New Roles for New Times:

Research Library Services for Graduate Students

December 2012

Lucinda Covert-Vail
Scott Collard

New Roles for New Times:

Research Library Services for Graduate Students

December 2012

Lucinda Covert-Vail, New York University

Scott Collard, New York University

ASSOCIATION OF RESEARCH LIBRARIES

New Roles for New Times:
Research Library Services for Graduate Students

December 2012

Report Prepared for the Association of Research Libraries by

Lucinda Covert-Vail, New York University
Scott Collard, New York University

Available for download at **http://www.arl.org/rtl/plan/nrnt/**

Contents

Introduction

In its 2010 report, *The Path Forward: The Future of Graduate Education in the United States*, the Commission on the Future of Graduate Education in the United States (the Commission) identified the following challenges to the graduate education system:

- Identification and attraction of talented students
- Improvement of student completion rates
- Clarification of nonacademic career pathways for graduate students
- Effective preparation of future faculty
- Inclusion of a professional development component at all levels of graduate education, both master's and doctoral

Graduate education programs at research universities, through the curricula, degrees, supporting services, and program offerings, are responding to these challenges.

Research universities are increasingly concerned with building comprehensive programs for their graduate students that focus on quality of life, professional development opportunities, and alternatives to traditional career routes, in addition to curriculum and academic development. They are building communities of support, providing spaces that meet the demands of today's curriculum and technologies, creating forums for students to present research, and developing opportunities that foster both independent and collaborative work. Universities are also working to help graduates compete in a global economy. Pressured to keep down costs, and facing competition from for-profit higher education, universities are developing new models for maintaining high-quality services and high productivity. The research library must be a key partner in this changing environment.

The rise of master's programs at research institutions, along with changes in teaching and learning practices, graduate student lifestyles, multidisciplinary research practices, and new forms of scholarly communication, constitute additional evidence of transformation of the graduate student experience. Internal to libraries, drivers of change include diminishing financial resources, changing patterns of collections usage, and increasingly entrepreneurial librarians. Taken together, they present challenges and opportunities for research libraries to think about graduate students in a new way.

In addition, one significant component of change in graduate education is the recent and significant increase in enrollment. According to the National Center for Education Statistics, "Post baccalaureate enrollment fluctuated during the period from the mid-1970s to the early 1980s, but between 1983 and 2010 it increased from 1.6 to 2.9 million students. Fall enrollment in post-baccalaureate programs is projected to increase through 2021 to 3.5 million students."[1]

These challenges–the changes occurring at the academy level and the increasing graduate student population–present opportunities for research libraries to reconsider their approach to graduate student services. Discussions about specialized services, spaces, and instructional programming for graduate students began within the research library community as early as 2007. The Council of Graduate Schools' 2007 report, *Graduate Education: The Backbone of American Competitiveness and Innovation*, an ARL-CNI forum on enhancing graduate education that same year, and an ARL SPEC Kit on graduate student and faculty spaces and services in 2008, all contributed to a new conversation about graduate student education and the library's role. At the same time, research libraries began to embrace a more expansive view of assessment, with some participating regularly in national studies such as LibQUAL+®. Others conducted their own assessments, including the University of Minnesota and University of Washington (UW), or used the more ethnographic, experiential approach of the University of Rochester. Through these activities, research libraries heard directly from graduate students about their needs and used that feedback to develop, rethink, and augment library services.

In the past six years, a number of studies centered on how libraries can better serve graduate users.[2] These studies found that targeted services, programs, and spaces are required to foster true graduate student communities. They also documented that graduate student communities themselves are incredibly varied and disparate. Before research libraries can create improved services and spaces for graduate students, they need to first define those communities and assess the full spectrum of their wide-ranging needs.

This report presents findings from interviews and a scan of the current state of graduate student programming, and it identifies some of the opportunities and programmatic initiatives across ARL libraries primarily. To compile this report, interviews were conducted with leaders of services and spaces at ARL libraries focused on graduate students, and one non-ARL library (Oregon State University) with active graduate services. The report synthesizes trends, themes, and approaches, notes divergences among selected institutions and creates a snapshot of some of the new approaches and thinking related to delivering services and resources to graduate populations. Findings indicate that research libraries are developing new ways to assess and advance the graduate research process and enhance graduate education in partnership with their institutions, thereby addressing some of the challenges posed by the Commission. Recommendations and strategies for serving graduate students more effectively in the new climate are provided.

Four principal areas of particular energy and interest emerged among those institutions studied. They are briefly described below and elaborated upon in the body of the report.

- *Segmented Services*: The heterogeneity of the graduate student population requires dedicated, programmatic, and segmented services. Key variables in graduate student diversity include demographic pressures; resource inequality among academic departments, programs, and even the terminal degree sought; the academic lifecycle; and the consequent multiple roles graduate students occupy. As a response, libraries are redesigning instruction, consultation, outreach, and technology services across the spectrum of needs. These services tend to be segmented and marketed for diverse students, rather than a generic "all graduate student" approach. As a result, continuous assessment of the target populations is a key component to initializing and sustaining these new services and programming.

- *New Use of Space*: The growing need for collaboration—particularly across disciplines—and for services from multiple library or campus providers leads to new use of library space. Libraries are redesigning, reimagining, and renovating their physical spaces to meet these new user needs. Key trends influencing space include growing collaboration and interdisciplinary research; divergent and unequal options for campus space available to graduate students, resulting in the library's potential to level the playing field; and the integration of library services with other campus service providers. The research commons movement, with its multidiscipline, multi-method collocation of staff and technology resources with graduate-appropriate physical spaces, is one prominent model found in today's research library.

- *Partnerships*: Libraries are leveraging their partnerships with academic and administrative units across campus to enhance the quality and efficacy of graduate-focused services and spaces.

- *New Organizational Structures*: Libraries are reexamining organizational structures in order to meet the changing and growing demands of graduate student education. Research libraries will need to cultivate and recruit for the new roles, relationships, and expertise needed to provide for dynamically evolving graduate student services.

Methods

Interviews were conducted with a sample of librarians and library directors who are providing innovative services to graduate students. Institutions and individuals were identified via library literature and professional activities, suggestions from contacts at institutions and other interviewees, and advice from ARL staff. Those interviewed were asked how research libraries and librarians are aligning themselves and their processes to meet the changing needs and demographics of graduate education within the academy. Interview questions focused on segmentation of users and the development of corresponding services and spaces; changing organizational structures and alignment within and outside the library; and redefinitions of staff roles, education, and training. Institutions interviewed included the University of Washington (UW), University of Guelph, Cornell University, Oregon State University, University of Illinois Urbana-Champaign (UIUC), New York University (NYU), University of Connecticut, Oklahoma State University, and Indiana University, Bloomington.

A multidisciplinary literature review was conducted, including both higher education and the library and information science fields, to identify trends, model programs, and institutional or individual leaders.

Key Findings and Recommended Strategies

- **Develop a suite of graduate student services**. Research libraries should align and design their services for the full spectrum of the graduate student lifecycle—teacher, student, scholar, writer, and researcher. Libraries can organize around interdisciplinary research and address experiences that apply across disciplines, departments or schools, such as capstones, dissertation writing, and comprehensive examinations and involve graduate students and their corresponding faculty/advisors in the planning and development process. Existing library initiatives such as the institutional repository, scholarly communications programming, and library instruction, should be reframed or re-characterized, to resonate with the graduate students and their academic lifecycle. Finally, libraries should develop informal learning and networking opportunities and take advantage of social networking tools to create opportunities for graduate students to work and learn collaboratively and develop communities of practice.

