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How Research Libraries Support the Research Process: From Idea To Publishing



by **Anne Langley** (Associate Dean for Research, Collections and Scholarly Communications, Penn State University Libraries) <Anne.langley@gmail.com>

A Changing Landscape

Over the past 10 to 15 years, academic/research libraries have become more service oriented. This transition came in response to a shifting scholarly communication environment, or to put it simply, how academia creates, seeks, and uses information. Librarians now support faculty and post-graduate researchers throughout multiple stages of the research process, and thus researcher interaction with the library has increased.

High-level academic research has always required library support to be productive, especially because researchers depend on the library to purchase and/or subscribe to the books, journals, databases, and other materials that make up the universe of scholarly communication. But the process of doing research has become more complicated, and librarians have stepped up to assist, adapting to meet academia's needs.

These adaptations have come about for a multitude of reasons: researchers' need for help to navigate more complex academic information; recent mandates from funding entities, both governmental and private, that require researchers' data and publications to be deposited in an open repository so that anyone can have access; new options for measuring publishing output beyond citation or journal analysis and requirements at some institutions that use these metrics for promotion and tenure; and, finally, the continuing proliferation of new journals, new forms of information dissemination, and new ways of aggregating information. In all these areas, librarians have seen an opportunity to apply their skills and support researchers in novel ways.

Academic libraries now see helping researchers manage information and data for research and publishing as part of their mission. Librarians — who already had the skills necessary to assess, organize, and make information accessible — have risen to the challenge. Helping researchers navigate new avenues of information management is a natural extension of our skills and knowledge. This article describes how **Penn State University Libraries** responded to the changing landscape by creating new services and new types of librarian jobs that support high-level research from start to finish.

The Libraries at Penn State

Penn State University is a public land-grant research university, with a flagship campus (University Park) in State College, PA, 23 other campuses across the state, two law schools (one in Carlisle, PA, and one at University Park), and a medical school (in Hershey, PA). The University Park campus comprises 14 distinct colleges. Overall, **PSU** has 99,133 students (47,261 at University Park), including 84,686 (41,359 at University Park) undergraduates. The university and the Libraries belong to a variety of consortia, including the Big Ten Academic Alliance (BTAA), the Pennsylvania Academic Library Consortium, Inc. (PALCI), and others.

The **Penn State Libraries** comprises 36 libraries, at least one at each campus. The main library, called Pattee-Paterno, four branch libraries, and a law school library are all on the University Park campus. The two law libraries (the second law library is in Carlisle) and the Health Sciences library at Hershey all have a dotted reporting line to the dean of Libraries and Scholarly Communications, who reports directly to the provost. Librarians have faculty status, and the tenure-track librarians are part of the university's promotion and tenure process. The collection approaches five million items, and the Libraries subscribe to more than 800 databases. The Libraries also support students and faculty in **Penn State's** digital World Campus through the work of a World Campus librarian who coordinates library services in collaboration with librarians throughout the system.

I am an associate dean at **Penn State University Libraries**, and my areas of responsibility include acquisitions, collection development,

subject liaisons, the special collections library, and scholarly communications and copyright outreach. Our senior leadership ethos is one of collaboration; I collaborate closely with the other two associate deans on digital scholarship, data management, document supply, and commonwealth campus librarianship, among other things.

Two years ago, the Libraries began implementing a five-year strategic plan that focuses on responding better to users' needs. That includes meeting the specialized needs of high-level researchers, whether they are undergraduates in the last years of their majors, graduate students, postdocs, or faculty at all stages of their careers. To this end, we have envisioned and created specialized librarian positions to help support these research needs. These positions work in concert with traditional librarian jobs such as subject specialists, teaching and learning librarians, and collection development librarians. We are reorganizing around the needs of digital scholarship in all its forms and no matter the academic discipline. I describe some of these specialized positions below.

New Roles to Support Researchers

The new roles at **Penn State Libraries** have titles such as research data management librarian, scholarly communications librarian, copyright librarian, and GIS and data librarian. Many librarians in these new roles work behind the scenes: data preservation librarians, repository management librarians, information architects and ontology librarians, all of whom create, support, and run the new systems we use to manage research information and data — including both purchased information and that created by researchers. Managing data and the related processes can be time intensive, and our librarians and information scientists are working together to free researchers from this burden so they can focus on their research. For example, in our design and implementation of **Penn State's** institutional repository, called ScholarSphere, the programmers and librarians who manage and update the repository have worked closely with one another and faculty advisors to make sure it meets the needs of the institution.

Larger institutions like **Penn State** can hire librarians to take on these new responsibilities. But smaller institutions can respond to the changing environment by expanding the responsibilities of librarians already on staff. For example, at my previous institution, I added the responsibilities of director of scholarly communications to my position as head of the science and technology libraries.

Internal and External Challenges

We have faced challenges in imagining these new roles and in attracting capable people to fill them. A big internal challenge has been dealing with a very traditional library culture. Most libraries struggle with change, often because our profession is steeped in traditions of varying kinds, including our tradition of requiring a library degree. Some of these new positions are better filled with people who have other expertise, such as a law degree or expertise and training in geographical information systems, and some librarians and staff have found this hard to accept. It's also been difficult for new hires coming into a sometimes mildly hostile environment. We've had to do one-on-one coaching for the newly hired to help them understand the ethos of libraries, and we've met often with those protesting and worked to help them better understand the changes facing libraries and how we've chosen to move our libraries forward.

