needs: core subscriptions, top 30 titles and key performance indicators. For each report the results fitted onto

one printable page to aid the data review.

The core subscriptions report presented the three year trends in title costs, downloads and cost-per-download for the subscribed titles within the package. Titles with low downloads and high cost-per-download became a priority for cancellation or substitution. The evaluation initially used the definitions of low, medium and high usage as defined by Evidence Base in the Analysing Publisher Deals project. When applied at Cranfield it was discovered that the low population numbers resulted in the majority of titles falling into the low or medium usage categories, and all title costs and costs per download falling into the very high

category. The definitions of low, medium and high were adjusted to suit local needs.

The top 30 report showed the highest used titles within each package. Three calendar years of COUNTER JR1 reports were reviewed to show the titles consistently being used heavily. The number of downloads were ranked to show their relative positions in the download chart in previous years. Titles consistently in the top 30 that were not a core subscription became a priority for substitution or subscription. A title that appeared in the top 30 once, but had low downloads in other years became a priority for investigation. Often these usage spikes were caused by technical difficulties as opposed to an increased demand for the title. Cost data from the package provider was added to show the costs for the highly used titles, along with the subject areas the title supported to give an indication of the research areas that would be impacted by a change in the subscription.

The metrics created reported on one complete year for each package. One consideration for the evaluation was which period should the analysis cover: academic/financial year, calendar year or contractual period. With staff resources in mind, a consistent approach was required for each package. This ruled out contractual period as the reporting period owing to the variations in subscriptions. Adjusting the reporting periods of the COUNTER JR1 reports were less problematic than adjusting the subscription agent financial reports which resulted in academic/financial year being the final reporting period. Although contractual period would be the most accurate reporting period the staff time required to calculate the metrics outweighed the benefit of this approach. For completeness, all three approaches were tested with the results showing a difference in cost-per-download of only a few pence.

Obtaining accurate title lists, and lists of the subscribed titles, proved challenging. Changes in personnel and information systems meant that this information was not readily available within the Library. Obtaining accurate title lists from publishers was time consuming and problematic at times, especially when ISSNs were absent from reports. The COUNTER JR1 reports initially provided an indication of the titles within the package. Reporting directly from these provided

inaccurate figures as the JR1 contains downloads for all titles provided by the publisher; the library did not necessarily have a subscription to all of the titles within the report. Once accurate title lists were obtained the titles that the library did not have access to were removed from the JR1 report to ensure accuracy in the reporting.

When reviewing the packages, the evaluations needed to consider the size of the target population that use the resource. For broad reaching publishers it was reasonable to assume that the majority of our STEM subject areas would use the resource, however for specialized resources which support niche research areas the size of the target population was considered when reviewing the quantitative metrics.

Review of the metrics helped highlight issues with some of the COUNTER JR1 reports received from the publishers. Longitudinal analysis of title-level usage highlighted unusual peaks within a package, and benchmarking between packages helped contextualize the usage data. Unanticipated large variations in usage were discovered between the packages. When investigated a variety of causes were discovered. Some included internal barriers to discovery and inappropriate cataloging which was rectified internally; others included the variation in resource design. As Bucknell³ discusses, platforms that provide the full-text for an article alongside the abstract will have inflated usage statistics compared to a package that requires the user to access the full text after reviewing the abstract.

The quantitative metrics, calculated within an Excel template and combined into one-page reports, proved to be a systematic and sustainable methodology for evaluating the electronic journal packages. It allowed the library to benchmark the packages against one another and provided the management team with an easy to digest report. It soon became apparent however that the quantitative metrics alone were not sufficient to inform decision making and demonstrate smart procurement. Statistics only provide a two dimensional view and should never be used in isolation. Article downloads are not necessarily equal to articles being read, used or valued. The metrics lacked a certain "So what?" factor; the Journal of Incognito had 2,500 downloads last year, but so what? In order to gather evidence of the

value of the electronic journals qualitative data was required.

As part of normal working practices, all academic liaison staff within the library aim to meet with the academic staff they support for a one-on-one discussion at least once a year. These discussions focus on what the academic staff member is working on, and how the library may support both their teaching and their research. As part of these discussions information was sought from the academic community on their use of the electronic journals. The library sought to identify who was using what, how, and what impact any cancellation would have on the academic endeavor. The library staff were provided with a template of interview style questions to support their discussions. To support the knowledge management of these discussions the library developed an in-house customer relationship management type tool. The Barrington Liaison Tool (BLT) is a database of academic liaison conversations which can be interrogated by course, department or academic staff member. Should a discussion cover resource usage, the text is tagged at the package level to enable qualitative comments to be collated and reviewed to inform decision making. A template was created and used for each package documenting who is using the resource, how they are using it, and what impact any cancellation would have on the strategic goals of the organization. This qualitative information was presented alongside the quantitative metrics for the package.