- **Create new spaces for graduate students that fit the way they work and that contribute to building community**. Whether they are impromptu space conversions or formal renovations, focusing on key aspects of graduate student needs around productivity and community can make a big impact. Functionalizing spaces around tasks, user groups, or service needs can increase their productive value for graduate students, while small changes—such as adding writable surfaces to a hallway or other gathering place—can help enhance community creation. Once implemented, libraries should continue to assess space usage and reframe or enhance as needed.

- **Create an internal organizational structure for supporting graduate student services and assessing their needs.** Support structures can take many forms. Libraries might establish an ongoing graduate student services working group with responsibility for assessment as well as program development, capitalize on the experience of newer librarians and staff who have recently experienced "grad life," mine in-house talent, or create teams of subject and program librarians.

- **Create strategic alliances and collaborations with others on campus.** Libraries should align their services with university or school graduate services initiatives and create cross-campus relationships, establish a graduate student services "network," and identify primary and secondary partners. Libraries

can look for pressure points, trends, or stumbling blocks within the university and identify the library's complementary strengths in people, space, and technology. They should seek partnerships that meet unfilled needs or expertise that neither partner can fulfill individually. On the academic side, libraries should consider partners such as the graduate college or the Provost office. Administrative options are as diverse as offices of graduate student life, university information technology, teaching excellence centers, writing centers, or institutional review boards. Staff at all levels should be encouraged to form strategic academic or administrative alliances, including frontline librarians, deans and directors, associate university librarians, and department heads.

- **Create an organization that encourages innovation, experimentation, and learning.** Developing graduate student services requires developing library staff. Libraries should review positions and organizational structures in light of graduate student needs, encourage entrepreneurship and pilots, create new partnerships between existing departments and individuals in the library, and adjust structures as needed.

- **Learn from other research libraries and share your experiences.** Though the graduate community in each institution will have its own, unique characteristics, they have much in common, too. Research libraries should take advantage of existing mechanisms to share information about activities, programming, and outreach. There are opportunities to collaborate on the development of assessment tools and to identify cross-institutional best practices, benchmarks, and appropriate standards. ARL, EDUCAUSE, and other organizations have orchestrated this opportunity in certain areas, and library leaders should expand their traditional resource-sharing practice by considering service development and provision, instructional capacity, and joint assessment techniques/practices.

Segmented Services

The interviews identified a number of broad-based graduate student needs and resulting library challenges. In some cases, the challenge is the perceived inequalities among graduate students—what interviewees at Indiana and NYU called the "haves and have-nots." Graduate student services and support may have been initially configured for doctoral populations, but with the heavy growth of master's students, these doctoral services may no longer fully match demographic realities in the academy. Master's programs may be effectively sealed off from the rest of the academic department, considered standalone, and therefore not receive information about resources and services that the library provides. Even those in traditional academic departments, based on demographics and background, more closely resemble professional master's students than doctoral students. Regardless of discipline, master's students tend to be more itinerant, more likely to have a job, to have families, and to be international students than their doctoral counterparts, and both Washington and NYU noted that these realities account for a greater emphasis on "library as place" among this demographic. Indeed, even within the doctoral community itself there can be discrepancies, especially regarding departmental space and resources between academic departments. This can lead to greater reliance on the library and other central university services.

One Cornell interviewee noted a related problem that occurs as the academy expands programs in interdisciplinary studies. Students in these areas may be doubly disadvantaged. Not only do they potentially lack a clear department "home" from which they might receive communication and support about library resources, but they also may not have dedicated library liaisons and may be uncertain who to contact for assistance. (Indeed, even senior faculty members face language and methods challenges when crossing into other disciplines.) Likewise, the increasing emphasis on globalization in higher education—thematically within programs (e.g., "global public health"), and geographically at sites and programs with international

footprints—creates stresses as well. Students within global programs may not have sufficient language skills, or may find that our collections are not fully adequate geographically to support these programs. Networks of support from traditional area specialists coupled with the expertise of subject specialists may be required. For students within these interdisciplinary and/or global programs, then, these potential disconnections exacerbate problems in areas of intense interest and growth in the academy.

Another point raised repeatedly in the interviews is that academic institutions have unrealistically high expectations about incoming students' research and technology-related skill levels. As pointed out by an Oregon State interviewee, faculty who were perhaps more accustomed to more uniform doctoral, "apprentice professor" track students, expect a level of sophistication that many new graduate students do not possess and that the faculty themselves do not have time to teach. These missing skills include awareness of the tools and methods of the disciplines, and even the process of developing research interests and topics. Moreover, the overall range of research skills that a graduate student might need to master has expanded. Today's graduate student must be well-versed in resource and bibliographic management, basic technical literacy, and the sound use of more powerful discovery and delivery tools. Even further, these skills might also extend to analytical and methodological skills where more intensive technology training may be warranted—for example, in evaluating and processing quantitative data; working with geographic and geocoded materials; using text or data mining and analysis tools; producing sophisticated visualizations, imagery, or online tools; using high-performance computing; and many other emerging areas of digital scholarship. In this new environment, almost any incoming graduate student could need some form of remediation.

Broad-based Instruction

Potential solutions emerged from the interviewees to the problems of outmoded communication structures and skills gaps. The first was orientation towards core research behaviors that have become nearly ubiquitous in the modern academic environment and yet the clear domain of no single service provider. The best example of this trend—and overwhelmingly the most cited instructional intervention—is teaching basic proficiency with bibliographic management software such as Endnote and RefWorks. Efficient resource management, a critical skill in an information-saturated environment, often falls between the instructional cracks. Is it the domain of library instruction departments, individual subject librarians, or academic IT? The answer seems to be all of these and none. In fact, Oklahoma State University reported that this problem contributed to the creation of a graduate student liaison. Instruction previously regarded as "around the edges" (as one interviewee put it) of traditional instructional activities has become a core need and service.

Interviewees at UIUC, NYU, and others reported that students are increasingly looking to the library to support them in using note taking, mind mapping, social networking, and institutional repository tools. Interviewees mentioned moving into more process-oriented instruction, by helping graduate students create poster sessions, make a PowerPoint or other visualization, or organize working groups. Lastly, interviewees reported demand for "softer" skills support to address time management, writer's block and other writing issues, and sustaining individual motivation. In the case of almost all those interviewed, but particularly well-illustrated by the University of Guelph's Graduate Student Learning Initiative (GSLI), libraries are pursuing partnerships with writing centers, teaching support units, career services, and many other support services (for more on this, see "Partnerships" on page 14). The use of digital resources and services is increasingly central to the work of today's graduate students with the resulting growth in demand for instruction in using, visualizing, and manipulating data of various kinds.

The growth of graduate instructional needs has outpaced the library's ability to rely on subject specialist liaisons to meet all graduate student needs in addition to their other responsibilities. Some libraries are creating "co-branded" services that take advantage of librarian skills as well as those of technologists,

statisticians, geographic data specialists, and media production personnel. NYU, the University of Guelph, and others are working to implement service centers to support the use of data and visualization processes. It is not only necessary to provide access to technologies and resources, but also to support those resources with instruction and expert assistance. These service centers, which some libraries are beginning to consider core offerings, work with graduate students to bring their software and processing skills up to a higher level. Due to staffing levels and available expertise, however, they may be under-resourced when it comes to responding to questions of methods, analysis, and discipline-specific standards. This is an opportunity for partnerships with academic departments or to create new staff positions within the library.

