ACADEMIC LIBRARIES AND COLLABORATIVE RESEARCH SERVICES

EDITED BY CARRIE FORBES

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Contents

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Preface

Carrie Forbes

HIGHER EDUCATION INSTITUTIONS in the United States and across the globe are realizing the importance of enabling internal and external collaborative work (e.g., interdisciplinary research and community partnerships). In recent years, researchers have documented the benefits of organizational collaboration for research, including greater efficiency, effectiveness, and enhanced research reputation. In addition, accreditors, foundations, business and industry, and government agencies have been espousing the importance and value of collaboration for knowledge creation and research and improved organizational functioning. As a result of both the external pressures and the known benefits, many forms of both internal and external research collaborations have begun to emerge in higher education.

At the heart of this change, academic libraries, which have long been models for collaborative work, are increasingly participating in the research process by providing a widening range of research support services beyond traditional reference services. New and innovative library services, in areas such as bibliometric analysis, research data management, and data repositories, are evolving in response to changes in education funding and policies. These funding and policy changes have also coincided with technological developments to create opportunities for academic librarians to find new roles within their institutions and the research community. There is a growing body of literature examining these changing academic library roles, but few volumes have concentrated on how the nature of collaborative work in libraries is helping to reshape institutional research practices.

This edited volume provides academic librarians and administrators with case studies and theoretical essays on how academic libraries are establishing their place in the new collaborative research arena by adapting existing library services and practices as well as adding new support services. The volume will also be useful to higher education administrators and institutional research officers looking for additional information on how to partner with libraries to increase the effectiveness of collaborative research.

In order to understand the nature of collaborative research practices in higher education and the changing nature of research support services, this volume has four sections: emerging liaison roles, focus on data, the library as publisher, and professional development.

Emerging Liaison Roles: From Research Support to Research Partner

Powerful forces transforming higher education are prompting a fresh examination of liaison librarian roles in research libraries. These forces include new and rapidly changing technologies, an abundance of digital information in myriad formats, evolving research methods, and changing practices in how scholars communicate and disseminate their research and creative work. In the past, libraries focused largely on capturing the end products of scholarship, and the bibliographer model was designed to fulfill that goal. With increasing pressure on researchers to plan and manage their output, and a growing adoption of open access publishing, research libraries are now compelled to understand and support all processes of scholarship. While there is general agreement that liaison roles are changing, research libraries are grappling with the scope of these new roles. Identifying emerging roles, determining what work to divest of, designing supportive institutional structures, establishing areas of primacy and leadership on campus, and ensuring that liaisons have needed skills and knowledge all present collective and urgent challenges.

Section 1 presents seven chapters on the variety of ways that academic libraries are adapting services or refining their organizational structures to better serve as collaborative partners. In chapter 1, Victoria Eastes, Michelle Shea, and Dawn Harris from Texas A&M University-Central Texas consider how to adapt to new expectations for library liaisons, including knowledge and implementation of copyright and accessibility standards, work as embedded librarians in courses, creation of displays and service-learning opportunities for outreach, interdepartmental cooperation across campus, and collection building for diverse content areas and instructional needs. Emily K. Chan, Daina Dickman, Nicole Lawson, and Suzanna Yaukey describe needed changes to academic libraries' scholarly communication

services in chapter 2 based on results from librarian focus groups, interviews with campus grant administrators, and conversations at the virtual Scholarly Communication Assessment Forum. Across these focus groups, interviews, and conversations, there were notable discrepancies between scholarly communication offerings and the grant administrators' awareness of these services, indicating that outreach and promotion of library services should be a focus for libraries as they modify service structures.

As higher education institutions increase their research productivity, libraries also need to respond by reframing and retooling specific research services. In chapter 3, Stephanie Crowe, Laura McBrayer, and Ashley Knox give an overview of the literature on how increased institutional research activities have impacted library organizations, and they present a case study on the University of North Carolina Wilmington's shift to R2 classification and the resulting impacts on library staffing, services, and resources, with an emphasis on necessary changes in their liaison model.

Librarians must not only adapt to changes in institutions' research practices but also to new teaching practices. In chapter 4, Paul Love, Michael Stöpel, and David Tresilian detail an innovative student-led, cross-institutional teaching project between the American University of Paris (AUP) and Al-Akhawayn University in Ifrane (AUI) in Morocco. The chapter describes how the COVID-19 pandemic disruption led to creative insights in rethinking the aims and methods used in the undergraduate classroom and the unique collaborative role of academic librarians.

Chapters 5 and 6 discuss the evolving role of librarians as embedded research partners. Gregory Laynor and Stephanie Roth examine how librarians can facilitate the evidence synthesis process of researchers by using protocols as a tool for collaboration and project management. Further, through a case study of digital humanities projects at the University of Southern California, Danielle Mihram and Melissa L. Miller demonstrate how librarians are uniquely positioned to foster cutting-edge collaborations and partnerships essential to developing and institutionalizing experimental modes of scholarly research and communication. Finally, in chapter 7, Zachary G. Stein, David N. Khey, and Scott T. Jordan detail a project by the University of Louisiana Lafayette and the Louisiana State Penitentiary at Angola Museum to digitize photos depicting the history of prison life.

Focus on Data: Research Data Services

The growth of data-intensive science, coupled with funding mandates for data management plans (DMPs) and government open data, has led to a growing emphasis on data management across all academic disciplines. Academic

librarians are now often integrated as partners in all aspects of the research process, from data collection to publication and preservation of research output. A suite of research data services (RDS) needed by academic communities is emerging in academic libraries in response to the growth of data-intensive research, changing roles of libraries, and the recognition of a need for research data management. Section 2 presents chapters focused on this emerging area of research partnerships. In chapter 8, Andrea Pritt presents best practices and reflections for developing research data services with limited staffing on a small regional campus. Similarly, Meg Eastwood, in chapter 9, details the effective and necessary collaborative partnerships needed to support researchers using REDCap, a secure, HIPAA-compliant, web-based data collection tool, within an environment where staffing levels are lagging behind large increases in the number of grant-funded research projects.

Library as Publisher: Open Access Services and Scholarly Publishing

Libraries are largely distancing themselves from the role of information warehouse and instead are devising new strategies to position themselves as active partners in the creation and dissemination of research. In response to profound shifts in technology, policy, scholarly practices, and the marketplace, libraries have increasingly adopted the role of publisher developing their own portfolios of journals, monographs, and conference proceedings as well as supporting faculty in understanding the purpose and value of open access publishing. Libraries, as information intermediaries, have a unique and advantageous position in this new environment as they have intimate knowledge of the information needs and practices of scholars on their campuses as well as a deep understanding of scholarly publishing across disciplines.

Chapter 10 kicks off section 3 with an in-depth case study of how libraries might approach open access publishing as a consortium through a discussion of the functions of various Texas Digital Library user groups. Caitlin Harrington and Kenneth Haggerty, in chapter 11, present an alternative model of open access publishing for libraries by describing the use of a publications oversight board for open access journals at the University of Memphis.

Professional Development: Developing Skills for a Changing Profession

The nature of the academic library is undergoing a fundamental shift away from merely providing access to scholarly literature and toward assisting in its creation. Researchers are arriving at institutions with the skills to gather information and create new knowledge but face an overwhelming choice of methods to manage and promote their outputs. This changing dy-

namic offers academic librarians a chance to branch out into research support roles, but to do this successfully, they must develop skills in the areas of scholarly communications, data management, bibliometrics, and more. In chapter 12, Clarke Iakovakis, Megan Macken, and Matt Upson note how research information management (RIM) can serve as an important vehicle for libraries to expand their collaborative partnerships for research, but they also detail the organizational training and professional development required for librarians to be successful in this service arena. The section concludes by addressing how librarians can expand their skills to adapt to the changing information landscape. Jay A. Edwards discusses in chapter 13 an often-overlooked area of professional development, "soft skills," and denotes myriad ways that librarians can improve their communication and listening skills in order to be truly effective partners in research with their campus colleagues. In chapter 14, Susan E. Montgomery describes how librarians must improve their data literacy skills in order to be able to support student learning in a data-rich research environment.

Looking Forward

New roles in research services, digital humanities, teaching and learning, digital scholarship, user experience, copyright and scholarly communication, and more are being developed at universities and libraries across the globe. Academic librarians are now playing two new roles, that of advocate and of consultant, both with an emphasis on campus engagement. As advocates, they have become a library's "sales force," speaking on a wide range of topics and trends in higher education, influencing and persuading campus stakeholders on important issues, and serving as ambassadors of change. As consultants, librarians identify faculty and student needs and then make referrals to colleagues with more specialized areas of expertise, or when advanced help is not available, they make plans to develop new services themselves in partnership with other campus offices. In today's complex research ecosystem, librarians must be knowledgeable, confident, proactive, and politically savvy. They can offer more than research support; they are partners and leaders, helping faculty and students navigate a rapidly changing landscape. My hope is that this volume provides a path forward for both academic librarians and campus administrators to realize the full potential that collaborative, interdisciplinary partnerships with librarians can have for transforming the nature of higher education research practices and policies.

I

EMERGING LIAISON ROLES

FROM RESEARCH SUPPORT
TO RESEARCH PARTNER
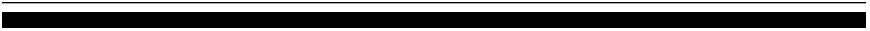
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Changing the Liaison Role to Enhance Library Collaboration within the Academic Community

Victoria Eastes, Michelle Shea, and Dawn Harris

Texas A&M University-Central Texas (A&M-Central Texas) is an upper-division college located in the city of Killeen, Texas, which is home to Fort Hood, one of the largest US military installations in the world. The University Library serves a non-traditional student body of around 2,400 students, who mostly attend part-time and are an average age of thirty-four.[1] Forty percent of those individuals are also tied to the military. Serving this unique demographic of students requires a great deal of planning and support work, leading the librarians at A&M-Central Texas to seek creative and innovative ways of adapting the liaison role. This work includes the following: becoming copyright specialists and digital accessibility advocates; promoting the use of non-textbook resources in courses and the importance of inclusivity in the online classroom; expanding the embedded librarian role as co-educator and content builder; promoting outreach through displays and programming by partnering with other service-providing departments; participating on university councils and committees in order to influence the governance of the university; and collaborating with faculty to build collections tailored to fit their unique needs. The strengths and interests of the individual librarians and their ability to recognize and respond to needs as they arise have shaped the liaison role and have promoted the library as an equal learning partner on campus.

This chapter considers new expectations for library liaisons, which includes knowledge and implementation of copyright and accessibility standards, work as embedded librarians in courses, creation of displays and service-learning opportunities for outreach, interdepartmental cooperation

across campus, and collection building for diverse content areas and instructional needs. The role of liaisons has shifted to highlight librarians as educators and collaborators, not just information providers. Practical examples are incorporated to show how librarians can become more active participants in content management, classroom teaching, and curricular planning to impact campus outcomes within and beyond the library.