Combining the qualitative and quantitative measures enabled the library service to evaluate the electronic journals, enabling informed decision making and demonstrating smart procurement to senior stakeholders. The approach adopted was found to be systematic and sustainable. Both the quantitative and qualitative measures combined told the story of the resource. The next planned phase includes an evaluation of course reading lists to identify which articles the academics are recommending, where they are published and how frequently a journal title/article is recommended.

Previously the library had relied on cost-per-

download as the sole indication of resource value. With the new approach it was apparent that the resource which had the highest cost-per-download overall also had the second highest use and value to the institution; the cost-per-download metric was inflated owing to the exceptionally high cost of the resource. Cancelling the resource owing to its perceived poor performance would have had a large negative impact on the academic community.

Evaluation of this nature does require sufficient resourcing and in some cases up-skilling of library professionals. Library management should consider if an investment in this type of analysis is going to be of benefit to the library service. At Cranfield the results were successfully used to lobby against a proposed resource cut, safeguarding the electronic journals from a budget reduction. There is no guarantee that evaluation of this nature would safeguard information provision budgets, but providing some evidence of the impact a reduction in resources would have on your institution cannot harm your case if you are campaigning for funds.

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Notes

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Electronic Collection Assessment and Benchmarking to Demonstrate the Value of Electronic Collections

Stephen Miller

University of Maryland University College, USA

Abstract

University of Maryland University College, part of the University System of Maryland, provides a mostly online library in support of its educational mission to serve non-traditional, distance education students. While the library conducts an annual collection assessment on its collection of over 125 licensed research databases, the library also undertook two projects in 2009–2011 with the main goals of demonstrating the value and relevance of the database resources to the UMUC curriculum and to justify continuing and additional budgetary support. The first project involved conducting a library program review, based on the model of academic program reviews, including a self-study report and a review by external reviewers. The second project conducted a benchmarking analysis, comparing the database holdings and key collection metrics against those of a peer group. The methodology of both projects is discussed. The studies found that the database selection and expenditures are adequate or exceed expected minimum requirements in most cases and that the library's selection and collection review processes are sound. The findings were successfully used to justify funding for the purchase of additional databases.

Introduction

Part of the University System of Maryland, University of Maryland University College is "a comprehensive virtual university. . . focusing on the unique educational and professional development needs of adult students," with over 90,000 individual worldwide students.¹ The institution's focus is educating working adult and military students through mostly online distance education.²

UMUC's Information and Library Services (ILS), UMUC's mostly online library, is critical to the educational mission of the university by educating students in library and information

literacy to ensure their academic and career success, promoting information literacy within the university, and providing extensive online library resources and value-added services such as reference assistance, library instruction, and interlibrary loan for UMUC students, faculty, and staff worldwide.³ Because of the high population of remote distance education students and faculty, the core collection of the library consists of over 125 library research databases, mostly aggregator databases from EBSCO, ProQuest, Thomson Reuters, and the like.

With the economic downturn of 2008, UMUC departments faced budget reductions followed by several years of rollover budgets without annual increases. The library reduced the number of databases in its collections over the course of several years in order to control for inflation in database cost and to ensure that the collection expenses represented the most efficient use of university resources while still providing the research resources required by students and faculty. The need to objectively demonstrate and justify the need and rationale for each database became a necessarily high priority in budget planning. This presented an opportunity to use an evidence-based approach to show how maintaining the quality of the library resources contributes to achieving the vision, mission, and goals of the university.

Each fiscal year, the library conducts a thorough collection review and analysis to ensure that each individual database provides value for UMUC's academic programs, faculty, and students. This effort became even more critical after 2008 due to budget reductions. The annual project involves the library's Reference & Instruction and Electronic Resources Management teams, as well as document management and electronic reserves staff, systems personnel, and administration to ensure

input from all areas. Key criteria that are used in justifying retaining a database include database usage statistics, amount of full-text contained, relevance to the UMUC curriculum, overlap with other databases, cross-linking activity, and the usage of a database by librarians for instruction. Input from faculty and academic directors in UMUC's Undergraduate and Graduate Schools are requested through the library's liaisons to the academic programs to ensure that the curriculum is supported. At the end of this process a list of discontinuations, additions, and substitutions is created, which determines the electronic collections budget and collection changes for the following fiscal year.