Lastly, there remains extensive demand for support of many of the library's more traditional responsibilities. Libraries mentioned teaching the use of interdisciplinary tools and processes that can help extend a graduate student's research "reach." Interviewees reported that graduate students are often unaware of some of the simplest but most important systems, including using WorldCat to find materials outside of their home institution, understanding the intricacies and value of citation indexing tools, making better use of Google Scholar, using current awareness tools to become engaged in the scholarly life of a field, finding governmental and gray literatures, and more.

Demographically or Lifecycle-Segmented Services

Deeply embedded within the question of providing instructional support to graduate students is the growing realization of how heterogeneous our graduate populations have become. This heterogeneity exists not only in the divide between master's and doctoral programs, but also in the multiple programs, academic lifecycles, demographic realities, and life/work balance issues inherent to these populations. Several interviewees reported an enhanced degree of difficulty in outreach, service provision, timing, and approach in dealing with highly diverse graduate students, and as such highlighted the need for developing and deploying responsive, targeted services. Chiefly, the interviews turned up a number of potent demographic markers that help institutionis understand these students, including:

- Students with full time jobs in addition to their studies
- Students with intensive family obligations
- Students who have been out of the academic setting for extended periods
- Students in mid-career change mode
- International students, for whom language, the academy, and North American library culture may be unfamiliar

Librarians at multiple institutions also noted significant service implications of their students' academic lifecycle, throughout which a student's needs change dramatically as they progress through their programs. An Indiana interviewee mentioned an ongoing attempt to conceptualize their university's graduate student populations into four different categories—as learners, researchers, teachers, and producers—and then align services along that continuum. NYU, UIUC, University of Guelph, and others noted similar points, and broke these into distinct segments that could prove useful for service alignment. The most commonly noted areas of academic lifecycle alignment were:

- *Reader and learner*—trying to become acquainted with a field and its literature
- *Teacher or "becoming teacher"*—learning to apply pedagogy to deliver course content
- *Researcher*—collecting data in field sites or through available resources
- *Analyzer and synthesizer*—processing and analyzing data collected
- *Writer*—learning how to stay motivated, finding the space and mutual support from others

- *Proto-author*—orienting towards publishing, copyright, and scholarly communications
- *Archiver*—depositing data or final products into library (or other) repositories
- *Job hunter*—taking the next academic or professional step

Understanding students' broad demographic and academic lifecycle markers is helping many libraries tailor services appropriately, including adjustments in the time services are offered, wider offerings of asynchronous instructional services such as video tutorials, and various levels of remediation for reentering students. At NYU, librarians find that focusing on easy-entry tools like RefWorks can expose anxious students both to new processes and workflows and also to the value of incorporating such tools into their research lives.

A number of institutions reported services aimed at re-orienting those who have been out of the academy for extended periods. These services tended to be configured with the master's student population in mind, as the skills deficits and lack of training opportunities elsewhere seem most glaring among these students. Indeed, a number of interviews revealed a perceived, pervasive attitude among faculty or other campus units that acquiring basic research skills is the job of the graduate students themselves and not the academic department to teach. Interviewed libraries keenly felt the pressure to help lift these students to proficiency, as they noted that master's students often feel less connected to libraries and resources, are more likely to be taxed by externalities like work and family, and feel anxiety about their re-entry into academic life.

Graduate students are in some cases also teachers or "proto-teachers." Effective pedagogy and instructional approaches and methods may be something that graduate students are learning in their departments or graduate college, through a center or non-academic program, or from one-on-one interactions with advisors or peers. The interviews indicated the importance of creating strong partner relationships with those working with graduate students. The library's role in helping students as teachers is evolving. Some librarians interviewed mentioned helping emerging teachers use library resources to enhance their teaching, assisting with technology, educating teachers on learning management systems in planning and delivering their courses, helping teachers navigate copyright and fair use, and providing "neutral ground" for multidisciplinary teaching groups to meet. At least one institution interviewed is participating in a teaching assistant (TA) "peer mentorship" program aimed at helping graduate students improve their teaching skills.

NYU has developed services geared to help those going through the proposal writing process. These include classes aimed specifically at master's students gearing up for their capstone projects and doctoral students preparing their prospectuses. Irrespective of subject focus, there are building-block approaches where students across the disciplines can benefit from non-subject specific knowledge, including tools (such as citation indexes); processes (accessing special or difficult-to-get items in collections or via interlibrary loan); current awareness habits (alerting tools and feeds); content or format modeling (using dissertation abstracts to see others' work in your department or school); grant-funding support; and other core competencies of bibliographic management.[3]

A cluster of lifecycle interventions exists to support dissertation writers, in particular for doctoral candidates, with instruction they are not likely to get from their academic departments. For example, UIUC library provides sessions on "getting past writer's block" and the libraries at NYU facilitate matching of dissertation writers' support groups. However, the interviewed libraries most often mentioned that they provide "last mile" services for writing the dissertation product itself, including an awareness of the following scholarly communication issues:

- Understanding your choices and rights in releasing your dissertation to ProQuest
- Understanding your rights as an author when looking to publish your dissertation
- Knowing about copyright and the restrictions it can place on your dissertation
- Understanding publishing choices around open access and scholarly communication
- Deploying strategies for approaching editors and otherwise "shopping" your content

Outreach

A core concern expressed in interviews centered on creating and sustaining outreach and messaging activities that effectively market library roles in supporting graduate education. There are a number of complications in providing perpetual outreach, but the biggest overarching challenge may be simply communicating with students in the "sealed-off" masters programs. Frontline staff at Oregon State, UIUC, NYU, and others commented on the difficulty of even disseminating information to master's students. Library liaisons may communicate with faculty in their departments, who in turn spread word to their doctoral students; but there the communication stops. As one University of Guelph interviewee pointed out, there is a further challenge in getting graduate students to understand that the research library provides services especially for them. Graduate students often perceive that learning how to do library research should be "their job," and they would not necessarily look to the library for help.

Interviewees reported a number of strategies to increase the efficacy in outreach to graduate students. The most frequent approaches involve identifying key listservs, current awareness tools, and other communication channels. These often include groups and lists that operate at the school level, like those operated by graduate student government organizations. Broad-based student support units were also mentioned in the interviews, and these organizations—in their connection to orientation activities for new, incoming students—can play a crucial role in helping the library introduce its resources to students who may have been away from the academy or who were not exposed to the need for high-level, discipline-based research materials and services as undergraduates.

Interview data indicate that subject liaisons remain one of the most practicable routes into graduate lives. Interviewees mentioned collaborations with selectors on messaging, as at UIUC where the graduate coordinator provides boilerplate messages and marketing pitches to make it easy for liaisons to get the word out among their constituents. Subject liaisons can also be a valuable source of intelligence for a particular school or program, and can also provide an introduction to key personnel on the academic side. An email from a director of graduate studies or vice provost for research is far less likely to go unread by its graduate recipients. There can be a delicate balance between subject liaisons and a graduate coordinator in using these communication channels, but by clearly defining roles and taking a complementary approach (as UW put it), the relationship can be very effective.

Lastly, interviewees pointed out that it is especially important that outreach programming to graduate students be closely tied to the library's overall promotion strategy, for the sake of both efficiency and scale. Graduate students want to see themselves represented in the programming provided by the library; offerings that seem too general (or low-level) in nature may not appeal to those who feel they are ready for more advanced knowledge. Inversely, an instructional session that looks too advanced may alienate those who are returning students and want basic-level help. In practice, libraries are working to rebrand and reframe programs to capture students that are dispersed across the spectrum of preparedness and self-perception, effectively presenting similar core instructional content, but with slight alterations in description and depth of a session. Rather than attempting to create separate content for each session, libraries can take a modular approach to content creation and work instead to cast messages to appeal to its different constituents.