Literature Review

The literature on library liaison roles varies a great deal in terms of the approach subject liaisons fill and seek when conducting this work. A lot has changed in the more than forty years since Laurence Miller defined liaison work in 1977 as a "formal, structured activity in which professional library staff systematically meet with teaching faculty to discuss stratagems for directly supporting their instructional needs and those of their students."[2] By 2001, when the American Library Association (ALA) produced the "Guidelines for Liaison Work in Managing Collections and Services," they expanded the definition of liaison work to include multi-faceted areas, including working on collection development, assessing and weeding of existing collections, crafting clear library policies, and adapting roles to take on multiple responsibilities.[3] In 2017, Barbara Tierney and Lois Kuyper-Rushing found common elements among most liaison programs in terms of collection management, outreach and instruction, and online research guides and other educational aids.[4]

Recent scholarship has found additional similarities between libraries' approaches to their liaison programs and the challenges they face. Darby Orcutt, Mira Waller, and Scott Warren pointed to changes in the liaison role, including the "the amalgamation of areas to which subject librarians liaise," as a contributing factor in determining the focus of services and a potential cause for burnout from trying to do too much.[5] Neil Nero and Anne Langley stressed the importance of frequent communication and anticipation of faculty needs to build mutually beneficial professional relationships.[6] Isabel Silver and Barry Trott explored liaison outreach activities, such as marketing library resources and services to faculty, tying them to student success.[7] Further, José Díaz and Meris Mandernach examined librarians' relationship-building efforts, emphasizing the importance of "patience, expertise, follow-through, responsiveness, and individuality" for librarians to make lasting connections with faculty.[8]

Seeking potential avenues outside the traditional liaison role, Janice Jaguszewski and Karen Williams noted that, in response to an increasing

demand for copyright knowledge, many libraries have been expanding the liaison role to include expertise in "fair use" and intellectual property.[9] Barbara Tierney and Michael Arthur suggested changing the librarian's role from a reactive one to a proactive one—for example, reducing the amount of time spent by liaisons at the reference desk in favor of proactively reaching out to faculty and students to offer assistance before it is even requested.[10] In addition, Inga Haugen, Kristen Mastel, and Jeanne Pfander explored the success of collaborative liaison efforts to meet faculty researchers' basic needs for access to information regardless of physical location, whether while working remotely from home or a branch campus.[11] Finally, Laura Banfield and Jo-Anne Petropoulos concluded that there is no right or wrong liaison model, but rather that each library should revise the role to adapt to their own institutional needs.[12]

Case Study: A&M-Central Texas

The library liaison program at A&M-Central Texas is crafted to address the individual needs of faculty, students, and staff while remaining flexible enough to incorporate multidisciplinary research and learning into the program's strategic goals. Professional-track faculty librarians fulfill their liaison roles in multiple ways: providing a variety of scheduling options for students to suit both in-person and distance learners; making connections and expanding services to meet changing needs; and demonstrating a willingness to take on many and varied roles. In this case study, the experiences of the A&M-Central Texas librarians across technical services, archives, and public services are chronicled to show the diversity of roles that library staff can fill as liaisons.

The Liaison as Copyright Specialist

The demand for specialized expertise in the areas of copyright and intellectual property rights has been growing as online programs continue to proliferate, particularly after the COVID-19 lockdowns of 2020, and as more course content becomes available beyond the physical university community.[13] The Technology, Education, and Copyright Harmonization Act of 2002, commonly known as the TEACH Act, sought to redefine the terms and conditions governing the use of copyrighted materials by nonprofit educational institutions in virtual or distance learning and placed more responsibility on educators and their institutions to ensure compliance.[14] The TEACH Act was meant to honor the rights of copyright holders and help educators by defining parameters for how and how much copyrighted materials could be used in the classroom.

The reality is that the rigidity of these parameters has often left educators with more questions but with less room for error to remain in compliance with the law. What a faculty member may deem fair use, the copyright holder may view as infringement. Publishers and rights holders have been increasing efforts to remove copyrighted or unlicensed materials found on university websites and virtual course platforms. Many leading universities have responded to the threat of fines—ranging in some cases from $750 to $30,000 per infraction—by seeking ways to educate faculty on what is and is not permissible.[15] In response, some university libraries have chosen to hire librarians with an additional law degree or law experience to serve as a copyright liaison to help faculty navigate the complexities of the law for courses and professional research, which may help prevent future liability for the university.

If libraries are unable to hire someone who already has these qualifications, it may fall to an existing, interested librarian to learn more about copyright by taking advantage of professional development opportunities, building a resource list for reference, and utilizing peer-to-peer networks for advice and support. In response to requests to hire or designate a copyright specialist for A&M-Central Texas, the provost turned to the library as the best place to find a qualified person. The head of Technical Services was "voluntold" to assume the role of copyright specialist for the university and tasked with educating herself on all things copyright. Later, the university archivist studied to become another specialist, particularly in how copyright applies to primary source documents and the use of orphaned works. In these instances, the copyright liaison role became a part of each librarian's assigned duties. When doing this work, any librarian who does not have a law license should always make clear that they are not offering legal counsel; rather, they are giving advice based on their personal understanding of the law. Any researcher wishing to truly pursue the use or publication of materials of unknown or questionable copyright should seek professional legal advice.

Professional development opportunities are an excellent resource to learn about copyright, particularly how it affects libraries and how other institutions address similar issues. There are several free or low-cost resources available for any liaison who wants or needs to learn about copyright.

- Conferences: Two excellent conferences include Miami University Libraries Copyright Conference and the Kraemer Copyright Conference at the University of Colorado-Colorado Springs.[16]
- Courses and trainings: One excellent certificate-granting course is Copyright X, a free twelve-week networked course sponsored by Harvard Law School, the HarvardX distance-learning initiative, and the Berkman Klein Center for Internet and Society; and its affiliated course, Copyright

X: Libraries, created by MIT and focused on copyright as it affects cultural institutions.[17]

- "How-to" guides and publications: A brief list may include resources such as the US Copyright Office's "Resources and Education" website or the ALA's "Copyright for Libraries: General Information."[18]
- Networking groups: For example, in 2019, the Texas A&M University System (TAMUS) librarians serving as copyright specialists for their individual campuses created an email group to build relationships, seek advice, and share resources with their system peers.

Promoting Copyright on Campus

To promote copyright assistance for faculty at A&M-Central Texas, one of the library liaisons created an in-person course for faculty members on fair use in relation to teaching and academic publishing. The course is repeated as requested and was additionally put together as a LibGuide, titled "Copyright and Fair Use: Copyright in the Classroom," for faculty to access as needed. Faculty are invited to contact the librarian with any questions or concerns regarding copyright, particularly the use of copyrighted materials in the virtual classroom and the use of services like electronic course reserves (e-reserves).[19] The library markets the e-reserves program as a platform for faculty members' curated supplemental readings, or even textbook alternatives, leaving copyright compliance and accessibility to the expertise of the librarians. Each semester, faculty are invited to request that materials or resources be made available for students to easily access online as e-reserves. These range from book chapters and journal articles to websites or films. The e-reserves librarian works closely with the copyright specialist to determine if materials are available for use as open resources in the public domain or licensed through a library database and whether permissions from the copyright holder are required. In one instance, the copyright specialist reached out to the author of an out-of-print book and received written permission to digitize the library's copy and make it available online to fulfill a faculty request. Covering the legalities of unique situations like these places the copyright specialist in the role of helping to protect the university from liability. The reality is that copyright touches all subjects, and gaining expertise in this area is an excellent way for any library liaison to offer their services to faculty and their academic community.

Online Accessibility

At A&M-Central Texas, addressing copyright concerns is tied in with advocating for accessibility of all online course materials and digital library

resources. As a public institution, the university makes every effort to ensure all university-related websites and digital materials conform to the Web Content Accessibility Guide (WCAG) 2.0 under Section 508 of the Rehabilitation Act of 1973. In recent years, adherence to Americans with Disabilities Act of 1990 (ADA) compliance has become an increasingly important and potentially litigious area for universities. According to the Office of Civil Rights, as of 2020, there are 167 pending discrimination complaints against postsecondary education institutions involving disability.[20] The US Department of Justice lists the lack of alternative text for images, inaccessible document formats, and limited or missing accessible features for video and multimedia as among the most common issues for website accessibility.[21]

The library is amongst the strongest advocates for accessibility on campus and works closely with the Academic Technology Department to ensure all digital materials available through the library meet set standards. As the main person who works with unpublished materials, the university archivist frequently collaborates with the e-reserves librarian to process scanned documents, such as book chapters, using optical character recognition (OCR) programs like ABBYY FineReader and Adobe Pro DC. This process converts scanned images into text that is then readable by assistive software, a process heavily used by the archives to make digitized primary documents available through the Digital Archives. Further collaborations with the University Writing Center (UWC) and the graduate Thesis Office provide opportunities for the archivist to liaise with faculty about specific criteria, such as the importance of labeling headings and subheadings, providing alternative text for images and tables, or explaining why assistive software programs work better with rich text format over PDF for font manipulation. Helping faculty to understand the complexities of accessibility and why it is necessary to create better understanding and certainly more appreciation for the work done by the librarians.

Building Relationships Through Collaboration and Outreach

Beyond issues of technology and legality, librarians must also be well versed in instruction, collaboration, and event planning to serve as effective liaisons. Librarians are active participants as teachers and professional colleagues, evidenced at A&M-Central Texas by the faculty status given to those who have completed a terminal degree in their field, such as the MLS or MLIS. Librarians have the power and inspiration to make change happen, whether that involves contributing to instructional design or library project management, particularly in the role of interdisciplinary intermediaries bridging the gap between subject areas and departments. No longer

simply the gatekeepers of information, academic librarians are increasingly "charged with the task of making themselves actively involved in the learning process, rather than being there when someone has a project due at the end of a course."[22] Collaborations with faculty, students, and community groups provide excellent avenues for A&M-Central Texas liaisons to actively engage with their constituents and build meaningful and mutually beneficial professional relationships.