In order to supplement the findings of this annual review process, additional studies and evaluations were required in order to more fully and completely demonstrate the value of the database collection to the university in a compelling and data-driven way. An initial project undertaken towards this end was curricular mapping which showed the applicability of each database to one or more academic programs. Most databases had wide applicability, covering the needs of or having potential use within many academic programs while at the same time having little overlap in content, with only a few databases specifically targeted towards the needs of a particular academic program. In addition, two additional assessment projects were developed, one to perform a "library program review" with external expert reviewers, and the second to benchmark UMUC's database holdings and relevant statistics against peer institutions.

Purpose

The purpose of the two projects was to:

- prove the reliability and effectiveness of the annual collection assessment process
- ensure that UMUC's electronic resource collections are competitive with those of peer institutions
- identify additional or alternative resources to be considered for the UMUC collection as replacements, substitutes, or additions to existing resources
- ensure compliance with professional best practices and expectations for database coverage
- demonstrate the financial value of the library database collection and justify continuing

and additional budgetary support for library resources

- provide objective evidence of adequate library support in accreditation reviews

Project 1: Library Program Review with External Reviewer Evaluation

UMUC periodically reviews its academic programs per University System of Maryland requirements.⁴ These reviews involve the creation of a self-study document analyzing the academic program and providing evidence for its quality along with future improvements and directions for the program.⁵ External reviewers then review the self-study and provided materials, conduct a campus visit to meet with primary stakeholders, and finally produce a report on strengths of the program and areas for improvement.⁶ In discussions about library assessment, our Provost at the time suggested following the same model and creating a "library program review" that would feature the self-study along with external reviewers to provide input on the comprehensiveness of the research database collections and their "fit" to the curriculum. The primary goal of this project was to ensure that the library research database holdings that form the core of the UMUC online library's collections were adequate to meet the curricular needs of five topic areas of critical strategic significance for UMUC:

1. Management and business (Doctor of Management, Master of Business and Administration, and undergraduate business programs and majors)
2. Community college administration, leadership and policy (Doctor of Management)
3. Education (Master of Arts in Teaching, MS/ Instructional Technology, Master's in Distance Education)
4. Information assurance and cybersecurity
5. Humanities and social sciences (psychology, sociology, humanities, and similar programs and majors)

By enlisting the expertise of reviewers from major academic libraries at universities with strong programs in particular subject areas, the library hoped to determine if the current selection of library databases was the best that can be provided given the available funding, if the selection of resources adequately met the academic needs of our students and faculty, and what changes or recommendations external experts suggest

for improving our resources, services, and library program overall. To conduct the study a library project team was formed consisting of the Associate Provost for Information & Library Services, the Assistant Director for Public Services, and the Assistant Director for Systems and Access Services.

The Self-Study and Report

Project 1 began in 2010 with a self-study and the creation of a self-study report. This report served to provide a snapshot of all aspects of the current status of the library and to formally document the library's resources, services, activities, and successes. The report was useful in explicitly describing the library as a formal record for advocacy within the university, and it served as the core document provided to the external reviewers in order to give them background and a complete understanding of the scope of library resources and services.

The report began with a broad overview of UMUC and Information and Library Services, then detailed library resources, the UMUC Archives and digital repository services, reference services and the student instruction program, the library's liaison program to academic departments, document delivery and electronic reserves, and the library's cooperation with the Graduate School in the delivery of the course UCSP611, Introduction to Graduate Library Research Skills. An overview of innovations that had been made to that date in online instruction methods was next provided, plus a discussion of our instruction for faculty. A section of the report focused on the behind-the-scenes activities of systems, web development, and multimedia development for teaching and learning. The library faculty and staff are highly active in national and state-level professional activities, and presentations, journal articles, and book chapters by faculty, and the library's involvement in the University System of Maryland and Affiliated Institutions (USMAI) library consortium were detailed in later sections.⁷

A SWOT analysis that had been developed with participation of the entire library staff during library's 2009 annual retreat and refined by the library's management team was an important part of the report. This provided a deep strategic analysis of the collective perception of strengths of

the organization, weaknesses that inhibit fulfilling the library's mission and goals, opportunities to pursue, and threats to the continued operation and relevance of the library.⁸

Detailed statistics on library operations were also provided as an appendix to the self-study document. These detailed input/output statistics such as reference questions received and answered, with a questions to headcount ratio, library instruction sessions and students reached, satisfaction ratings from the library's annual user satisfaction survey, and E-Reserves, document delivery and interlibrary loan, and circulation activity were included.⁹

The External Reviewer Process

Based on the available budget of the project and the anticipated workloads involved for staff and the reviewers, it was decided that four external reviewers would be needed to cover the five subject areas under review:

1. Management and business and community college administration, leadership and policy
2. Education and community college administration, leadership and policy
3. IT with an emphasis on information assurance and cybersecurity
4. Humanities and social sciences (psychology, sociology, humanities, and similar programs and majors)

Because we needed to ensure that the project and its recommendations carried substantial weight in order to use them to support additional funding and argue against potential funding cuts, the background and level of expertise and experience of the external reviewers was a critical factor. After considering several different ways of identifying potential reviewers, the project team decided to utilize the *U.S. News and World Report's* 2010 rankings of graduate school programs¹⁰ to identify the leading academic programs in the subject areas of interest. While certainly not without criticism in the academic community,¹¹ we needed a relatively objective method of identifying the leading programs and *U.S. News* rankings represented a reasonable and good enough tool for the purpose at hand.

After identifying four leading programs, the project team researched target librarians at those

universities' libraries, particularly looking for departmental liaisons and bibliographers or similar subject matter experts to contact. We reached out to the targeted professionals through e-mail and follow-up phone calls, and were able to nail down a panel of four consultants for the project. The reviewers were asked to sign contracts and confidentiality agreements due to the detailed amounts of internal data and information about UMUC academic programs that they would be asked to take into consideration.

The external reviewers were asked to:

1. Review the background materials provided on UMUC and Information and Library Services to understand the mission and goals of the university and library, the needs of UMUC's students and academic programs, the scope and purpose of the library holdings, and the library's budget and spending for electronic and other resources. Specific materials provided included UMUC's 2009–2013 Strategic Plan, the self-study document with SWOT analysis and library statistics, the library budget, the library's annual strategic goals and objectives document, database usage statistics and related analysis, and detailed information on the academic programs in each area under consideration.
2. Attend a synchronous, online orientation session which provided further information about UMUC, Information and Library Services, the scope and logistics of the project, and expectations for external reviewers and the deliverables.
3. Review and consider the research database holdings relating to their subject areas in light of their subject expertise and professional knowledge of the subject resources available on the market.
4. Provide a formal, substantive written report on their subject area including an analysis of how well the database holdings fit the academic needs of the university, the program or subject area under consideration, and its students, elucidating the perceived strengths and weaknesses of the current holdings. In addition, a list of additional databases that are critical to meeting the needs of students and a justification for each describing why the resource is necessary, taking into account the financial realities involved by ranking resources in priority order and suggesting current resources that could be discontinued in favor of the recommended resource were requested, as well as a list of additional databases that are recommended but not critical. List databases that were currently being provided but that were not critical or recommended, and provide information on any freely available, non-subscription resources in the subject area under consideration that the library should consider providing access to. Finally, provide any additional comments or observations on any aspect of the UMUC library resources, services, programs, or activities.
5. Attend a follow-up phone conference to provide a brief overview of the findings and answer questions from the UMUC project team.

The external reviewers were given a period of four weeks to complete their analysis and prepare their written report, then the project team reviewed the reports and individual phone conferences were held with each external reviewer to review the findings and address questions.

Findings

Overall, the reviewers confirmed that UMUC's library database collections are sufficient, adequate, and in many areas exceed expected minimum requirements in the subject areas covered by the project. This finding confirmed the quality and reliability of the library's annual database review and evaluation process, which involves both internal analysis and outreach to the university's academic departments for input and feedback. It was also a strong confirmation that the university's financial resources devoted to the collection are being well managed and put to use for resources that effectively support the curriculum. The strength of these reviews as important indicators of success came in large part from the institutional affiliations and the professional expertise and experience of the reviewers.

The biggest revelation and area of need that came from the evaluations was in the area of Information Assurance/Cyber security. The reviewer for this area noted that these are applied programs with a focus on real-world applications and hands-on skills development. The library database collection was well suited for theoretical, academic material,

but was lacking in the kinds of practical, practice-oriented materials needed by students learning the nuts and bolts of these disciplines. The addition of two e-book collections was recommended in order to fulfill this need and bring the collection more into balance, with substantial coverage of both theoretical and practical areas of the discipline. Thanks to the strength of the recommendation and the importance of a new Cyber security degree program being developed, the library was able to make a solid and successful argument for additional funding to the library budget for the purchase these resources, ProQuest Safari Books Online and Books 24x7.

The other suggestions made by the reviewers were considered as part of the annual database collection review process for fiscal year 2012, which took place from November 2010 to February 2011.