New Use of Space

A number of the institutions interviewed highlighted increasing pressure from research-intensive users on their physical spaces and services. Though there has been a move to integration of certain technological services and infrastructures as embodied by the information commons, interviewees point to a qualitatively different need to create or adjust spaces to meet higher-level researcher needs. While use of print collections has been declining in research libraries, there is a growing need for systems and services that allow users to interact in increasingly complex ways with digital resources—including data, images, text, and video. Moreover, the growth in graduate programs, particularly at the master's level, is creating pressure on (often scarce) physical space for academic departments, with that pressure concomitantly looking for an outlet in the "neutral" space of the research library. As the Indiana interviewee put it, libraries need to be "champions" for graduate students as the research enterprise becomes increasingly complex and resources are increasingly scarce. Dedicated graduate student space can help mitigate the unequal access to campus space that exists between and among academic programs and departments, as well as promote interdisciplinary interaction and collaboration.

The most cited approach to meeting this demand is a still-loosely defined entity called the "research commons" or "scholarly commons." Though there seem to be numerous expressions of the research commons, NYU, UW, UIUC, and University of Guelph all cited a number of aspects as essential, including providing dedicated graduate or high-level space; catering to multidisciplinary needs; collocating resources, services, and support across users' lifecycle; and equipping spaces with new amenities and furnishings to support diverse researchers' working styles. This is a growing construct internationally, as well, with examples of the research commons-type spaces found at the University of Exeter, University of Warwick, and the University of Cape Town, among others.

Dedicated graduate student space helps to reduce competition for resources with the still much larger undergraduate population. NYU and UW have undertaken projects to better understand the changing modes of graduate student work and the impact these changes have on space use. Higher demands for synthesis of disparate resources, combined with technology-integrated working styles (laptops, tablets, etc.), means that the amount of space needed per graduate user is higher than it is for less research-intensive users. Adjustments in per-user space allotment can vastly improve the comfort level for these users.

Dedicated graduate spaces can also build community. Much of the literature on graduate and professional student library users underscores the need for community-building opportunities, emphasizing that the graduate student experience is marked by longer length of study, intellectual rigor, and social isolation during research and thesis writing. Because graduate students uniquely straddle the roles of teacher and learner, they benefit greatly from interacting with other scholars from whom they can learn norms, habits, and discourse. Further, it is not uncommon for students to feel confused, lost, and lacking support in their programs, and they often rely on each other to find information necessary for their success. By providing spaces where graduate students have informal contact with each other and can recognize in each other common purpose and goals, libraries can help ameliorate the isolating effects of long-term graduate work. And by giving graduate students an opportunity to interact outside their home department, the library can provide a non-competitive and less anxious environment. The University of Guelph is building community around "digital research" by creating a department-neutral "collaboratory," while NYU has been experimenting with a graduate research "exchange" designed to allow for serendipitous collaboration and community building. These spaces can also provide the library a chance to integrate neutral or crosscutting programming to appeal to graduate students who need a break from their own intense work, but who still enjoy being engaged intellectually by an outside speaker or student from another department reporting on their work.

Multi-disciplinary space embraces shifts in the academy towards greater inter- and multi-disciplinary work. Spaces that support users across a spectrum of departments through programs, infrastructure, and available

assistance follow both this trend in the academy, especially among masters of arts students, whose programs and interests may be founded on interdisciplinary assumptions. The research commons vision mentioned by the University of Guelph is conceived not just as department-neutral in a political sense, but in a discipline sense as well, thought of as a space where graduate students will meet and ideas can "incubate" across discipline lines through theoretical exchange, use of digitized primary materials, or new methods. Some commons are already experimenting with how to support users who are branching into new methods or are blending known and novel methods in their work, and the need for consultation space and staff to support this multi-method style is growing.

Collocation of Resources and Services

Simply having spaces that support new kinds of work is not adequate; graduate users need easy and ready access to the service and technological infrastructure to work in multi-disciplinary, multi-method modes and to support their work as both information consumers and information producers. The research commons collocates the resources, services, and experts that will support research across the entire scholarly lifecycle. The commons frequently encompasses more traditional, front-end kinds of services like library reference and instructional services, links to subject specialists, and access to resources that supply primary and secondary research materials to graduate students. As UW put it, the goal is to provide one-stop shopping to all the services and resources of which students should be aware. Moreover, as students move to further modes of inquiry—away from exploratory, literature review-based work into stages of analysis, manipulation, and production—the commons may well include resources or services around these later lifecycle needs. For example, all the interviewees involved in creating research commons-type spaces remarked on the importance of creating partnerships with others on campus. These partnerships could be with support units such as writing centers, career centers, or international student offices, but also often include partnerships and space sharing with technologists and IT centers that are devoted to analyzing quantitative, qualitative, or geographical data, or to manipulating audio, video, and digitized materials. By bringing these services into one space such as the commons, the library can create a holistic suite of services in which students can be referred to specialists with the proper subject, technology, or production expertise.

For example, the Data Service Studio (DSS), which is part of the NYU Research Commons, brings together the expert assistance of subject specialist and data librarians, GIS specialists, and quantitative and qualitative research specialists in one location to provide the full range of graduate student support. The DSS offers:

- Access to specialty software packages, statistical and geographic information system (GIS), and qualitative data analysis.
- Training and support, as well as consulting expertise for many aspects of the research data lifecycle including access, analysis, collection development, data management, and data preservation.
- One-on-one and group consultation.

Interviewees also highlighted more functional aspects of the research commons, and in many of these areas we see overlap with the literature on the changing nature of learning spaces in general (for example, *Learning Spaces* by EDUCAUSE).[4] As mentioned previously, graduate students who are unusually heavy users of both materials and personal computing resources have greater physical space needs as well. Moreover, an acknowledgement of the long-duration work styles of graduate students leads to furnishings that are designed to support work-day comfort (particularly higher-end office chairs). For those segments of graduate populations involved in significant group productivity, flexibility and portability of furniture is also desirable; being able to roll tables together, move small whiteboards around, and reconfigure space to fit needs might be a part of commons design. UW, UIUC, and NYU are all trying to deploy flexible spaces that allow graduate students to co-author a presentation on a large screen or rehearse that presentation in front of their team by reserving closed-door

collaborative spaces. Writable surfaces to support ad-hoc group work might include rolling boards, floor-to-ceiling whitewalls, and even tables with writable tabletops.

Finally, a few cases combine high-impact productivity space with community building. Shared office-suite style rooms at NYU, for example, create functional, long-duration workspaces, complete with mobile lockers for each student so they can change their environment and seat to suit their needs. By assigning membership on a yearly basis, these rooms create a feeling of community, as members get to know each other over the course of the year.

Partnerships

Libraries need to exploit all available partnering opportunities in order to identify and market services to graduate students. Multiple interviewees remarked on attempts to connect with non-academic units on campus to target students and extend the library's outreach efforts. Oregon State, UIUC, NYU, and others maintain extensive ties to student resource centers, international student services, centers for teaching and learning, and writing centers. Similarly, libraries are forging formal and informal partnerships with academic units on campus at numerous levels, including working with the graduate college (as UIUC and NYU do), working with official graduate student organizations and councils (as at Indiana and Washington), or even, in Cornell's case, working with the schools to help understand graduate attrition. Consistently, institutions that have created strong partner relationships with academic units cite their effectiveness and value, with non-library partners serving as effective promoters of library resources and services.