Embedded Librarians

At A&M-Central Texas, professors may choose to have their library liaison serve as an embedded librarian in courses. The term "embedded" suggests a deeper course integration beyond one-shot instruction or general overviews of library services. In practice, the embedded librarian program is achieved through co-teaching in the classroom, professor-assigned follow-up meetings for students with their librarian, and equal-access instructor roles and posting privileges within online course management systems (CMS), such as Canvas. As embedded librarians, liaisons support students needing help with assignments, research, and formative assessment. Within the embedded librarian spectrum, services range from in-depth involvement, including class instruction, assigned one-on-one interactions, and course-specific research guides to a more casual "here if you need us" approach, depending on the professor's vision for their course. In one example, the business school liaison worked closely with the professor of a graduate-level course to decide what goals the professor had in mind for the class itself and to brainstorm ways to meet those goals through the library's available resources. After meeting with the professor, the liaison created a research guide for that unique course, which was then posted in the CMS with course materials. A class visit gave the liaison the opportunity to introduce and demonstrate the guide and to encourage students to reach out for assistance as needed (which, in this case, several did). This presentation was recorded, along with instructions for scheduling individual appointments, and then it was made available through the CMS. By identifying both the professor's goals and the students' needs, the liaison successfully built a support framework for the course that provided access to both resources and services.

When opportunities for embedded librarianship arise, it is wise to jump on board and chart a path forward. These collaborations do not need to be complex. For example, for a senior writing history course, one professor asked a liaison to serve as embedded librarian and required each student to schedule an initial appointment to discuss their topic for a semester-long research project. This was particularly helpful in showing students how and

where to access primary sources and how to incorporate them into their research. Students were free to follow up for more assistance. The professor reported positive feedback from the students on the overall experience. These connections with faculty often result from months of interactions through other projects, committee service, and simple book order requests. Embedded librarians have "a wider reach, such as being incorporated into departments, programs, research centers, or administrative offices," meaning they can cultivate campus connections and take a more active role in making academic collaborations happen.[23] Acting proactively, one liaison approached the university's academic technology department about creating content specifically tailored to the CMS. The liaison then offered this content to professors teaching online courses as an additional resource, one requiring little to no effort for the professors.

A successful embedded librarianship program often relies on faculty buy-in and student participation. For those classes where the professor has worked closely with the liaison to build a framework of resources tailored to course topics, which become embedded into the course's online module, student participation has often remained high regardless of whether individual meetings with the librarian were required or merely encouraged. For future courses, it might be useful for the librarian to create additional handouts (such as blank mind maps) and to offer opportunities for students to reflect on individual research topics and to receive tips to test out different search strategies. Librarians can also collect student work products to document evidence of teaching efficacy, similar to teaching faculty, and to track understanding of learning outcomes or improve library instruction. These assessment measures can enhance the overall instructional services suite created by embedded librarians to deepen the connections with professors and facilitate positive outcomes for students.

Displays and Collection Building

Liaisons can also expand their roles by utilizing the highly visible, well-trafficked nature of the library building itself to explore collaborative projects with other departments. The liaisons at A&M-Central Texas create monthly displays throughout the library to promote specific collections or to highlight holidays or themes. Using this opportunity, several liaisons have collaborated directly with faculty to create displays to promote specific academic programs and courses using artifacts, books, and other resources. In 2019, librarians worked with anthropology faculty to create a display of featured objects recovered from a recently excavated homestead site, including photographs and common artifacts from the period, paired with books from the library's

collection on cultural anthropology. Further, the university's committee on diversity, equity, and inclusion (DEI) approached the librarians in 2021 to curate a display for a special presentation. Items placed on display included nonfiction books, featured digital films, and other materials addressing inclusivity in schools and businesses. The collaboration proved so successful that plans are in process for a permanent collection within the library related to DEI. These types of collaborations illustrate the liaison's ability to look beyond traditional roles to find new ways to impact academia using creativity and attentiveness to existing needs.[24] Additionally, a successful liaison program requires building relationships with both faculty and students. Working directly with students on curating books and other materials as part of service-learning projects is another example of a mutually beneficial relationship.[25] Not only do students meet their program requirements, but librarians also gain insight into current student needs and how best to meet them. Low-pressure partnerships like these can build or initiate rapport that can lead to future partnerships, in the library or in the classroom.

Interdepartmental and Community Partnerships

Other partnerships at A&M-Central Texas extend beyond the typical interactions with students in the classroom. Working in cooperation with the University Writing Program (UWC) to combine research assistance with quality writing instruction has proven to be one particularly successful partnership. Tutors from the UWC, prior to COVID-19 necessitating a move to fully virtual services, would station themselves in study areas near the library's main reference desk during normal evening hours. Students could schedule an appointment or "drop in" to meet with a tutor for feedback on papers or projects. It was common for these students to stop by the reference desk after their writing session to seek help with locating resources, choosing databases or citation management software, and improving the overall quality of their research. For in-depth assistance, students were encouraged to contact their course liaison via email or in person. This partnership helped students address any topical gaps in their writing while also building their confidence to perform independent research. The tutors focused on grammatical editing and revisions, and the librarians focused on the quality of research and resources—both sides creating a generative and supportive process for students.

The librarians and writing program staff are involved in discussions on how to extend these services to include local community members (nonstudents). One proposal under consideration involves connecting with area high schools through a civic essay writing contest, providing an open-ended question prompt and a small cash incentive to the winner. This contest

could connect the university with area high school teachers and, potentially, future university students. If successful, it could generate interest in the university through sponsored writing clubs, mentoring opportunities, and additional outreach programming.

Other ideas involve working with area public libraries to host résumé, cover letter, or college entrance essay writing workshops. This partnership would include University Library liaisons, the directors of the local public library branches, and would utilize existing services from the Texas Workforce Commission. For event planning, the most logical method would be to communicate with departmental contacts regarding potential plans, including needed materials, the target audience, physical or virtual meetings spaces available, and the level of needed commitment. A planning group would assign duties and establish a timeframe for completion. Library liaisons have much to contribute to service-learning experiences and community partnerships, particularly if they have a strong background in the target subject area. By gaining an awareness of college and department activities, librarians can increase their overall participation in campus events and provide customized services.[26] An ongoing partnership is more likely when the projects receive dedicated support from all the parties involved. At A&M-Central Texas, the library liaisons assigned to these projects are experienced in outreach, event planning, and educational pedagogy, ensuring the best chance of successful partnerships through collaboration.

Committee Service and Professional Development

The librarians at A&M-Central Texas are faculty members on the professional track, meaning they must meet certain expectations in areas of professional development and fulfill service obligations for promotion. Since tenure-track professors are held to similar expectations, fulfilling these obligations is yet another opportunity to build mutually beneficial relationships between liaisons and faculty. Service on university councils and committees provides representation of the library, ensuring its equal footing with other departments in university decision making and leadership. At A&M-Central Texas, two of the more influential committees are Faculty Senate, responsible for advising the president's office and for advocating for faculty needs on issues like promotion and tenure; and its subcommittee, the appropriately named Committee on Committees (ComCom), which assigns faculty and staff to the various committee positions available each academic year. Over the past few years, librarians have held leadership positions on both committees, first as Faculty Senate executive committee secretary and, later, as chair of ComCom. Leadership opportunities like

these add legitimacy to the librarians' role as fellow faculty. Through committee work, connections are made, needs are determined, and solutions are reached that involve the library at each step.

Within committees, librarians can also originate projects and presentations that meet information needs and count toward promotion. As a supportive project for the Faculty Center for Teaching and Learning, the librarian on the committee created a LibGuide to highlight recommended articles and embedded videos on model teaching practices and Quality Matters (QM) initiatives. QM is a program that focuses on increasing course rigor, promoting student engagement, and improving faculty teaching to create stronger instructional experiences for students, so it was important for the library to highlight this endeavor. For that same committee, a librarian gave a faculty presentation about open educational resources to address DEI needs and to enhance student engagement. Recommendations for faculty included the following ideas: using images with more diverse representation of cultures, racial groups, and religious customs; incorporating up-to-date news articles or journal issues; meeting accessibility standards through closed captioning and OCR; and assigning lower-cost or open-source textbooks. Framing this presentation as a discussion allowed for candid faculty feedback on these issues, generating useful information on how to best address them with partnerships across the university.

Committee service is an opportunity for liaisons to promote the library. Regular but timely advocacy is essential to show how the library can help in actionable ways. The key is being a good listener, volunteering specific tips or assistance when appropriate, and staying informed on how the committee is working with the university to proactively anticipate future projects or avenues for collaboration.

Enhancing Campus Service Learning and Instruction

Popular collections of books and media, hands-on manipulatives, and technological and circulating devices are available through the library to enhance coursework in the classroom and off-site. These items are popular with professors in the College of Education and Human Development (CEHD), particularly for demonstrations aimed to connect with K-12 learners in the community. Librarian liaisons also contribute their expertise in service learning to plan, implement, and improve upon library-originated programs, such as themed summer camps for reading, STEM, or coding logic for children in the community. Service-learning courses have a practical component, where students must complete an active project or interact with community members to demonstrate skills learned during a class. For these programs, faculty

are contacted to enlist help from graduate-student volunteers, who can run aspects of these camps as service projects. These volunteers provide guided reading groups for the younger grade levels, giving them the opportunity to hone their teaching skills and professors an opportunity to create assignments with reflective and product-based elements. Librarians, in turn, increase their visibility on campus and build professional partnerships with faculty and community members. As a library liaison, the goal is to balance expertise with resources and to adapt to the varying needs of multidisciplinary coursework.

An upcoming initiative is aimed at creating a more visible process to help liaisons connect with faculty in their subject areas. Successful liaisons have found that regular, informal chats create more familiarity with library services and improve professional connections. These connections also enhance librarians' job performance as it increases their ability to support community functions and to revise service outcomes and practices for campus.[27] The long-term plan is to create a suite of liaison services, customized to the needs of different departments or colleges, and to market the services more strategically through library signage, social media, direct emails, and in-person visits. Initial efforts have involved contacting faculty to request titles for books or journals that should be added as part of collection development, a set of information literacy tutorials aligned to the Association of College and Research Libraries' (ACRL) *Framework for Information Literacy for Higher Education*,[28] subject-specific LibGuides, assistance with university and degree accreditation documentation or tours, and embedded librarian collaborations. The hope is to better personalize these services and resources to encourage more faculty to contact their liaisons directly with their needs.

The Role of Collection Development

At every level, collaboration and partnerships are "critical to leveraging expertise and thereby developing and expanding new services, liaison roles, and library roles more generally."[29] The librarians at A&M-Central Texas specializing in collection development liaise with faculty, university administration, and institutional review staff to create stronger collections. They utilize their expertise and relationship-building opportunities on curriculum committees and participation in the institution's academic program review to encourage active participation from faculty in collection-development practices.