Project 2: Benchmarking Research Database Holdings

As a second project to evaluate the quality of UMUC's research library collection, in 2011 we used a benchmarking process to compare the database holdings and primary input/output-oriented statistics within a group of peer institutions. As described in the ACRL *Standards for Libraries in Higher Education*, "Benchmarking is widely used as a strategy to enhance institutional quality and effectiveness. . . The judicious selection and use of metrics can be used to develop a more informed picture of institutional standing within the higher education marketplace."¹²

This project consisted of two components: a database holdings analysis and a comparison of standard metrics with an identified peer group to see how UMUC ranks in areas such as collection expenditures, salaries, staffing, number of databases subscribed to, and activity data in areas such as reference transactions and instruction sessions.

Prior to undertaking these sub-projects, however, the first and quite difficult issue involved determining what institutions to include in the peer group. According to the ACRL *Standards for Libraries in Higher Education*, "A peer group can be identified using criteria such as the institutional mission, reputation, selectivity for admission, size

of budget, size of endowment, and so forth."¹³ However, because UMUC is a highly unique institution in its mission to serve non-traditional, working adult learners and military students primarily through online distance education, UMUC's closest peers in this particular higher education market segment tend to be the for-profit colleges and universities. Whereas public and private non-profits provide data openly through surveys like that of the National Center for Education Statistics and the ACRL *Academic Trends and Statistics Survey*, the lack of data reporting and data availability from these for-profit institutions makes it impossible to benchmark against them.¹⁴ Secondly, the for-profit competitors in the market segment typically do not make their library holdings viewable over the web to the general public in the way that most public institutions do, preferring to completely restrict the online library within a portal requiring student and faculty to log in for access. Therefore, we decided to focus only on public institutions for these reasons.

We then needed a way to systematically define a peer group made up of public institutions that could be considered similar in mission, student and faculty population, curricular focus, and library size/coverage. Carnegie Classifications were used as an objective and reliable guide for assessing potential peers.¹⁵ Four classification areas were focused on: the basic classification, the size and setting, the undergraduate instructional program, and the graduate instructional program. UMUC's classifications for these areas are:

- Basic: Masters-L
- Size and Setting: L4/NR (10k+ FTE, Nonresidential including Online-Only)
- Undergrad Instructional Program: Balanced/SGC (Balanced arts & sciences/professions, some graduate coexistence)
- Graduate Instructional Program: Post baccalaureate-A&S/Business (Post baccalaureate with arts & sciences (business dominant))¹⁶

The project team attempted to match as many of these as possible in selecting a peer group. While it was difficult to match all four, we could typically find overlap with other institutions in two or three of the classifications. We also wanted to include at least one University System of Maryland institution in order to make an in-state comparison. After an iterative process involving discussion with the

Provost to leverage his knowledge of UMUC's competitive environment and peers, the peer group was finalized as consisting of 12 institutions:

- Athabasca University, Canada
- BYU-Idaho
- Central Michigan University, MI
- Colorado State University-Pueblo, CO
- Eastern Michigan University, MI
- Excelsior College, NY
- San Jose State University, CA
- SUNY Empire State College, NY
- Towson University, MD
- Troy University, AL
- University of Central Florida, FL
- University of Wisconsin-Parkside, WI

Once the peer group was established the two sub-projects could get underway.

Sub-Project 2a: Peer Group Database Holdings Analysis

In 2002, Donald Schnedeker described making comparisons of database holdings within academic business libraries, however he noted that "this sharing has generally been considered an informal activity and has not been included in the selection criteria of the evaluation process for electronic resources."¹⁷ After making a case for using survey-based information for database collection benchmarking, he notes that "with the development of the Internet. . . access to this information is changing rapidly."¹⁸ Fortunately for the purposes of our study, the trend towards greater availability of information online now makes it much easier to compare database holdings. It was found that eleven of the twelve institutions in the peer group make their lists of library research databases publically available online at their institutional websites. The methodology for this part of the project involved pulling the A-Z lists of research databases from each Web site and compiling the data into spreadsheets for analysis.

The first step in this process was to harvest the A-Z database lists. Due to the one-time nature of this project, this was done largely through a manual process, however if repeatability was a critical issue a more efficient route would be to develop scripts to perform this function. Each institution's lists were copied from the websites and placed into a text file for each institution, including UMUC's list.

All HTML coding and extraneous elements such as graphics such as full or partial-text indicators, "more information" links, and the like were removed to give a simple list of the databases arranged alphabetically by title.

After harvesting and reviewing the data, we realized that different schools utilize different approaches to their A-Z lists. Some schools take an inclusive approach and include both subscription databases mixed with freely available databases, such as PubMed, links to individual e-journal subscriptions, and links to library sites and the like. Others take a more restrictive approach and include primarily only the subscription databases that are licensed from vendors. UMUC falls into the latter camp on this issue.