Certain segments of the graduate student population might have needs that lend themselves to particular campus partnerships. Students are segmented primarily by discipline and terminal degree, followed by transition into the North American academy by international students. Librarians at Oklahoma, UIUC, University of Connecticut, and University of Guelph all mentioned building partnerships with international student organizations and campus offices to create orientation programs that encouraged students to consider the idea of consulting librarians as information resources.

Library-campus partnerships are not new; however, the focus on graduate students, with an emphasis on diversity and segmentation, expands offerings beyond basic doctoral support and instruction and identifies the library's potential role in a new range of areas such as bibliographic management, dissertation working groups, and data analysis. Interviews revealed a universal need for campus conversation on the roles librarians might play with graduate students and their associated networks and a desire "to place the librarian in the world, rather than having [students] come to the library."

No single campus entity is capable of providing all graduate services. However, there is an opportunity for libraries to capitalize and build on their strengths in delivering services to the graduate community and to strategically partner with student services and graduate departments to mitigate other over-burdened service points. In building this kind of community, libraries can help expand overall graduate student offerings by filling gaps and sharing information. Intentionally or not, many of these collaborative efforts address the segmentation and differing lifecycle stages of graduate students. Developing networks of providers and co-sponsors within the university in order to provide coherent graduate student programming, while including appropriate measures for assessment and success, are a few of the challenges.

Partnerships can be both formal and informal, can begin at the dean or director level, as well as with the individual librarian, and may take the form of pilots, cross-departmental and university initiatives, and even cross-university initiatives. There is no single model, as research libraries sample and reinvent the approaches that work best in their institutional setting. And there are still plenty in the university who may not fully understand the library's value. An effective and unified communications message, expressed at all levels of the library organization, is critical to building successful partnerships. Developing a broad understanding of university

expectations for graduate education and the learning objectives of each program can lead to a clear articulation of corresponding library programming.

Examples of broad, cross-campus partnerships that incorporate the library are seen in several Canadian research universities. These are formalized, multi-pronged approaches to graduate student development that bring a range of players into the mix. The University of Western Ontario's 360° Graduate Student Professional Development Initiative "offers a diverse range of events, workshops and courses, which provide critical communication, writing, teaching and professionals skills to graduate students and postdoctoral fellows."[5] The University of Guelph's Graduate Student Learning Initiative (GSLI) "brings together key campus services that support academic and professional skill development for graduate students."[6] Both of these ambitious programs combine the expertise, skills, and staff of multiple campus entities, including the libraries, working together to expand and deliver the breadth of graduate education.

At the University of Guelph, the GSLI brings together seven partners, from Career Services, Learning Services, the Data Resource Center, Writing Services, University Teaching Development Program (faculty support, TA training), the library and the Office of Research. Together, they offer sessions throughout the year to support academic and professional skills development. The GSLI had its roots in a smaller, successful collaboration between some GSLI units when a learning commons was created. As part of its focus on graduate students, GSLI members also share information among themselves and collaborate in the development of new services. GSLI services can also be customized for faculty and integrated at the course, program, or department level.

Forming strategic, intra-institution alliances is only one approach. Many research libraries partner with individual faculty, graduate departments, or support services. This model includes connecting with other student support centers on campus, for example, centers for teaching excellence, centers for writing and learning and the office for international students, or with academic centers such as the vice president for research or the graduate college. Strategic alliances with academic units are key. Working with those partners to identify learning gaps and appropriate library roles is critical and may be accomplished at any level in the organization.

Libraries are attracting and building partnerships that demonstrate both traditional and new approaches. A common theme expressed during the interviews was the ability to rethink and reframe traditional library roles and expertise and repurpose them in creative ways. Examples include:

- Co-teaching and addressing issues that support the teaching process, e.g., research strategy, bibliographic support, bibliographic organization, citation management, and data management.
- Developing teaching segments or electives that can be incorporated into required "support" curriculums for TAs, often in conjunction with centers for teaching excellence. A module on designing research assignments that can be further customized by the TA is one example.
- Identifying a need or problem and offering assistance, e.g., library teaches citation management to student writers and editors at campus journals and bar reviews.
- Co-hosting workshops and conferences, e.g., author's rights, post-dissertation publishing.
- Inviting graduate services/programs into library space.
- Partnering in deploying new campus technologies, e.g., wikis, blogs.
- Proving expert library services such as consultation in scholarly communication, literacy, productivity/research tools, and publication/metadata.
- Identifying internal library partners, e.g., digital library, institutional repository, and developing programs for graduate students.
- Embedding a librarian in a capstone or action-based learning project in a professional school. For instance, the University of Michigan Kresge Business Administration Library places a librarian in each Multidisciplinary Action Program (MAP) and thus connects librarians with students as they gather data and information.[7]

Some partnerships are built on identifying academic programs that fall between the cracks of traditional library discipline or department-based organization, such as institutes, cross-disciplinary centers, or multi-disciplinary initiatives across schools.

Another approach has been to build on institutional concerns and look across institutions for partnerships, such as the 2CUL research initiative between Columbia and Cornell Universities, which addresses PhD completion rates and attrition patterns. The 2CUL libraries partnered with the graduate schools at their institutions, and with one another, to conduct a series of interviews to identify the challenges and roadblocks to successful degree completion and the potential role of the library in graduate life. The outcomes of the joint study focused on library as place, on community, information control, and access to deep research collections, and the need for assistance with research, information management, and teaching. Findings in each one of these areas can potentially lead to programming and space initiatives useful not only for 2CUL universities but for libraries wishing to "propose library intervention strategies that will positively address the high attrition rate and long PhD completion time."[8]

And what of the other important partner—the graduate students themselves? In some cases, such as NYU and UW, broad graduate student surveys were part of the impetus for changes to graduate library services. Graduate partners frequently inspire changes in physical space, such as the Research Commons at NYU and UW, and the Grad Pad at Indiana. Prior to its launch of the Research Commons, NYU Libraries spent eighteen months working directly with graduate students, using focus groups and conducting mini surveys placed in areas known as grad gathering points. Techniques developed by the University of Rochester and adapted to the NYU community were also used. Graduate student input led to a complement of services and spaces, and it reinforced the need for including cross-disciplinary exchanges. This led to the creation of the "Grad Exchange" at NYU, which is both a physical and social space for grad-only gatherings and a venue for programming.

Assessment

Libraries must continually assess their environment and their users in order to serve them appropriately. Learning how to extend their reach and bring value to constituencies year round, from one lifecycle stage to another, is of the utmost importance. A number of interviewees commented on the need for resources devoted to collecting, collating, and distributing feedback from graduate students. Increasing interdisciplinary activities, disconnected communication channels, and demographic and lifecycle exigencies make the need for a centralized collector or collection strategy all the more compelling. Further, though diverse in many of their needs, graduate students do tend towards a number of common desires around their spaces, the timing and availability of services, and the duration and concentration with which they pursue their goals. Centralized feedback can uncover these similarities and show librarians patterns and commonalities that can aid in planning, renovation, and service provision.

Standard tools like LibQUAL+® can be a start to identifying big issues and trends over time, and most institutions interviewed commented on its utility in helping understand graduate students. But focus groups, interviewing, observing, and surveying, with an eye towards pinpointing and defining these realities, is critical. Not only can these activities help libraries understand more about graduate students and their goals, but also how to approach them, help them connect with valuable skills and processes, and how to adjust as the nature and makeup of our institutions changes.