Building a New Collection

Collaborating with faculty to develop new and unique collections is an excellent method for building relationships and strengthening the role of

library services in the learning process. In 2015, faculty from the CEHD approached the education librarian/liaison about creating an education resource center (ERC) similar to one at another university. The collection would provide instructional materials in a variety of formats for faculty and students to use in the classroom to help elementary students learn and retain knowledge for a variety of learning styles, including visual, auditory, or kinesthetic. Educators enrolled in the CEHD would be encouraged to use various curriculum supplies during their studies and student teaching. The incorporation of these manipulatives into the curriculum would address the needs of multiple learning levels through a wide range of items for different uses.[30] These resources would also "allow for conscious or unconscious development of motor skills, social, self-help, cognitive, problem solving, leadership, [and] multi-skill building" opportunities.[31]

The CEHD already had a small number of items but housed them in a locked closet within CEHD, which limited usage and made tracking them difficult. By placing the collection in the library, not only was access expanded, but circulation also could be tracked via the library's automation system. To augment the initial collection, a $20,000 grant was obtained from the Texas State Library and Archives Commission to provide funding for ten categories of materials, including manipulatives, teaching kits and games, guided reading sets, flip charts, technology items, and puppets.[32] Since the inception of the ERC, faculty outside of the CEHD have contacted the library about expanding the collection. A psychology professor who routinely teaches classes on sand tray therapy asked the library to purchase sand trays with figures and miniatures. After discovering that the human skeleton replica in the ERC collection improved student learning, the forensic anthropology professor requested the addition of a human skull replica for student exploration. Five years after its inception, the ERC's items account for approximately 10 percent of the library's total circulation. Faculty know they can bring their wishlists for items to add and the librarians will endeavor to locate and purchase even the most unique and unorthodox materials to enhance faculty and student research and learning.

Serving on Curriculum Committees

Serving on a university-wide curriculum committee offers librarians the unique opportunity to learn about new and revised programs and courses long before they become a reality. For liaisons, this lead time is invaluable in terms of long-range planning for collection development. The program review process helps the liaison develop a supporting collection based on feedback from central faculty in the program, expected student enrollment, and the time

frame for implementation. Serving on a curriculum committee has been one of the most successful avenues for increasing the visibility of the library and demonstrating the value of library services and collections to the university.[33]

Since 2011, a library representative has served on the University Curriculum Committee at A&M-Central Texas. While it was initially filled by the Dean of the Library, in 2018, it became clear that the Collection Development and Acquisitions Librarian was a more meaningful fit. The goal of any collection-building process should be to have the necessary materials on hand when they are needed for teaching and research. The involvement of academic collection managers in the initial planning stages for academic programs has been instrumental to each new academic program's overall success, and committee work has helped make that possible.[34] New programs are particularly challenging for academic libraries to support as current resources may be limited or superficial. It often requires several years and multiple budget cycles to create a collection with enough breadth and depth to support a new curriculum. Library budgets are notoriously tight, and funding must be addressed before purchasing additional collections. Adding new subject areas to any purchasing budget requires finesse and compromise, and the sooner the collection development librarian learns about new programs, the easier it is to allocate additional funds.

Once the initial planning phases are complete, the collection development librarian can develop a plan for the scope of the collection. Corresponding with faculty about their expectations for the program allows the librarian to provide guidance on recommended databases and available resources. If faculty are not already strong proponents of the library, this process of cooperation can help cement the educational partnership. Participation in the planning stages of a new program also allows the librarian time to conduct a thorough analysis of existing materials, including any necessary weeding due to inadequacy or datedness of materials, and to identify potential resources for purchase.

Participation in the Institution's Program Review Process

Academic libraries play, or have the potential to play, a prominent role in the institutional program review process and enhancement of academic programs.[35] At A&M-Central Texas, graduate and undergraduate programs are externally reviewed on a ten-year cycle. College deans, program faculty, and the Academic Program Review coordinator prepare a descriptive and evaluative self-study that includes program status, strengths and weaknesses, opportunities and threats, evaluations of learning outcomes, and recommendations. In addition, the A&M-Central Texas University Library is an active partner in the review process with the goal of enhancing resources and ser-

vices based on collaborative evaluation of support for individual programs.[36] The library's program review segment provides an excellent opportunity to showcase supporting collections, including highlighting databases and journals as well as monograph holdings. Both the age and the granularity of the collection are analyzed and discussed to show a steady increase in the acquisition of core titles illustrative of a collection's growth. For planning purposes, the library uses these figures to determine if the program in question warrants extra collection development funds in the next budget cycle. In addition to this evaluation of materials, the program review includes analyses of patron access, budget, services, and staffing to demonstrate the library's role as an integral part of the university's mission and student success.

Every year, the library designates funds within its materials budget to augment these targeted collections, including last-minute funds from "end-of-year" money. The collection development librarian analyzes the subject collections for the four to six academic programs under review for depth and breadth. Core titles not in the collection are identified and purchased with most funds directed toward areas with the greatest need. Through collection development, the liaison actively advocates for library engagement in institutional program planning and support.

Conclusion

Liaison roles, along with the role of academic libraries overall, are changing, and librarians must be proactive in their approach and functions if they wish to continue their presence as a valuable asset to the community. The librarians at A&M-Central Texas define the liaison role as part of a collaborative partnership with faculty and students. Acknowledging that not every academic library has the same opportunities, there are still numerous areas in which liaisons can expand their services and the library's influence on university governance and affairs.

1. *Ask questions and brainstorm ideas.* Take an analytical look at a given subject/area/department to understand its strengths and weaknesses, areas for growth, and discuss potential needs the library can address.
2. *Take advantage of available resources.* Build peer networks. Take advantage of the numerous free opportunities for professional development to learn about new topics and trends.
3. *Reach out and build relationships.* Not all faculty will respond, and not all projects will succeed, but take lessons from the failures and build on the successes.

4. *Rethink and move beyond traditional roles.* The liaison's role is to support the research and teaching needs of their assigned department or subject area. Expanding this role to include areas of copyright and fair use, outreach and programming, committee service and institutional review, and collection development are only some ways to enhance these services.

While each library will experience different results, there are many opportunities to become a proactive liaison by supporting students, faculty, and staff more effectively, strategically, and holistically.

Notes

1. Texas A&M University-Central Texas Strategic Planning Committee, "Texas A&M University-Central Texas Strategic Plan, 2018–2022," Texas A&M University-Central Texas, 2017, https://www.tamuct.edu/accreditation/AMCT%20Strategic%20 Plan%202018-2022.pdf.

2. Laurence Miller, "Liaison Work in the Academic Library," *RQ* 16, no. 3 (Spring 1977): 213.

3. Liaison with Users Committee, Collection Development and Evaluation Section, and Reference and User Services Association, "Guidelines for Liaison Work in Managing Collections and Services," *Reference and User Services Quarterly* 41, no. 2 (Winter 2001): 107, https://www.jstor.org/stable/41241068.

4. Barbara G. Tierney and Lois Kuyper-Rushing, "A Tale of Two Liaison Programs: University of Central Florida Libraries and Louisiana State University Libraries Partnering for Subject Librarian Excellence," in *Roll with the Times, or the Times Roll Over You*, edited by Beth R. Bernhardt, Leah H. Hinds, and Katina P. Strauch (West Lafayette, IN: Purdue University Press, 2017), 385.

5. Darby Orcutt, Mira Waller, and Scott A. Warren, "What Are Subject Liaisons When 'Collections' and 'Subjects' Don't Matter?" in *Roll with the Times, or the Times Roll Over You*, edited by Beth R. Bernhardt, Leah H. Hinds, and Katina P. Strauch (West Lafayette, IN: Purdue University Press, 2017), 394.

6. Neil Nero and Anne Langley, "Subject Liaisons in Academic Libraries: An Open Access Data Set from 2015," *Libraries and the Academy* 17, no. 1 (2017): 5–15.

7. Isabel D. Silver and Barry Trott, "Outreach Activities for Library Liaisons," *Reference and User Services Quarterly* 54, no. 2 (Winter 2014): 8–14, https://journals.ala .org/index.php/rusq/article/viewFile/2763/2750.

8. José O. Díaz and Meris A. Mandernach, "Relationship Building One Step at a Time: Case Studies of Successful Faculty-Librarian Partnerships," *portal: Libraries and the Academy* 17, no. 2 (2017): 274.

9. Janice M. Jaguszewski and Karen Williams, *New Roles for New Times: Transforming Liaison Roles in Research Libraries* (Washington, DC: Association of Research Libraries, August 2013), 12, https://www.arl.org/resources/new-roles-for-new-times -transforming-liaison-roles-in-research-libraries/.

10. Barbara G. Tierney and Michael Arthur, "Subject Librarian Initiative at the University of Central Florida Libraries: Collaboration Amongst Research and Information Services, Acquisitions and Collection Services, and the Office of Scholarly Communication," in *Too Much Is Not Enough*, edited by Beth R. Bernhardt, Leah H. Hinds, and Katina P. Strauch (West Lafayette, IN: Purdue University Press, 2014), 486–91, https://www.jstor.org/stable/j.ctt6wq772.89.

11. Inga Haugen, Kristen Mastel, and Jeanne Pfander, "Librarians at Land-Grant Universities Working with Extension: Three Case Reports," *Library Trends* 65, no. 3 (2017): 384, https://doi-org.du.idm.oclc.org/10.1353/lib.2017.0007.

12. Laura Banfield and Jo-Anne Petropoulos, "Re-Visioning a Library Liaison Program in Light of External Forces and Internal Pressures," *Journal of Library Administration* 57, no. 8 (2017): 827–45, https://doi-org.du.idm.oclc.org/10.1080/01930 826.2017.1367250.

13. Jaguszewksi and Williams, *New Roles for New Times,* 12.

14. "Copyright: TEACH Act," American Library Association, accessed March 10, 2019, https://www.ala.org/advocacy/copyright/teachact.

15. Anna Marie Johnson, "Connections, Conversations, and Visibility: How the Work of Academic Reference and Liaison Librarians Is Evolving," *Reference and User Services Quarterly* 58, no. 2 (2018): 96, https://journals.ala.org/index.php/rusq/article /view/6929/9356.

16. For more information, see Miami University Libraries, "Copyright Education," Miami University, September 2021, https://copyrightconference.lib.miamioh. edu/. The library also offers a free copyright webinar series to help information and education professionals learn more about current copyright issues and topics; see also Kraemer Family Library, "Kraemer Copyright Conference," the University of Colorado Springs, accessed September 2021, https://copyright.uccs.edu/. While the conference takes place in-person, registration is free, and discounted room and board rates are available.

17. For information on the course and how to apply, see "CopyrightX," Harvard University Law, 2021, http://copyx.org/harvard-law-school/; see also "CopyrightX: Libraries," Massachusetts Institute of Technology, 2021, http://copyx.org/affiliates /copyrightx-libraries/.

18. For example, see US Copyright Office, "Resources and Education," Copyright .gov, November 23, 2021, https://www.copyright.gov/about/resources-education. html; see also American Library Association, "Copyright for Libraries: General Information," https://libguides.ala.org/copyright.

19. Lisa Hopkins, "Copyright and Fair Use: Copyright in the Classroom," last modified August 11, 2021, https://tamuct.libguides.com/copyright.