A second issue that was discovered was that not all institutions name the same database in the same way on their A-Z lists. As an example, UMUC lists *ProQuest Dissertations and Theses* under "D" as "Dissertations and Theses (ProQuest)" with the rationale that students will look under "D" for "dissertations" rather than "P" for "ProQuest." Other institutions may put this database under "P" since that is alphabetical by the database's actual name as given to it by the vendor. Some institutions would also combine databases from one vendor and simply point to that vendor's portal, while others would split out the individual databases by name. An example of this was the various *Economist Intelligence Unit* Databases, for which UMUC provides a link to each individual database, however others simply linked to "Economist Intelligence Unit" as a whole rather than breaking out the components.

As a result of these issues, much cleanup was needed. The project team combed through the individual lists numerous times to identify discrepancies among the lists and regularize the data, relying especially on the Assistant Director for Public Service's extensive reference experience and knowledge of the database marketplace to identify free vs. licensed databases and cull out non-licensed items. Sometimes research was needed to determine what kind of resource a particular database title was and whether it was a subscription or free resource. The project team realized just how human and "messy" library A-Z database lists are (UMUC's being no exception),

relying on non-standardized local practices and local judgment of community needs and usability practices, in addition to being prone to errors and inconsistencies arising from their development over time.

After a reasonably clean set of individual lists was prepared, the lists were combined into a single comparison chart in an Excel spreadsheet table as shown in Figure 1.

Figure 1

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	DATABASES - ALPHABETICAL LISTING	TOTAL	UMUC	ATH	BYU-I	C. MI	CO ST-P	EAST MI	EMP ST	SJ ST	TU	TROY	UCF	WI-PKSD	EVALUATION
2	TOTALS		132	303	329	187	118	202	98	310	197	136	380	175	
3	19th Century British Library Newspapers	1			1										B
4	A to Z Maps Online	3			1	1					1				E
5	A to Z World Culture	1						1							E
6	A.D.A.M. Interactive Anatomy online	1			1										B
7	ABC Clio Ebook Collection (selected titles)	1									1				D
8	ABI/INFORM	12	1	1	1	1	1	1	1	1	1	1	1	1	A
9	Abstracts in Anthropology	3				1		1			1				D
10	Abstracts in Social Gerontology	2									1		1		D
11	Academic ASAP	1											1		E
12	Academic OneFile (UMUC Discontinued FY10)	6		1		1		1	1			1	1		E
13	Academic Search Complete (Addition to A.S. Premier)	5	1	1					1			1		1	A
14	Academic Search Premier	10	1	1	1		1			1	1	1	1	1	N/A
15	Access Medicine	2										1	1		B
16	Access NewspaperARCHIVE	1												1	D
17	Access Pharmacy	1											1		B
18	Access Science (UMUC Discontinued Y12)	3		1								1		1	F
19	Access World News Research Collection (NewsBank)	1			1										C
20	AccessEngineering (McGraw Hill)	1		1											B
21	Accounting & Tax	3			1			1			1				E
22	ACLS Humanities e-Book Project	5		1	1		1		1				1		C
23	ACM Digital Library	9	1	1	1	1		1	1	1	1		1		A
24	ACM Online Guide to Computing Literature	1									1				C
25	Advanced Polymers Abstracts	1											1		B
26	Advertising Age	1			1										E
27	African American Biographical Database	1											1		F
28	African American Experience	1								1					F
29	African American Music Reference	2			1									1	B
30	African American Newspapers, 1827-1998	1									1				B
31	African American Song	1		1											B
32	AgeLine	3	1	1							1				A

Combined in this way, inconsistencies were now more apparent and more easily spotted, so further rounds of data review and cleanup took place, primarily to sort out database name discrepancies at this stage. Fields were added to total the number of databases listed by institution and the number of institutions subscribing to each database. This table was 1,190 databases long, arranged alphabetically by database title. The database titles that UMUC

subscribed to were color coded so that they would be easily recognizable in the spreadsheet.

The next step of the project was to review each of the 1,058 databases in the table that were not licensed by UMUC. A letter and color coding system, shown in Figure 2, was developed to indicate six categories into which a database on the spreadsheet may fall.