There is some indication that graduate students, as prime consumers of the library and its services, are active respondents to survey invitations, and that by narrowly casting surveys that appeal directly to graduate status, one can get good results. These methods also scale up and down nicely, and can be targeted with specific services, spaces, materials, and issues in mind. A number of interviewees indicated using these types of tools to assess particular library amenities and spaces. For instance, both Oregon State and NYU found demand around graduate-centered study rooms and doctoral-only spaces, collaborative facilities and technologies,

and seating. Library services are equally ripe for this kind of assessment, and grad-focused instructional programming is noted in particular as a place where assessment is vital.

Libraries have been using focus groups for a long time, and interviewees at UIUC, NYU, Oregon State, and others mentioned their continuing efficacy in highlighting core needs and issues for graduate student populations. Focus groups not only expose common concerns across carefully shaped groups (for example, dissertation writers), but can also allow libraries to ask important questions ("but what about those doctoral students who have not started writing?"). Further, the rise of the ethnographic user study in the library world has given us new insight into how to form focus groups, individual interviews, and even "unobtrusive" observation to get higher-quality data. A few of those who have renovated spaces or buildings with graduate students in mind have noted the usefulness of observing graduate students at work or putting them through exercises designed to illustrate their ideal physical working conditions—a process that NYU used to identify an ideal workspace footprint and amenities list to support graduate-level work.

Many institutions are experimenting with graduate student advisory boards or councils. In some cases, such as at NYU, these boards are coupled with new initiatives or spaces and designed to help steer projects from their earliest formation to after their launch. In other cases, a standing board may be appointed or even paid. UW reported a significant impact due to the investment of their board, and along with Indiana noted that their advisory boards help facilitate awareness of services across campus. Though the emphasis of the board is on feedback, Indiana also reported that the board has been very effective at communicating the library's activities out to their communities and faculty, as well. In this, they have proved a valuable avenue for increasing partnership opportunities between the library and other interested units on campus.

New Organizational Structures

The same drivers that have contributed to the development of graduate services are having an impact on organizational structures and librarian roles in research libraries. Now that a number of research libraries have made user assessment a cornerstone of their activities, the unmet needs of individual user groups, such as graduate students, are coming to the forefront. LibQUAL+® and other assessment tools are identifying graduate student attitudes about space, information control, and affect of service. It was not uncommon to hear in an interview that new positions (e.g., graduate services librarian) or initiatives were initiated in response to gaps first identified via LibQUAL+®. Libraries could then use subsequent assessment tools to focus on graduate students' service gaps and unmet needs.

Many research libraries have subject specialist librarians corresponding to departmental disciplines, and in that capacity they work primarily with faculty and, to a lesser extent, doctoral students. The growth of interdisciplinary programs presents a challenge to this model as programs, departments, institutes, and the students themselves fall between established discipline lines. The expansion of master's programs is also placing a burden on the traditional subject specialist model. For subject librarians, non-subject (or domain-based) assistance (including bibliographic management, data analysis, scholarly communication, and teaching and presentation skills) may fall outside the traditional discipline-based structure, but it is of critical need for graduate students. Libraries are struggling with the ever-increasing need to provide new services to users and to align staff roles and skill development accordingly. The debate whether to simply expand the role of the subject specialist, create new graduate student positions, or focus on a support infrastructure that teams the subject specialist with the domain specialist, will be resolved at individual institutions. The interviews uncovered several different models of effective staffing for graduate services.

Graduate Student Librarian

Many research libraries have assigned or hired an individual librarian to create and guide programs designed for graduate students—"someone who wakes up thinking about graduate students." By most accounts, this graduate

coordinator seeks to create broad-based services. The coordinator may work in partnership with subject specialists, function as part of an instructional services or public services team, or convene a working group or other committee to provide a set of services.

In organizations with a dedicated graduate student librarian role, the position is usually located in public services or instructional services, rather than the subject specialist unit. In some instances, graduate librarians exist as a department of one. Regardless of where the position is situated in the organization, one benefit of identifying a specific role is that of coordination—the position provides a point person who can work directly with academic departments and other centralized university services that support graduate students, and they can serve as a bridge between the graduate student population and subject librarians. These individuals initially take on much of the lead role themselves and can be responsible for outreach as well as the creation of elective courses or library modules for other campus partners.

The position is "as much about developing services as developing colleagues' awareness and skills." In other cases, they extend themselves to librarian colleagues and provide training and development on skills that are then useful to the graduate population. Some graduate student librarians come with an experienced instructional background and parlay that into creating instructional modules that subject librarians can insert into their own teaching and outreach.

Graduate Student Services Committee

Some organizations have created graduate student working groups empowered to further assess graduate student needs and develop programming and even spaces in response. Some libraries have intentionally chosen not to create a specific position, based on the philosophy that graduate student services need to be woven throughout the organizational structure, especially within the subject selector/liaison construct. This model usually results in the creation of a graduate student working group (or committee) with broad membership, consisting of both subject and domain specialists. It often oversees graduate student assessment, develops new graduate-based instructional and informational programming, standardizes communication and outreach tools and messages, and integrates graduate student services within the subject specialist environment.

Subject Librarian Redefined and Support Infrastructure

Another approach is to broaden the role of the subject librarian or create a new layer of support infrastructure. Meeting the full spectrum of graduate student needs requires both subject specialists and programmatic or domain specialists, including instructional services, scholarly communication, IT, data specialists, and even basic information literacy. At one institution, for example, the scholarly communication librarian and the subject specialist work together to develop authors' rights and publishing workshops for graduate students. Other organizations are building new skills directly into the subject librarian role, with expectations of technology and information management skills, scholarly communications expertise, and a stronger focus on outreach to users.

Whether an organization names a graduate student librarian or coordinator, creates new infrastructure positions, or simply weaves graduate student services into existing structures, these new roles need to be articulated and used to drive recruitment, retention, and professional development at the service delivery level and within managerial positions. One recent example of a new position description is from Kansas State University Libraries; the position combines faculty and graduate services focusing on research and instructional support, as well as professional development in teaching and scholarship.

When describing the type of individual and the skill set needed to lead graduate student service development, some common traits emerged among the interviews. Descriptions of this role or individual were always hybrid, i.e., a subject specialist with strong domain skills such as instruction, scholarly communication, or technology. Interpersonal skills such as the ability to coordinate, network, and build bridges were also

named. Several mentioned the desirability of someone who had recently experienced graduate life, preferably in a second subject master's degree. Most emphasized the need for entrepreneurial drive. Intervieweess also expressed a strong desire to mine in-house talent as much as possible and develop expertise from within the organization.

New Organizational Structures

In most of the libraries interviewed, graduate services were still contained within functional units such as public services, research and reference services, instructional services, etc. On the other hand, some libraries were beginning to tie graduate services more directly to institutional mission and their own strategic planning. As a result, future organizational restructuring and strategic plans may include a specific graduate component. For example, key components of graduate student services, such as assessment, rethinking librarian roles, and expertise and developing physical and virtual spaces as they relate to graduate students, are being made explicit in library planning documents.

The University of Connecticut Libraries reorganized in 2009 to align its structure with the university's academic plan, which included graduate and professional education as a goal. One result was that the library's Research and Information Services Department was transformed into Library Research Services and included three subject-based teams. In alignment with the university's academic plan, the subject specialists in these teams became explicitly responsible for developing and enhancing services for graduate students, among other responsibilities. The reorganization is a result of a school-based effort to identify the research and academic needs of the schools in general and the academic departments specifically. This also builds on previous assessments conducted by the libraries with graduate students. The dean and associate dean of libraries and the appropriate subject team leader are meeting with the academic deans of each school, with the purpose of ultimately developing a customized plan for library services and to identify new and enhanced roles, skills, and responsibilities for library staff.