20. Jasmine Clark, "A Coordinated Effort: Cultural and Policy Requirements for Digital Accessibility," *College & Undergraduate Libraries* (2021): 3, https://doi-org .du.idm.oclc.org/10.1080/10691316.2021.1932659.

21. US Department of Justice Civil Rights Division, "Project Civic Access Toolkit, Chapter 5: Website Accessibility under Title II of the ADA," ADA.gov, accessed September 22, 2021, https://www.ada.gov/pcatoolkit/chap5toolkit.htm.

22. Ansley Stuart, "Embedded Librarianship: The Future of Libraries," *Library Journal*, Oxford University Press, November 19, 2019, https://www.libraryjournal.com/?detailStory=embedded-librarianship-the-future-of-libraries.

23. Alessia Zanin-Yost, "Academic Collaborations: Linking the Role of the Liaison/Embedded Librarian to Teaching and Learning," *College and Undergraduate Libraries* 25, no. 2 (2018): 152, https://doi-org.du.idm.oclc.org/10.1080/10691316.2018.1455548.

24. Díaz and Mandernach, "Relationship Building One Step at a Time," 275.

25. Pete McDonnell, *The Experiential Library: Transforming Academic and Research Libraries through the Power of Experiential Learning*, Chandos Information Professional Series (Cambridge, MA: Chandos Publishing, 2017), 93–94.

26. Silver and Trott, "Outreach Activities for Library Liaisons," 12.

27. Sara D. Miller and Rachel M. Minkin, "Qualitative Teaching and Learning Needs Assessment for a Community of Academic Librarians," *Journal of Library Administration* 56, no. 4 (2016): 418, https://doi-org.du.idm.oclc.org/10.1080/01930826.2015.1112708.

28. Association of College and Research Libraries, *Framework for Information Literacy for Higher Education* (Chicago, IL: Association of College and Research Libraries, 2015), http://www.ala.org/acrl/standards/ilframework.

29. Jaguszewski and Williams, *New Roles for New Times*, 13.

30. Renee L. Hoffman, "Building a Curriculum Materials Center from the Ground Up," *College and Research Libraries News* 79, no. 9 (2018): 513, https://doi-org.du.idm.oclc.org/10.5860/crln.79.9.511.

31. Amrita Madray and Amy Catalano, "The Curriculum Material Center's Vital Link to Play and Learning: What's the Connection?" *Education Libraries* 33, no. 2 (2010): 11, https://files.eric.ed.gov/fulltext/EJ913570.pdf.

32. Dawn Harris, "Let's Get Technical—Adding a New Dimension to Education: Creating a Curriculum Materials Center Collection," *Against the Grain* 31, no. 2 (2019): 60, https://doi-org.du.idm.oclc.org/10.7771/2380-176X.8388.

33. Joanne M. Muellenbach, et al., "Services and Staffing Practices in Academic Health Sciences Libraries Serving College of Osteopathic Medicine Programs: A Mixed Methods Study," *Journal of the Medical Library Association* 108, no. 3 (2020): 408, https://doi-org.du.idm.oclc.org/10.5195/jmla.2020.862.

34. Anne Marie Austenfeld, "Building the College Library Collection to Support Curriculum Growth," *Collection Management* 34, no. 3 (2009): 211, https://doi-org.du.idm.oclc.org/10.1080/01462670902975027.

35. Lynne Bowker, "The (In)visibility of Academic Librarians in the Cyclical Program Review Process: A Corpus-Based Study of Two Ontario Universities," *The Canadian Journal of Information and Library Science* 43, no. 1 (2020): 67, https://doi-org.du.idm.oclc.org/10.3138/cjils.e004.

36. Bridgit McCafferty and Dawn Harris, "Closing the Gap: the Library in Academic Program Review," in *Academic Libraries and the Academy*, eds. Marwin Britto and Kirsten Kinsley (Chicago: Association of College and Research Libraries, 2018), 234.

Bibliography

American Library Association. "Copyright: TEACH Act." Accessed March 10, 2019. http://www.ala.org/advocacy/copyright/teachact.

American Library Association. "Major Copyright Bill Affecting Distance Education Becomes Law." American Library Association, January 19, 2007. https://www.ala.org/advocacy/copyright/teachact/majorcopyright.

Association of College and Research Libraries. *Framework for Information Literacy for Higher Education.* Chicago, IL: Association of College and Research Libraries, 2015. http://www.ala.org/acrl/standards/ilframework.

Austenfeld, Anne Marie. "Building the College Library Collection to Support Curriculum Growth." *Collection Management* 34, no. 3 (2009): 209–27. https://doi-org.du.idm.oclc.org/10.1080/01462670902975027.

Banfield, Laura, and Jo-Anne Petropoulos. "Re-Visioning a Library Liaison Program in Light of External Forces and Internal Pressures." *Journal of Library Administration* 57, no. 8 (2017): 827–45. https://doi-org.du.idm.oclc.org/10.1080/01930826.2017.1367250.

Bernhardt, Beth R., Leah H. Hinds, and Katina P. Strauch, eds. *Roll with the Times, or the Times Roll Over You: Charleston Conference Proceedings, 2016.* West Lafayette, IN: Purdue University Press, 2017. http://www.jstor.org/stable/j.ctvhhhdbh.

Bowker, Lynne. "The (In)visibility of Academic Librarians in the Cyclical Program Review Process: A Corpus-Based Study of Two Ontario Universities." *The Canadian Journal of Information and Library Science* 43, no. 1 (2020): 66–95. https://doi-org.du.idm.oclc.org/10.3138/cjils.e004.

Clark, Jasmine. "A Coordinated Effort: Cultural and Policy Requirements for Digital Accessibility." *College and Undergraduate Libraries* (2021): 1–16. https://doi-org.du.idm.oclc.org/10.1080/10691316.2021.1932659.

Díaz, José O., and Meris A. Mandernach. "Relationship Building One Step at a Time: Case Studies of Successful Faculty-Librarian Partnerships." *portal: Libraries and the Academy* 17, no. 2 (2017): 273–82. https://doi-org.du.idm.oclc.org/10.1353/pla.2017.0016.

Harris, Dawn. "Let's Get Technical—Adding a New Dimension to Education: Creating a Curriculum Materials Center Collection." *Against the Grain* 31, no. 2 (2019): 60–61. https://doi-org.du.idm.oclc.org/10.7771/2380-176X.8388.

Harvard University Law. "CopyrightX." IPX. Accessed September 22, 2021. https://ipxcourses.org/.

Haugen, Inga, Kristen Mastel, and Jeanne Pfander. "Librarians at Land-Grant Universities Working with Extension: Three Case Reports." *Library Trends* 65, no. 3 (2017): 378–95. https://doi-org.du.idm.oclc.org/10.1353/lib.2017.0007.

Hoffman, Renee L. "Building a Curriculum Materials Center from the Ground Up." *College and Research Libraries News* 79, no. 9 (2018): 511–15. https://doi-org.du.idm.oclc.org/10.5860/crln.79.9.511.

Hopkins, Lisa. "Copyright and Fair Use: Copyright in the Classroom." Last modified August 11, 2021. https://tamuct.libguides.com/copyright.

Jaguszewski, Janice M., and Karen Williams. *New Roles for New Times: Transforming Liaison Roles in Research Libraries.* Washington, DC: Association of Research Libraries, August 2013. https://www.arl.org/resources/new-roles-for-new-times-transforming-liaison-roles-in-research-libraries/.

Johnson, Anna Marie. "Connections, Conversations, and Visibility: How the Work of Academic Reference and Liaison Librarians Is Evolving." *Reference and User Services Quarterly* 58, no. 2 (2018): 91–102.

Madray, Amrita, and Amy Catalano. "The Curriculum Material Center's Vital Link to Play and Learning: What's the Connection?" *Education Libraries* 33, no. 2 (2010): 11–17. https://files.eric.ed.gov/fulltext/EJ913570.pdf.

McCafferty, Bridgit, and Dawn Harris. "Closing the Gap: The Library in Academic Program Review." In *Academic Libraries and the Academy*, edited by Marwin Britto and Kirsten Kinsley, 230–239. Chicago: Association of College and Research Libraries, 2018.

McDonnell, Pete. *The Experiential Library: Transforming Academic and Research Libraries through the Power of Experiential Learning.* Chandos Information Professional Series. Cambridge, MA: Chandos Publishing, 2017.

Miller, Laurence. "Liaison Work in the Academic Library." *RQ* 16, no. 3 (Spring 1977): 213–15. https://www.jstor.org/stable/25825827.

Miller, Sara D., and Rachel M. Minkin. "Qualitative Teaching and Learning Needs Assessment for a Community of Academic Librarians." *Journal of Library Administration* 56, no. 4 (2016): 416–27. https://doi-org.du.idm.oclc.org/10.1080/01930826.2015.1112708.

Muellenbach, Joanne M., Wendy C. Duncan, Cheryl Vanier, Lisa Ennis, and Anna Yang. "Services and Staffing Practices in Academic Health Sciences Libraries Serving College of Osteopathic Medicine Programs: A Mixed Methods Study." *Journal of the Medical Library Association* 108, no. 3 (2020): 408–19. https://doi-org.du.idm.oclc.org/10.5195/jmla.2020.862.

Nero, Neil, and Anne Langley. "Subject Liaisons in Academic Libraries: An Open Access Data Set from 2015." *portal: Libraries and the Academy* 17, no. 1 (2017): 5–15. https://doi-org.du.idm.oclc.org/*10.1353*/*pla*.2012.0015.

Orcutt, Darby, Mira Waller, and Scott A. Warren. "What Are Subject Liaisons When 'Collections' and 'Subjects' Don't Matter?" In *Roll with the Times, or the Times Roll Over You: Charleston Conference Proceedings, 2016*, edited by Beth R. Bernhardt, Leah Hinds, and Katina Strauch, 394–96. West Lafayette, IN: Purdue University Press, 2017. https://muse.jhu.edu/book/62521.

Reference and User Services Association, Collection Development and Evaluation Section, Liaison with Users Committee. "Guidelines for Liaison Work in Managing Collections and Services." *Reference and User Services Quarterly* 41, no. 2 (Winter 2001): 107–9. https://www.jstor.org/stable/41241068.

Shea, Michelle. "Faculty Center for Teaching and Learning." Last modified August 18, 2021. https://tamuct.libguides.com/FCTL.

Silver, Isabel D., and Barry Trott. "Outreach Activities for Library Liaisons." *Reference and User Services Quarterly* 54, no. 2 (Winter 2014): 8–14. https://journals.ala.org/index.php/rusq/article/viewFile/2763/2750.

Stuart, Ansley. "Embedded Librarianship: The Future of Libraries." *Library Journal*. Oxford University Press, November 19, 2019. https://www.libraryjournal .com/?detailStory=embedded-librarianship-the-future-of-libraries.