Figure 2

EVALUATION CODES/ COLORS:			
A	UMUC (or USMAI) currently subscribes		
B	Not applicable to UMUC curriculum, would not purchase		
C	Applicable to curriculum, but additional funding needed		
D	Possible applicability to curriculum, review in next review cycle		
E	Nice to have, not critical, only if funding available		
F	Would not purchase, overlapping content or not useful		

Two major questions arose—if several or all of the other schools subscribe to a database but UMUC does not, why not? If UMUC subscribes to a database but few if any of the other members of the comparison group subscribe, why is that? We looked especially carefully at databases falling into these two categories. To help address these questions, separate arrangements of the data were created as additional spreadsheet tables: the databases arranged by most subscribers, and the databases that only UMUC subscribed to ranked by the number of subscribers. In addition, a table was created arranging the databases by the evaluation codes shown in Figure 2, which helped facilitate review as part of the annual database assessment and review process.

It was found that in the cases in which several other schools subscribed to a database but UMUC did not the reason was that the database did not fit our curriculum or that we had adequate coverage of the topic in another database. In the cases in which only UMUC subscribed and others did not, the database was supporting a particular part of the UMUC curriculum that was not covered by other resources.

Sub-Project 2b: Metrics Analysis

This sub-project was a standard input/output metrics analysis comparing key metrics that the project team and Provost wished to explore with those of other institutions, using ratios when appropriate to make the data more understandable. Fortunately these input/output evaluation processes are mature and well defined in the literature.¹⁹ National Center for Education Statistics data and the IPEDS

Data Center tools were used to generate the comparisons, which were then exported as an Excel spreadsheet and edited for presentation.

The comparison metrics we chose for this project included:

12-Month Enrollment by FTE

Staff

- Number of Librarians
- Number of Other Professional Staff
- Librarians and Other Professional Staff per 1,000 FTE
- Total Staff
- Total Staff per 1,000 FTE

Salaries

- Total Salaries
- Total Salaries Expenditure by FTE

Collection Expenditures

- Total Collection Expenditures
- Total Collection Expenditures per FTE

Library Expenditures

- Total Library Expenditures
- Total Library Expenditures per FTE

Holdings & Activity Data

- Number of Databases
- Instruction Sessions
- Reference Transactions

The comparison group, state, and national average and median were produced for each category.

An important decision that was made was to focus on total collection expenditures rather than subcomponents of that figure such as electronic resources expenditures. In initial comparisons the database figures did not appear to be consistently reported across the schools in the peer group. This led to a discussion of how to effectively compare UMUC's unique situation, in which almost the entirety of the library collection expenditures go toward licensed research databases, with only a very small percentage by comparison going towards print serials and books. It was decided to focus on a one-to-one comparison of total expenditures with the rationale that what was most important is the ratio of expenditures per FTE. Even though a more traditional library will split those expenditures between electronic resources, serials, and books, the more important aspect was felt to be the total amount spent per student in comparison to other institutions.

Conclusion

As described in *The Value of Academic Libraries* report, library stakeholders tend to focus on financial value in addition to impact value and that "librarians must demonstrate that academic librarians manage their financial resources well."²⁰ While the two projects undertaken at UMUC could not present true outcomes-based assessment metrics, they do provide credible, objective evidence to financial value-focused stakeholders

that the funding for the library's electronic resources collections truly ensures that students and faculty have the necessary resources that support their academic programs, that the selection and collection management practices used by the library are sound, and that UMUC is competitive within its higher education market segment when it comes to library resources. By combining both qualitative and quantitative data with the expertise and perspectives of expert external reviewers to demonstrate the value of electronic resources and the efficiency of the management process, the UMUC library has successfully made the case for both sustained and additional funding for electronic resources to support the university's academic programs.

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Closing Panel Remarks: The Assessment Conference from the Research Library Perspective

Robert Fox
University of Louisville, USA

My remarks today are intended to provide a summation of this week's conference and programs from the research library perspective. In doing so, I hope to highlight some of the major themes I heard and relate how these might be valuable to my colleagues at other research libraries.

To frame why this conference and its programs are important to me, I want to relate three very short stories:

1. When I was interviewing for the Dean of University Libraries position at the University of Louisville two years ago, I had a private meeting with the Provost. In that meeting, I described how difficult it can be to reflect quantitative measures of the library's value that would relate directly to the institution's quantitative objectives scorecard. The provost leaned forward and said "I'm ok with qualitative and quantitative measures."
2. I was offered and accepted the position at Louisville but in my first 18 months, we took three budget cuts which resulted in the loss of \$500,000/year in permanent funding.
3. We were facing a fairly substantial cut during the third budget cut and I indicated that a loss of that magnitude might result in a large number of journal cancellations. The provost asked me if faculty and researchers used our journals enough that this would have an impact on them.

Why these three stories?