The University of Guelph Library is rethinking its organizational structure and moving from a more traditional academic liaison model to a team-based model with five strategic areas, including "learning and curriculum support" and "research enterprise and scholarly communication," to better serve their users. Graduate student needs were one of the factors influencing this reorganization. The library has created "integrative services teams...organized around specific users group(s)." The library is beginning to think about user groups in a more segmented approach (as scholars, researchers and teachers). The Research Enterprise and Scholarly Communication team will support user's work from conception all the way to publishing and preservation. Research consultations can involve a number of librarians. A consultation can include a range of activities including data consultation, dissertation writers' support around IP and e-submission, and scholarly communication support/information including author's rights, copyright, and models of open access. The Learning and Curriculum Support Team, on the other hand, serves student learning needs including the specific charge to "enhance and support graduate student development through strategic partnerships and a comprehensive approach to service delivery that addresses the needs of graduate students as learners, teachers, and researchers."

The Learning Organization, Experimentation, Pilots, Staff Development

Most interviewees stressed the need for pilots and prototypes, and also emphasized staff development. Others who called for "a flexible enough structure and acceptance of the learning organization" reinforced this. Encouragement of experimentation was a common theme, and this came from differing levels within the organizational structure. Coupled with this sentiment was the "need to define and try new things and not be afraid to fail." The research commons concept is very much in line with this type of thinking. Although the creation of a

research commons requires planning and financial commitment, those involved in its subsequent development are very much in the pilot/experimentation stage and quite willing to test new programming, evaluate it, and either keep or discard as needed. Experimentation applies to staffing as well. In one case, staff were invited to make proposals and test drive a new position for several years, after which long-term structural adjustments might be considered, based on the ongoing need for the role. In others, as we have mentioned, entrepreneurial librarians were encouraged to develop new partners either within the organization or across the campus and to develop programming beyond the library's standard offerings.

Institutions rarely mentioned new resources, either financial or human. One interviewee stated that, "Nothing involves new positions but just different priorities and doing work differently." Most stressed the desire to "mine talent from within" and develop new skills and learning opportunities. A commitment to retraining was expressed by several interviewees. The entrepreneurial nature of graduate student services and those who initially lead within the organization is not to be overlooked. One person stated that, "Most of the time it's been the self-starters that have taken it upon themselves to get what they need, but we should take a look at what we're offering."

In addition to building new expertise, libraries also mentioned staff development programs that focused on organizational development, including change management, collaboration skills, and team management, as libraries began looking at new ways of working. For example, Cornell is developing in-house training opportunities for staff to learn new approaches to outreach and instruction, and NYU is training on and implementing "after action reviews" as a standard tool to assess initiatives, projects, and programming. The University of Guelph also included staff development, and each new team focuses on their training and development.

Conclusion

Research libraries are re-envisioning graduate student services and spaces, taking their lead from changes in the academy at large. The growth in master's programs, the competition for students, the evolving tension between for profit and not-for-profit higher education, and the discussion of the value and expense of higher education taking place among the graduate students themselves, are driving library service providers to innovate. While there was a surprising consistency among the institutions interviewed regarding the causes and impetus to examine graduate student services, the responses and solutions clearly reflected each library's particular organizational culture and local population. In an atmosphere of shrinking budgets and increasing scrutiny regarding educational outcomes, there is a great opportunity for additional research on the value added by research libraries to graduate education. Research libraries should take the opportunity to learn from each other, addressing not only those needs found in common, but also sharing local and novel interventions that might allow them to invent new ways to meet graduate student needs in their own contexts. Research libraries may be only one part of a complex support structure for graduate students through their lifecycle at the university, but the programs underway at the libraries examined in this report indicate that their contribution may be a decisive factor in student success and well-being.

Endnotes

1   National Center for Education Statistics, "Graduate and First-Professional Enrollment,"
    http://nces.ed.gov/programs/coe/indicator_gre.asp.
2   See, for example, "Enhancing Graduate Education: A Fresh Look at Library Engagement," Proceedings of the
    2007 ARL-CNI Forum, October 12, 2007,
    http://www.arl.org/resources/pubs/fallforumproceedings/forum07proceedings.shtml.
3   "Graduate Student Services: A Selective Guide to Services and Resources Especially for Graduate Students at
    NYU Libraries," http://library.nyu.edu/grads.
4   EDUCAUSE "Learning Spaces" (2006), http://www.educause.edu/LearningSpaces.
5   http://grad.uwo.ca/360/.
6   http://gsli.uoguelph.ca/.
7   Berdish, L., and C. Seeman, "A Reference-Intensive Embedded Librarian Program: Kresge Business
    Administration Library's Program to Support Action-Based Learning at the Ross School of Business," *Public
    Services Quarterly* 6 no. 2/3 (2010), 208–224.
8   "Library Intervention Strategies for Doctoral Students in the Humanities," http://2cul.org/activities/intervention.

References

Altbach, P. G., R. O. Berdahl, and P. J. Gumport, *American Higher Education in the Twenty-First Century: Social,
    Political, and Economic Challenges,* Baltimore: Johns Hopkins University Press, 2005.

Ash, Doris, "Creating Hybrid Communities Using Inquiry as Professional Development for College Science Faculty,"
    Journal of College Science Teaching 38, no.6 (2009): 68–76.

Bennett, Onda, and Karen Gilbert, "Extending Liaison Collaboration: Partnering with Faculty in Support of a Student
    Learning Community," *Reference Services Review* 37, no. 2 (2009): 131–42.

Berdish, Laura, and Corey Seeman, "A Reference-Intensive Embedded Librarian Program: Kresge Business
    Administration Library's Program to Support Action Based Learning at the Ross School of Business," *Public
    Services Quarterly* 6, no. 2 (2010): 208–24.

Blummer, Barbara, "Providing Library Instruction to Graduate Students: A Review of the Lterature," *Public Services
    Quarterly* 5, no. 1 (2009): 15–39.

Castro Gessner, Gabriela, Damon E. Jaggars, Jennifer Rutner, and Kornelia Tancheva, "Supporting Humanities
    Doctoral Student Success: A Collaborative Project Between Cornell University Library and Columbia University
    Libraries," *Council on Library and Information Resources* (2011).

Chakraborty, Mou, and Johanna Tunon, "Taking the Distance Out of Library Services Offered to International
    Graduate Students," *Journal of Library Administration* 37, no. 1/2 (2002): 163–76.

Cooper, Liz, Chris Palazzolo, and Anna Van Scoyoc, "Reaching the Faculty of the Future...Now: Marketing
    Instructional Services to Graduate Students," Paper presented at Sailing into the Future: Charting our Destiny:
    Proceedings of the Thirteenth National Conference of the Association of College and Research Libraries,
    Baltimore, Maryland, March 29–April 1, 2007.

Council of Graduate Schools in the United States and Advisory Committee on Graduate Education and American
    Competitiveness, *Graduate Education: The Backbone of American Dompetitiveness and Innovation*, Washington
    DC: Council of Graduate Schools, 2007.

Daniels, William, Colin Darch, and Karin de Jager, "The Research Commons: A New Creature in the Library?"
    Performance Measure and Metrics 11, no. 2 (2010): 2116–30.