Texas A&M University-Central Texas Strategic Planning Committee. "Texas A&M University-Central Texas Strategic Plan, 2018–2022." Texas A&M University-Central Texas, 2017. https://www.tamuct.edu/accreditation/AMCT%20Strategic %20Plan%202018-2022.pdf.

Tierney, Barbara G., and Lois Kuyper-Rushing. "A Tale of Two Liaison Programs: University of Central Florida Libraries and Louisiana State University Libraries Partnering for Subject Librarian Excellence." In *Roll with the Times, or the Times Roll Over You: Charleston Conference Proceedings, 2016*, edited by Beth R. Bernhardt, Leah Hinds, and Katina Strauch, 384–88. West Lafayette, IN: Purdue University Press, 2017. https://muse.jhu.edu/book/62521.

Tierney, Barbara G., and Michael Arthur. "Subject Librarian Initiative at the University of Central Florida Libraries: Collaboration Amongst Research and Information Services, Acquisitions and Collection Services, and the Office of Scholarly Communication." In *Too Much Is Not Enough: Charleston Conference Proceedings, 2013*, edited by Beth R. Bernhardt, Leah H. Hinds, and Katina P. Strauch, 486–91. West Lafayette, IN: Purdue University Press, 2014. https://www.jstor.org/stable/j.ctt6wq772.89.

US Department of Justice Civil Rights Division. "Project Civic Access Toolkit, Chapter 5: Website Accessibility under Title II of the ADA." ADA.gov. Accessed September 22, 2021. https://www.ada.gov/pcatoolkit/chap5toolkit.htm.

Zanin-Yost, Alessia. "Academic Collaborations: Linking the Role of the Liaison/Embedded Librarian to Teaching and Learning." *College and Undergraduate Libraries* 25, no. 2 (2018): 150–63. https://doi-org.du.idm.oclc.org/10.1080/10691316.2018 .1455548.

2

Reconnecting the Dots

An Analysis of Campus Stakeholders' Awareness of Library Scholarly Communication Services

Emily K. Chan, Daina Dickman, Nicole Lawson,
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UNIVERSITIES TRADITIONALLY IDENTIFIED as teaching institutions are increasingly encouraging faculty to engage in grant-funded research, scholarship, and creative activities, often to highlight institutional impact and influence. Academic libraries, with growing investments in scholarly communication services, are in a unique position to support these efforts. Although campus administrators may not see libraries as natural partners for these new strategic initiatives, given their historical perceptions of libraries, there are significant collaboration and growth opportunities for administrators and faculty in aligning with library scholarly communication programs.

Reporting on an awarded Institute of Museum and Library Services (IMLS) National Forum grant (LG-35-19-0066-19) to assess scholarly communication programs at Carnegie-classified Master's Comprehensive (M1) public institutions, this chapter presents results from librarian focus groups, interviews with campus grant administrators, and conversations at the virtual Scholarly Communication Assessment Forum in May 2020, where both librarians and campus stakeholders were in attendance. Across these focus groups, interviews, and conversations, there were notable discrepancies between scholarly communication offerings and the grant administrators' awareness of these services.

Analysis includes response mapping between librarians and campus grant administrators at seven M1 public institutions. Interviews conducted with campus stakeholders and scholarly communication librarians demonstrate that these institutions face various challenges, including multiple, competing, and simultaneous strategic priorities. The intersection of external stakeholder

work and the libraries' ability to support research support services is also investigated. Results demonstrate the gaps in outreach between liaison and scholarly communication librarians and their respective campus partners. Responses from campus stakeholders also reveal a growing need to provide comprehensive research impact services, something that few of the institutions were offering at the time the study was conducted. The chapter concludes with practical suggestions for closing the awareness gap and moving libraries from roles of research support to research partner.

Literature Review

For decades, academic libraries have been encouraged or required to demonstrate their impact on various campus initiatives, whether related to student success, faculty productivity, or other pertinent strategic priorities. Alignment with campus strategic plans has emerged frequently as an assessment element. Kathryn Crowe has indicated that developing strategic plans and assessments to support a university's mission raises the library's profile locally[1] while Holt Zaugg has shown the positive effects of a library impact map (LIM) assessment mapping library priorities to university areas of focus.[2] In a case of scholarly communication and institutional repositories specifically, just the mention of the institutional repository (IR) within a library's strategic plan indicated the library's commitment to supporting the campus' research lifecycle.[3]

Creating a culture of assessment in libraries has been increasingly discussed in library assessment communities with practical recommendations for implementation,[4] including publicizing the commitment[5] and creating a program targeted to stakeholder needs.[6] The topic of research impact as a library service has also been an area of growing scholarship. Lauren Di Monte discussed the particular suitability of research impact services to the job portfolio of librarian and library assessment professionals,[7] and Berenika Webster and Jackie Belanger explored potential partnerships and tools for measuring the role the library plays in supporting research impact and scholar productivity.[8] Many libraries, however, have faced outreach challenges with faculty who may not recognize the role the library can play in supporting research analysis for faculty because they view students as the sole potential beneficiaries and users of library services.[9]

The grant project discussed in this chapter was initially undertaken to develop consensus on performance indicators for scholarly communication services. The literature has shown, however, that although researchers have

acknowledged and investigated performance indicators for institutional repositories, creating meaningful indicators requires time and careful attention to the development of relationships with faculty members. For example, Maria Cassella compared internal elements related to institutional repositories (e.g., user perspective, internal process perspective, financial perspective, learning and growth perspective) to external criteria (e.g., interoperability, secured external funding for the IR, and national or international participation in projects) using a balanced scorecard approach in order to assess the overall value of IRs for researchers.[10] Fatemeh Lagzian, A. Abrizah, and Mee-Chin Wee highlighted critical success factors for IR management, services, technology, self-archiving practices, staffing, and resources through a survey of both IR managers as well as researchers in the same institutions.[11] Further, Holly Mercer, Brian Rosenblum, and Ada Emmett documented faculty behaviors and interactions with their local IR over time.[12] As researchers' needs may vary widely by discipline beyond their needs for an IR, Diane Harley et al. found that tailored local solutions may be necessary in the delivery of scholarly communication services with infrastructure "built within the context of disciplinary conventions, reward systems, and the practice of peer review."[13]

Metrics for IRs have not reached the same level of standardization as many other library tools, such as the COUNTER Code of Practice for normalizing the collection of electronic resources statistics, the Association of College and Research Libraries (ACRL) Metrics that collect data on library usage in academic libraries, or the Integrated Postsecondary Education Data System (IPEDS) surveys that provide general statistics on higher education and include sections for academic libraries. The challenges of standardized metrics for IRs should be understood in the context of local cultures, which have been mentioned in multiple studies. Both Gerard Van Westrienen and Clifford Lynch, as well as Rowena Cullen and Brenda Chawner, found that IR success is determined by the community; in particular, Cullen and Chawner, along with Laura Waugh et al., drew attention to the disciplinary patterns that impact local success.[14] Todd Bruns and Harrison Inefuku mapped metrics to audience types, indicating that metrics may need to be individualized to serve various audiences. For instance, university administrators, campus units, faculty, students, and the library or repository managers may each assess success using different metrics, though Bruns and Inefuku recognized that comparing metrics across institutions does require more standardization.[15] Other scholars, such as Patrick O'Brien et al. and Ross Macintyre and Hilary Jones, have concluded that current metrics for repositories are insufficient, leading to undercounting and, ultimately, inaccurate reporting.[16] Projects such as Institutional Repository Usage Statistics UK (IRUS-UK)[17] and Repository

Analytics & Metrics Portal (RAMP)[18] have emerged to address these inaccuracies. Some institutions have instituted tools such as alternative metrics, or altmetrics, to track the additional reach of scholarship through social media engagement or coverage in the press to assist with proving value and impact. Stephanie Haustein et al. investigated the role of social media in measuring the impact of research and scholarship and concluded that a more nuanced approach is needed to appropriately report research productivity.[19] Kim Holberg et al. reaffirmed the complexity of determining scholarly impact, suggesting that alternative metrics may be another viable vehicle while acknowledging the need to address complexities around identifying the correct work, social media company restrictions, and the correlation between these metrics and ultimate impact.[20]

Project Background

California State University, Sacramento, and San José State University received an Institute of Museum and Library Services National Leadership Grant in 2019 to organize a National Forum on the topic of scholarly communication assessment. Both institutions had noted a gap between service planning and demonstrated assessment of success. This grant project aimed to bridge this gap by producing a white paper and a scholarly communication assessment rubric, informed by feedback from both scholarly communication practitioners and campus stakeholders. The project focused on public institutions classified as Master's Colleges and University-Large Programs, or M1s, as defined by Carnegie classifications. The focus on M1s was intentional; most public M1s are teaching-centered institutions with limited budgets for research-intensive activities, so determining which services best support their communities has been necessary to ensure maximum impact per dollar.

Investigators on this project included Emily K. Chan, Daina Dickman, Nicole Lawson, and Suzanna Yaukey. Lili Luo served as the evaluator for this project. Emily K. Chan is Associate Dean of Research and Scholarship for the University Library at San José State University. Chan's background includes previous experience as a Scholarly Communications Librarian, and she leads conversations regarding best practices in scholarly communication within the grant team. Daina Dickman is Assistant Director of the Network of the National Library of Medicine (NNLM), Region 5; however, she was the Scholarly Communication Librarian throughout the collection of results for this chapter. She serves as an additional scholarly communication expert with firsthand knowledge of common campus stakeholder interactions. Nicole Lawson is Associate Dean for Academic Services at

California State University, Sacramento, where she is responsible for assessment, among other duties. Lawson leads conversations regarding the incorporation of library assessment practices into scholarly communication practices. Lawson is the current Project Director. Suzanna Yaukey is Dean of University Libraries at Towson University. Yaukey was the past convener of the ACRL Digital Curation Interest Group. In this role, she led the group's initial steps to become an ACRL Section, the Digital Scholarship Section—a move that expanded ACRL's scope in the area of digital scholarship as it pertains to scholarly communication. Yaukey began as the Project Director. Luo is a Professor at the School of Information at San José State University. As the evaluator for the grant, she served as the moderator for focus group sessions and campus stakeholder interviews and assisted the investigators throughout the process with research design.

Method

The project included three phases (see Table 2.1). First, in-person and virtual focus groups were conducted with scholarly communication practitioners who were employed or formerly employed by M1 Carnegie-classified institutions. Twenty librarians across three focus groups participated. Second, interviews were conducted virtually with thirteen campus stakeholders who were employed at M1 public institutions and involved in grants processes, including supervising, managing, and assisting with grant budgets, writing, reporting, or other grant requirements. Finally, the National Forum was held on May 4 and 5, 2020, online with forty-three participants, including library scholarly communication practitioners or librarians, library assessment experts, scholarship recipients, campus stakeholders from grants offices, and faculty who had some experience working with the library and their scholarly communication services. The project went through IRB review, but because of the focus on program assessment, it was not deemed to be human subject research. Participants were still asked to complete basic consent forms.