Support at Every Step of the Process

The academic/research library can and often does support researchers throughout their entire research process. The library is where many researchers begin their discovery process. Whether they're planning research strategies, formulating a research question, honing their methods or seeking new ways of doing things, they often turn to the libraries, and in particular to the resources we've purchased or subscribed to. They

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use the library literature to make sure they're working on something original or novel. We support this work through targeted collection development, which comes from the knowledge and expertise of subject liaisons who buy or lease information, and through aggregated search engines designed and populated by librarians with an IT or a cataloging/metadata background.

Many researchers in multiple fields use, reformat, and create data. Anthropologists use GIS data. High-energy physicists collaborate with large, globally available datasets. Biological and medical scientists use genome mapping, while humanists mine old English texts. All researchers who use data have to learn how to harvest, sort, organize and preserve it. Research data management librarians are trained to teach and support this type of work. Best practices include having a research data management plan at the beginning of the process so that no data is lost, disorganized, unusable, or unsharable at the end of the process. Research data management stems directly from the field of library and information sciences, as librarians have long been harvesting information, organizing it, and making it accessible, adapting and creating new systems as the data creation demands. We have hired a data scientist to be **Penn State Libraries'** first research data management librarian, and we plan to hire a social science research data management librarian in the coming year.

Research has changed with the creation of massive digital indexing, abstracting, and sometimes the deep indexing of databases with information beyond just the citation or full text. As scholarly output and the meta-information created to manage has moved to the digital world, researchers have had to spend much less time doing their background work. Many publishers are experimenting with and creating innovative support tools that are hybrids of classic indexing and abstracting databases. Tools like **SAGE Research Methods** and **REAXYS** not only help researchers find materials, but also help them make connections between different types of information in new and time-saving ways. These new products are indeed wonderful for researchers, but their proliferation produces deep challenges for managing flat, decreasing, or very slow growth in library materials budgets. And instruction librarians must keep abreast of regular updates and interface changes.

At **Penn State**, we conduct annual rolling reviews of journal subscriptions and databases, and we are planning to assess our allocation model in the near future and explore the idea of creating an allocation schema. We hope our schema can account for the huge variations across disciplines in the creation, use and dissemination of scholarly output.

Our subject liaisons review their subscriptions individually and in subject-oriented groups, and they consult with faculty to make cancellation or purchasing decisions. Though we haven't recently conducted a large-scale cancellation, we recognize that we may eventually have to move beyond annual reviews to a comprehensive assessment.

Guidance on Open Access and Copyright

Once researchers are ready to publish, our librarians can work closely with them to help them evaluate the viability of open access journals, or to help them deposit data or papers into open access repositories. Our goal is to make these processes seamless, so that there is very little or no burden on researchers. Librarians, especially those with expertise in copyright or scholarly communications, help researchers with language to use in contracts so that they can retain some of their copyrights — ensuring that they can share their articles in a repository, on their websites, or with their colleagues and students. These specialized librarians also must teach faculty and researchers that they need to retain some or most of their copyright. Our own copyright librarian, who holds the first position of its kind at **Penn State**, has spent the past three years figuring out the university's needs. She has become a valuable resource for individual faculty and researchers in managing the copyrights for their scholarship, their use of materials in the classroom, and the creation of their open education resources. Based on her needs analysis, we will be adding positions to that department: a scholarly communications outreach librarian and copyright analysis support staff.

Research Assessment

Once research is published, there are many ways to assess its worth. Citation counts are no longer the only methods of assessment. Altmetrics are nontraditional metrics, such as counting the number of times people tweet about someone's research. This and other types of altmetrics can be mined to assess an article's effect on the profession. We have a group of medical and science librarians at **Penn State** who help researchers learn about and use these new ways of measuring scholar impact.

Open Education Resource (OER) Support

Our librarians, especially those with subject and instruction responsibilities — along with instructional designers at the university — are working closely with faculty to identify, vet, design, and review appropriate open education resources for use in our World Campus courses, and for other courses where faculty are interested in experimenting. Other institutions, or even state university systems, have mandated OER. Librarians are invaluable partners with faculty conducting research into the viability and use of open materials in the classroom, and librarians play a strong role in increasing the adoption of open education resources by advocating for them with students, faculty, administration, and other librarians.

Conclusion

As academia changes, so do libraries. As you've read, librarians have taken on new roles to support changes, sometimes drastic, in our institutions. Many people in higher education say that the library is the heart of an institution. At **Penn State**, we take this role seriously. As our institution responds to changes in the world of higher education, we respond to the needs of the faculty, students, and researchers with whom we interact with and support. This is because we change along with those who need us. It's an exciting time to be a librarian, no matter what your title is. 🌍

Expert, Guide, Cheerleader, Coach, Fake News Combatant: The Many Hats of Academic Research Librarians in Supporting Students

by **Roz Tedford** (Director for Research and Instruction, Z. Smith Reynolds Library, Wake Forest University) <tedforr@wfu.edu>

When you tell people outside of academe that you are an academic librarian you often get responses back like “oh, I'd love to be a librarian, I'd love working with books all day!” or “do students really need libraries anymore? Isn't everything online?” But within the walls of academe, research librarians today are more engaged than

ever in the teaching and research missions of their institutions and while the hats we wear continue to grow, so too does our impact on student success.

Students come to college with varying degrees of research experience behind them. Some come from high schools where there was extensive attention given to the research

process while others have never written a true research paper before. Add to the mix a growing international population of students and you bring issues of cultural differences in writing and attribution expectations and English as a second language issues into the mix. So we never quite know what to expect

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