DiPietro, Joseph C., Wendy Drexler, Kathryn Kennedy, Vasa Buraphadeja, Feng Liu, and Kara Kawson, "Using Wikis
    to Collaboratively Prepare for Qualifying Examinations: An Example of Implementation in an Advanced Graduate
    Program," *Tech-Trends* 54, no. 1 (2010): 25–32.

Earp, Vanessa J., "Information Source Preferences of Education Graduate Students," *Behavioral & Social Sciences Librarian* 27, no. 2 (2008): 73–91.

Eyman, D., S. Sheffield, and D. N. DeVoss, "Developing Sustainable Research Networks in Graduate Education," *Computers and Composition* 26, no. 1 (2009): 49–57.

Fleming-May, Rachel, and Lisa Yuro, "From Student to Scholar: The Academic Library and Social Sciences PhD Students' Transformation," *Portal* 9, no. 2 (2009): 199–221.

Foote, Kenneth E., "Creating a Community of Support for Graduate Students and Early Career Academics," *Journal of Geography in Higher Education* 34, no. 1 (2010): 7–19.

Franklin, Brinley, "Surviving to Thriving: Advancing the Institutional Mission," *UConn Libraries Published Works*, Paper 36 (2011).

Garson, Deborah S., and Eileen McGowan, "Collaboration as a Model: Co-Teaching Graduate Course," *Information Outlook* 14, no. 1 (2010): 16–21.

George, Carole, Alice Bright, Terry Hurlbert, Erika C. Linke, Gloriana St. Clair, and Joan Stein, "Scholarly Use of Information: Graduate Students' Information Seeking Behaviour," *Information Research* 11, no. 4 (2006).

Goldenberg-Hart, Diane, "Enhancing Graduate Education: A Fresh Look at Library Engagement," *ARL: A Bimonthly Report* no. 256 (2008): 1–8.

Harrington, M. R., "Information Literacy and Research-Intensive Graduate Students: Enhancing the Role of Research Librarians," *Behavioral & Social Sciences Librarian* 28, no. 4 (2009): 179–201.

Hopwood, Nick, "Doctoral Experience and Learning from a Sociocultural Perspective," *Studies in Higher Education* 35, no. 7 (2010): 829–43.

_____, "Doctoral Students as Journal Editors: Non-Formal Learning through Academic Work," *Higher Education Research and Development* 29, no. 3 (2010): 319–31.

Ishiyama, John, Tom Miles, and Christine Balarezo, "Training the Next Generation of Teaching Professors: A Comparative Study of PhD Programs in Political Science," *PS: Political Science and Politics* 43, no. 3 (2010): 515–22.

Kayongo, Jessica, and Clarence Helm, "Graduate Students and the Library: A Survey of Research Practices and Library Use at the University of Notre Dame," *Reference & User Services Quarterly* 49, no. 4 (2010): 341–9.

Kroth, Philip J., "Leveraging Change to Integrate Library and Informatics Competencies into a New CTSC Curriculum," *Medical Reference Services Quarterly* 28, no. 3 (2009): 221–34.

Lawrence, Jane Fiori. "Connecting Academic and Student Services," *New Directions for Higher Education* no. 139 (2007): 77–86.

Lewis, Vivian, and Cathy Moulder, "Graduate Student and Faculty Spaces and Services," *Spec Kit 308* (Washington DC: Association of Research Libraries, 2008).

Lippincott, Joan K., and Clifford A. Lynch, "ETDs and Graduate Educations: Programs and Prospects," *Research Library Issues*, no. 270 (June 2010).

Lougee, Wendy Pradt, "Diffuse Libraries: Emergent Roles for the Research Library in the Digital Age," *Council on Library and Information Resources* (2002).

Macauley, Peter, "Can Our Relationships Be Reconceptualized? Librarians, Information Literacy, and Doctoral Learners," *Journal of Education for Library and Information Science* 50, no. 2 (2009): 68–78.

Murray, David, *Information commons: A Directory of Innovative Services and Resources in Academic Libraries* (2001), http://ux.brookdalecc.edu/library/infocommons/icsites/sitestype.htm.

Newswander, L. K., and M. Borrego, "Using Journal Clubs to Cultivate a Community of Practice at the Graduate Level," *European Journal of Engineering Education* 34, no. 6 (2009): 561–71.

Oblinger, Diana, ed., *Learning Spaces*, Washington, DC: EDUCAUSE, 2006.

Ortega, Suzanne, and Carol B. Lynch, *The Changing Nature of Graduate Education*, Washington, DC: Association of Research Libraries, October 2007.

Pappano, Laura, The Master's As the New Bachelor's," *The New York Times*, July 22, 2011.

Rempel, Hannah Gascho, "Services for Graduate Students: A Review of Academic Library Web Sites," *Journal of Web Librarianship* 4, no. 1 (2010): 19–35.

Ridley, Michael, Helen Salmon, Catherine Steeves, and Meghan Kirwin, *The University of Guelph Library Organizational Renewal Initiative: Organizational Model and Design,* University of Guelph, 2009. http://www.lib.uoguelph.ca/about/organizational_renewal.cfm.

Rikli, Roberta E., "The Role of Master's Institutions in Developing Researchers: Rethinking the Master Plan," *Quest* 61, no. 1 (2009): 59–73.

Sadler, Elizabeth, and Lisa M. Given, "Affordance Theory: A Framework for Graduate Students' Information Behavior," *Journal of Documentation* 63, no. 1 (2007): 115–41.

Stevenson, J., "Doing More Good, Doing Less Harm: Some Trends in Graduate Education," *ADE Bulletin*, no. 141–142 (2007): 8–15.

Stewart, Debra W., "Getting It Right: Graduate Schools Respond to the Millennial Challenge," *Communicator* 40, no. 7 (2007): 1–3.

Stoddart, Judith, and Henry Campa, "Designing and Assessing Career and Professional Development Programs for Master's and Doctoral Students: A Case Study," Powerpoint for Council of Graduate Schools Annual Meeting, December 2009.

Teitelbaum, Michael S., and Carol B. Lynch, "Needed: Support for Professional Science Master's Degrees," *The Chronicle of Higher Education*, August 15, 2010.

Tipton, Carol J., "Graduate Students' Perceptions of Library Support Services for Distance Learners: A University System-Wide Study," *Journal of Library Administration* 32, no. 1/2 (2001): 393–408.

Trask, B., R. Marotz-Baden, B. Settles, D. Gentry, and D. Berke, "Enhancing Graduate Education: Promoting a Scholarship of Teaching and Learning Through Mentoring," *International Journal of Teaching and Learning in Higher Education* 20, no. 3 (2009): 438–46.

Washington-Hoagland, Carlette, and Leo Clougherty, "Identifying the Resource and Service Needs of Graduate and Professional Students: *The University of Iowa User Needs of Graduate Professional Series*," *Portal* 2, no. 1 (2002): 125–43.

Wander, Cathy, Brent Bridgman, Ross Marcel, Fred Cline, Nathan Bell, Patricia McAllister, and Julia Kent, *Pathways Through Graduate School and into Careers*, Princeton, NJ: Educational Testing Service, 2012.

Wendler, Cathy, Brent Bridgeman, Fred Cline, Catherine Millett, JoAnn Rock, Nathan Bell, and Patricia McAllister, *The Path Forward: The Future of Graduate Education in the United States*, Princeton NJ: Educational Testing Service, 2010.

Young, William H., Marilyn C. Armstrong, Allison A. Friedrich, and Sharon N. E. Ray, "Graduate-Level Non-Degree Seeking Students: A Growing Audience," *Journal of Continuing Higher Education* 57, no. 3 (2009): 168–80.