TABLE 2.1
Phases of the Project with Activities and Number of Participants per Phase

Phase	Activity
1	Three in-person or virtual focus groups with scholarly communication librarians (n=20)
2	Individual interviews conducted via Zoom with external stakeholders (n=13)
3	Virtual Scholarly Communication Assessment Forum convening scholarly communication librarians, external stakeholders, assessment experts, teaching faculty, and scholarship recipients (n=43)

Focus Groups with Librarians

The overarching purpose of conducting the focus groups with scholarly communication librarians was to determine best practices and needs in the assessment of scholarly communication services and programs at M1 public academic libraries. The focus group script was written with the intention of identifying institutions' scholarly communication activities, assessing that work, and ascertaining scholarly communication components that were difficult to assess but were important to consider for development of future programs and services. To get discussion started, and to track all the scholarly communication services institutions offered, each librarian in the focus group was asked to complete a questionnaire on their services, which was based on the University of Central Florida's (UCF) Research Lifecycle.[21] This lifecycle model was chosen because of its comprehensiveness in identifying various scholarly communication services and for the usefulness in organizing discussions to match corresponding lifecycle phases. For each step in the lifecycle, librarians indicated what services they offered, how developed the service was, and how the service was staffed (i.e., by a single person or a team). A moderator guided the librarians through the focus groups, following a predefined script.[22] After the focus groups, the researchers solicited referrals for stakeholders in the librarians' grant offices who could take part in individual interviews.

Campus Stakeholder Interviews

The campus stakeholder interviews similarly used the UCF Research Lifecycle as a basis for discussion. Stakeholders were shown a presentation breaking down the various phases in UCF's diagram. In each section, they indicated whether they were aware of any library programs that supported the specific phase, or if they would welcome such a service. The stakeholders were also queried as to how they would suggest a step or activity might be assessed. The same moderator from the focus groups conducted the one-on-one interviews with campus stakeholders, guiding them through a script of questions and queries regarding each stage of the lifecycle.[23] All discussions in the focus groups and campus stakeholder interviews were transcribed.

Scholarly Communication Assessment Forum

Data from the focus groups and the campus stakeholder interviews informed the agenda for the virtual Scholarly Communication Assessment Forum in May 2020. Many of the focus group participants were invited to speak about their services at the forum, and campus stakeholders and faculty were invited

to serve on panels discussing library scholarly communication services. Additionally, participants in four breakout rooms discussed specific topics with questions and prompts to get conversation started, including scholarly communication as part of the strategic planning process, feedback from campus stakeholders, creating stories from scholarly communication interactions and successes, and, lastly, elements of a rubric to assess services at M1 institutions. The forum and breakout rooms were also recorded and transcribed.

The entire project created a rich data set on scholarly communication practices from various perspectives. In the next section, the discrepancies between librarians and their campus stakeholders at the same institutions are discussed. Fourteen participants from the focus groups and campus stakeholders' interviews were mapped to seven M1 institutions. Only seven institutions were included in the analysis for this chapter, as these were the only institutions where both a stakeholder and a librarian participated in the research. Services offered at their respective universities were coded as nodes in NVivo, a qualitative data analysis tool. The answers from the scholarly communication librarians (both from focus groups and from the forum) were then compared to the answers from the campus stakeholders.

Results

The seven institutions analyzed in these results had varying levels of scholarly communication services and staffing scenarios. A few librarians were the only ones working on scholarly communication within their library; some had scholarly communication tasks as one of many job duties; and a few worked within a team of professionals. All the seven institutions had an IR, but the content within the IR varied. All institutions also offered various scholarly communication services depending on local need, though all offered some form of either guidance on where to publish or receive consultation on author rights. Additional services that the librarians reported during focus groups included the following: open access initiatives such as mandates, policies, or funding programs; predatory publishing review or workshops; citation management assistance; citation metrics or alternative metrics guidance; discovery support, including indexing in library databases and across the web; impact reporting; data management services; data analysis and visualization; writing assistance or support; and copyright guidance. These services were initially reported during the first activity using the UCF research lifecycle; others became apparent during focus group conversations and during the forum. The campus stakeholders viewed the same UCF research lifecycle to frame discussions during the interviews, which helped establish consistent terms across both groups.

The overall results were grouped into three categories or institutional profiles: the library that is under-resourced and, therefore, has issues establishing effective partnerships; the library that has different priorities or target audiences than their grants office; and libraries where a budding relationship is more indicative of the library becoming a research partner. In the following analyses, institutions are referred to by the letters A through G, with the librarian and stakeholder for each institution also identified with the corresponding institution letter. No additional details on the institutions or participants are provided in order to protect the confidentiality of participants.

Library is Under-Resourced, Making Partnership Difficult

Two libraries were included under the category of under-resourced to the point that partnering with any campus stakeholders might be difficult: Institution A and Institution B. Stakeholder A was only aware of one scholarly communication service: the IR.[24] Institution A library did, however, offer four other services that the stakeholder considered aspirational or helpful to their mission or role at the campus. These included where to publish workshops, predatory publishing guidance, citation management, and literature review assistance.

Per Librarian A's statements, the library provided workshops on predatory publishers with advice on where faculty might consider publishing.[25] Stakeholder A, despite not knowing that the service existed, stated it is helpful that "a librarian could potentially speak to a faculty member and say, 'maybe that's not your best area, the best publication.'" In the case of citation management and literature reviews, the stakeholder was unaware of the citation workshops the library offered and also did not know that the library provided consultations on literature reviews. In fact, the stakeholder asserted that the librarians might not have "the bandwidth even over there . . . to help folks with the literature review."

Stakeholder A mentioned two services that they thought would be aspirational for the library to provide: data management, which their office was responsible for at the time; and research impact services. Librarian A was aware that the stakeholder's office offered this service but not that the stakeholder thought it might be better situated in the library.

Both Librarian A and Stakeholder A agreed that the library having a role in reporting out research impact would be beneficial to all. The stakeholder was interested in having the library capture the dissemination results of funded grants as they could not count quantitative outputs from funded grants. The librarian saw the repository as a tool that could help with tracking those metrics, not just for grants but also across the university:

And I think that was one of the big pushes for the institutional repository was so we could see what our colleagues were doing and having a better footprint for [Institution A]. Because that's one thing we've been very, very poor at is being able to articulate what is the impact of the research that's being done by faculty.

Stakeholder A did see the potential of the library having "the entire works that everyone has published or submitted or the results of everyone's grants or research projects" in a repository but did not see the repository as the vehicle to fuel or inform research impact. The stakeholder also expressed interest in seeing evidence of departmental cross-collaborations across the university.

Interestingly, Stakeholder A acknowledged that they did not know for sure what services the library offered to support the research lifecycle. They stated: "I, again, I cannot speak to whether the library does. I feel kind of sad now that we're having this conversation—that I don't know as much about my library." The conversation also piqued the stakeholder's interest in connecting more to their library, specifically: "It's making me think that I need to meet with the newer librarians. So, now you've got me curious, I admit it."

For the next institution in this category, Stakeholder B was aware of a few services the library offered, including the IR and fledgling data management services.[26] The stakeholder knew specifics about items in the repository, stating, "I've seen a package of publications as part of the library collection that are the result of either scholarship, some grants, collaboration with students." They were not aware of author rights services that the library offered, and the stakeholder's understanding of the scope of the data management services offered was limited. The stakeholder saw literature review and citation management support as two areas where the library could offer additional support. Conversely, Librarian B frequently mentioned the loss of staffing for scholarly communication support that had subsequently not been replaced, making a comprehensive approach to the topic difficult, as "it's a small portion of my overall umbrella."[27] The librarian also mentioned frequent partnerships on open educational research (OER) initiatives with their faculty center and indicated that affordable learning was a strategic focus for the institution.

The gap in awareness of author rights services was likely due to Institution B's self-submit model for the repository. The library provided resources on checking SHERPA/ROMEO and agreements to determine which article version faculty should post, but they did not mediate the deposit; rather, they only provided consultation as needed. The model for data management at the library was in the fledgling stages, with an informal group that "consults on varying parts of the data management piece." The librarian referred to it as "low visibility" with a "handful of faculty members" inquiring about new services of "research data management, using archivable databases that I'm working on and generating, text mining, data visualizations." Despite not

knowing the extent of this project at the library, the stakeholder agreed that data management was an appropriate role for the library, stating, "I'm sure it's something that they should be doing."

Different Priorities and Target Audiences

Two institutions (C and D) were categorized as having different priorities and target audiences than their grants offices. The libraries seemed to have closer collaborations with other groups on campus that were not part of the interviewed stakeholder group. At Institution C, the librarian[28] and stakeholder[29] collaborated on a few key initiatives, specifically around data management planning for grants and citation metrics/impact reporting on specific journals funded for open access publication. Stakeholder C regarded the repository as a service for students though, not one that would support the work of the grants office. Disconnects between service offerings and awareness existed on the topics of the depth of data management services and author rights or where to publish services. Stakeholder C felt that the library might be able to play a role in collaboration tools, research impact, discovery support, and data visualization.

While Stakeholder C was aware that the library provided support for data management plan authoring in the context of grant writing, they were not in tune with the depth of the service the library was offering. Librarian C mentioned a slate of data management services that included the following: help with identifying data management plans or repositories as part of the grant writing process; access to the DMPTool, an online tool for authoring data management plans that accompany grant proposals; guidance and workshops on data ownership; and guidance on disciplinary data repositories. The stakeholder mentioned a "struggle with finding sort of boilerplate language about the campus' resources," and that they felt "the library could certainly have a role in . . . speaking to our institutional infrastructure and resources for data management."

Librarian C offered where to publish assistance and author rights workshops; however, Stakeholder C did not seem to be aware of these offerings but felt that a library partnership with the campus faculty center would be valuable and appropriate. The librarian mentioned that they were invited to meet new faculty (likely in collaboration with the faculty center), and that they organized presentations on the topic of where to publish and author rights.

Stakeholder C mentioned the usage of Pivot, the grants database, multiple times, including that the library and their office co-fund the database. They saw a possibility for the library to take the lead on training faculty to do searches in Pivot. Specifically, "I don't have an information science back-

ground and our office could collaborate with the library and librarians in terms of maximizing those search options." This co-funding relationship was not mentioned by Librarian C.