Well, first, you have to know that I was at Georgia Tech prior to Louisville. In working with three provosts and two presidents there who were all engineers, if it wasn't hard quantitative data in front of them, it didn't matter. Working with a provost at Louisville who was fine with qualitative data opened up a new world of assessment opportunities. We've seen here over the last

few days a number of examples of tools that are available to us.

With the second story of the three budget cuts, with each cut, the provost would ask if we couldn't save some money through collaborations—a theme that recurs frequently and for which you need to have a good answer.

And with the third story about the provost asking if faculty would miss journal content, this illustrates why we want to have handy data around to answer these types of questions and, perhaps more importantly, why we shouldn't assume our stakeholders know what we do or why we do it.

In our initial keynote this week, I heard a statement that helped shape my thoughts through the conference. In that address, Dr. Lombardi gave a very concise definition of what higher education institutions provide in that for their tuition dollars, students buy a combination of education (degrees/courses) plus institutional brand plus an experience (residential, online, etc.) So the questions we face are how do our libraries fit into this equation and how do we let others know how we fit in as well?

I've identified a few of the threads that I've noted in various sessions this week that I think help with those questions and, in so doing, address the potential value of this conference for research libraries.

First, I heard repeatedly that we have to have a story to tell. Now, that story will vary considerably from one institution to another, but some elements of that story might include:

- The value and use of our special collections
- How libraries move the institution's strategic plan forward
- How libraries can raise the institutional profile

- How our libraries help attract and retain students and faculty
- How libraries meet user needs

Even though I mentioned qualitative studies earlier, I was particularly impressed by some of the *quantitative* projects I heard during the conference about measuring that last point, the effects on our users.

John Stemmer of Bellarmine University related a study linking individual student data to library data. This study showed a correlation between library usage and variables such as student retention and graduation rates. Similarly, Michael Rawls at Virginia Commonwealth University discussed a study that looked at faculty publication rates at research universities. The study showed a positive relationship between the library's e-material spending and the number of faculty publications on campus in a given year.

While both of these projects touch on issues of value to users, in this case students and faculty, more importantly, the projects produce results addressing factors considered critical by our campus administrators.

The second thread is that we have to mobilize our constituencies. This has been valid in my personal experience where I have often found it far more effective to have our users express concerns to campus administration than to have one more dean whining about funding.

The third message is that we can't go it alone. This involves collaborations with other institutions and with other campus units at your institution. But we can't assume that collaborations are beneficial solely because they are collaborations. Here, I note the work of the Orbis Cascade Alliance in seeking to explore metrics in determining the value of consortial activity.

The fourth thread is that we need to grow the role of libraries. An example was noted by one of our keynoters indicating that libraries should

seek a greater role in the accreditation process. I also commend Brian Mathews for exhorting us in his session to not just look at making incremental improvement to our existing processes and products but to look for opportunities to make discontinuous changes that capture the attention of our users and funding sources. Brian provided an old Bell Labs slogan of taking "A strange sideways leap."

The fifth thread is that we need to exercise "in your face advocacy." We can't be quiet, sit back and expect others to recognize our value. We should be out there fighting for funding. In his remarks, Dr. Lombardi stated that the power at a university is tied to those who are spending the university's funds.

My sixth point is that if doing everything you have heard about at the conference sounds exhausting, I liked one comment in particular by Elliott Felix when he described the Tiers of Assessment. Felix notes that while there is an increasing value of results associated with increasingly more difficult assessment work, value still exists even in some of the simplest assessments we might do.

Even with this concept, I'd say that my impression is that it will become increasingly important to have personnel who are dedicated to assessment and this definitely is the case at research institutions. This is my third Assessment Conference and I've seen the field continue to grow in sophistication. But the consequences of not having dedicated assessment positions at research libraries grow as well as funding sources are increasingly tied to performance and value measures. In closing, I will say that I am taking my own advice and Louisville has created its own first full-time assessment/user experience position. While we have had (and will continue to have) a committee that works with assessment issues, I believe it is critical for someone to "own" this increasingly important agenda.

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Closing Panel Remarks: Building the Assessment Librarian Guildhall: Criteria and Skills for Quality Assessment

Megan Oakleaf
Syracuse University, USA

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As a long time attendee of the conference and member of the planning committee, Megan reflects on the criteria that would ensure quality work in library assessment. She describes three “quality

criteria that may guide library assessment guild practice: 1) an emphasis on value, 2) the use of the right tools and data, and 3) the generation of decisions, actions, and communications based on assessment results.” She encourages to think about the “collection of specific, exact, individualized data” to enhance the quality of our studies and she concludes with an admonition for establishing the criteria needed for the assessment librarian guildhall.

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