Similar to other campus stakeholder interviews, Stakeholder C mentioned the importance of research impact and the role the library could play in educating faculty, specifically, "I think the library would be a good partner for helping [faculty] understand the metrics, the downloads of use and making that connection to the significance of the article." Interestingly, Librarian C mentioned partnering with the stakeholder's office to provide data on impact factors and to review journal quality for specific articles published using open access campus funding.

Institution D's situation had similarities to Institution C as the scholarly communication priorities for the librarian appeared to differ from those of the stakeholder. Stakeholder D was aware of multiple services offered by the library: an IR existed; the library had a role in long-term preservation; author rights workshops and consultations occurred; and librarians provided instruction on how to collect citations.[30] The stakeholder was unaware of predatory publishing services, stating the library could help educate faculty about these journals. The stakeholder was interested in more support for plagiarism investigations, data visualization, discovery support, and dissemination or storage of data. Librarian D, while they did frequently interact with the stakeholder's office, was much more focused on student research, topics of open access, and open educational resources.[31] The librarian partnered much more closely with the campus faculty center. This librarian acknowledged some communication issues with the faculty center as a partner, stating "they seem to have a disconnect with what we actually do and what they think we do," which might also apply to their relationship with the grants office stakeholder who was interviewed.

When discussing what the library should or could aspire to, Stakeholder D mentioned a role the library could play in discovering instances of plagiarism, specifically to protect the reputation of the institution by finding external instances of copied or plagiarized work from the institutions' authors. The stakeholder additionally felt that the library could play a beneficial role with faculty in supporting their research needs for data visualization. Also, discovery of research was a topic the stakeholder mentioned. They were aware of the readership maps in Digital Commons, the institution's IR; however, they described the need for something akin to a faculty profile to help with faculty discovery as "we may be a really small institution, but we have some super amazing people here and, and some of them are very much one of a kind." Lastly, the grants office at this institution handled data management planning and the preparation of data management plans (DMPs) for grant proposals.

Stakeholder D potentially saw a role for the library in the hosting of the produced data or related dissemination.

Budding Research Partner Relationship

Three institutions had close partnerships with the grants office that could be viewed as rising to the level of research partner. These institutions included Institution E, Institution F, and Institution G. At Institution E, the stakeholder seemed very connected to the scholarly communication librarian and to the services offered under the library's umbrella.[32] They were aware of the repository, data management services, author rights workshops, open access initiatives and policies, and copyright guidance. The only gaps between the stakeholder's knowledge of and existence of services were in the areas of literature review, citation management, and data visualization. This gap speaks to the reality that at least the first two services, if not also the last one, are likely offered by someone other than the scholarly communication librarian. In regard to literature reviews, Stakeholder E suggested that the library could "provide maybe some more workshops and assistance with doing the literature review. I know that's something I constantly struggle with." The stakeholder was unaware of workshops that the library provided for citation management, as well as assistance and workshops offered for data visualization. In conversations with Librarian E, they emphasized the particularly positive working relationship between the library and the grants office, which they considered the "hugest stakeholder, in my opinion, for advancing open access and open data."[33]

The library's assistance in author rights was lauded, as Librarian E stated, "all of my journal articles are in the big publishing houses like Elsevier. And the more I talked to the librarians, the more disenchanted I am with publishing there, but in my field, I don't really have any other choices." The stakeholder was aware of library initiatives to support and mandate open access, along with education on Open Researcher and Contributor ID (ORCID) registration and digital object identifiers (DOIs) used to distinguish individual works of scholarship online.

Both Librarian E and Stakeholder E acknowledged the need for additional library support in the areas of research impact. The stakeholder would like "a more consistent [and] effective way of being able to collect the products of faculty and student research," so that the campus can "build the research enterprise" and see "what the impact has been from the research we've been doing." The librarian saw a need to create a more campus-wide research impact service beyond the ad-hoc work they do on journal impact factors for individual faculty members, acknowledging that most faculty are not aware the

library can help: "it's more [that] people know that I know about that stuff." In later conversations, the librarian again revisited the challenges with ad-hoc assistance in research impact, hoping for their work to become "the role of the library to organize all those different statistics and types of metrics that we can pull together to provide a more comprehensive story about research output and impact."

The stakeholder at Institution F, much like Stakeholder E, was aware of various scholarly communication services from the library, including the IR, citation management, literature review support, data management planning, collaboration tools, discovery support, education on open access, and general publishing support.[34] The one service the stakeholder mentioned that the library could focus on for the future was analysis support. The librarian at this institution was part of a larger team, including support from a flagship campus, and mentioned many collaborations within their organization, such as partnering with the grants office, campus IT, an online learning center, and a Teaching and Learning Center.[35]

Stakeholder F knew details about the IR that were exceptional compared to other stakeholders interviewed for this project, including the platform name, ability to add or edit a bio, ability to search the repository, and that "it competes with other things like Google Scholar." The stakeholder mentioned various collaborative benefits of the repository, including the outward-facing connections that could be made with other researchers and the broader community.

Stakeholder F was aware of initiatives to support open access that were library-led as well as publishing support workshops which were co-hosted by the library and the faculty center. They mentioned that a librarian had been hired to assist with data management planning, and the stakeholder was aware not only of an upcoming workshop but also of a learning management system module on data management from the library. The only area the stakeholder saw as a growth opportunity for the library was to support analysis with workshops or awareness, "not necessarily data analysis support, but even just the opportunities to explore new applications, new techniques, right? I think that would be valuable for our campus."

Even though many of the programs at Institution G, the last institution, appeared to be pilots or initial scholarly communication services, the stakeholder was exceptionally informed on what was available.[36] Stakeholder G had a broader role than many of the others that the researchers talked to, which included additional aspects of academic affairs. The stakeholder knew about the new IR, predatory publishing support, copyright services, support on citation metrics, and open access programs. The stakeholder suggested areas of growth with support on measuring research impact, including where

to publish. Both the stakeholder and the librarian[37] mentioned the need for more research analysis support.

Librarian G mentioned a conference that the library hosted on the repository. While the stakeholder did not mention this conference specifically, they were aware that the library could archive student research, faculty research, and potentially data. The stakeholder was aware of outreach to help faculty boost their publications through citation and alternative metrics, and the librarian indicated they had a LibGuide supporting this topic. Both the librarian and the stakeholder mentioned an open access fund. The librarian stated: "I think faculty members are very intrigued by publishing open access, and it helps when we can pay their APCs [article processing charges]." The stakeholder stated that the open access funding helps "boost the impact" for scholarship going out through these channels and was also aware of a library review to "make sure they're not predatory journals and those sorts of things first, so they want to help make sure you're putting things in the right places."

Both Stakeholder G and Librarian G mentioned interest in advancing support in analyzing data. The stakeholder talked specifically about a workshop, or a learning community, organized by the library featuring statistical software. The stakeholder saw these interactions as important so that "faculty can talk and learn around specific areas." The librarian clarified that data visualization, text analysis, and GIS analysis would be useful for the library to offer but that they did not feel equipped to fulfill that need with the current staffing levels. While neither have a clear example of what would work best to address data visualization and analysis support, they both acknowledged a growing need in their campus community.

Stakeholder G discussed the importance of research impact as a university aspiring for a higher research status. They mentioned that "some faculty were hired under different expectations," and that they needed to measure how faculty outputs have improved over time, specifically, "Are they publishing in higher impact journals? How do we broaden the reach of anything they do publish?" Ultimately, the stakeholder felt that this kind of data was important to determine "not just who's getting what money but also who's really productive and who needs course releases and who's been impactful because we have limited resources."

Discussion and Limitations

Serious challenges still exist for M1 academic libraries to move from research support to a research partner. Many of the libraries in this study are under-staffed and under-resourced in general, not only in scholarly communication

areas, and therefore, they face difficulties creating true partnerships. Some have different priorities than the various stakeholders and must make choices about whose needs they address first. A few libraries have begun collaborating in positive ways with their grants offices, allowing their librarians to serve as research partners throughout the research lifecycle. Most stakeholders were aware of base-level offerings such as an IR, but many may not see librarians as their partners in research at all the levels that may be possible. Additionally, many of the stakeholders interviewed were not necessarily willing to say what the library should or should not be doing, as they were not closely connected in the university's organizational structures. Stakeholders may also not have interpreted ad-hoc assistance as a full-fledged "service." For instance, helping faculty find a reputable journal for article publication as needed might not be viewed as a publicized and marketed author service.

This research was not without limitations. One of the limitations in the data was the exclusion of other campus stakeholders, such as faculty centers, graduate studies offices, undergraduate research offices, and general stakeholders in academic affairs more broadly. The researchers acknowledge that a library's scholarly communication services do not just impact the grants and funding operations at a university. This group was chosen specifically in the interest of receiving normed responses. A further area of investigation might include interviews with additional partnering offices and individuals. Because of this limited stakeholder group, many of the interviewees were also not aware of OER projects within their local libraries, which, in some cases, were some of the more well-funded initiatives within those libraries. This alignment would not be uncharacteristic, given the teaching and learning focus of M1s.

Furthermore, even after choosing stakeholders from the grants offices, many expressed the sentiment that they really did not know enough about the library or that they might not be the right person to consult. Statements such as "that's my sense, but I may be wrong" showed the stakeholders' lack of awareness of library services. The concept of needing to better translate what libraries do for their communities is certainly not a new one; most libraries struggle to explain and justify their true purposes. Scholarly communication services in academic libraries face the same challenge.

Conclusion and Recommendations

The focus groups, stakeholder interviews, and, ultimately, the forum illuminated the continued challenges that M1 academic libraries encounter while marketing their scholarly communication services to the broader

campus community. To be a true research partner to a stakeholder such as the grants office, librarians need to determine what services would be most valuable to those stakeholders. One recommendation would be for librarians to go through an exercise such as the UCF lifecycle review with a campus stakeholder and talk about what aspirational services libraries might offer in collaboration with their grants office. The rubric and matrix created out of the SCAF project[38] might also help seed potential service offerings and could be used as an internal tool to determine what services might be needed. Above all else, librarians need to determine how they can gradually change the perception of the library to reflect the actual work they do. This may be through modified marketing messages, increased networking with various campus stakeholders, involving more library peers in the rollout of services, or simply preparing an elevator pitch for those unexpected encounters with potential stakeholders. Scholarly communication librarians have much to offer their campus faculty and stakeholders, including grants offices. It is a matter of articulating what campus stakeholders need so that a true research partnership can be established.

Notes

1. Kathryn M. Crowe, "Strategic Library Assessment: Aligning with your University's Strategic Plan" (presentation, Library Assessment Conference, Houston, TX, December 5–7, 2018), https://doi.org/10.29242/lac.2018.40.

2. Holt Zaugg, "Revisiting a Library Impact Map" (paper, Library Assessment Conference: Assessment Programs and Organizational Issues, Online, November 18, 2020), https://www.libraryassessment.org/wp-content/uploads/2021/08/33-Zaugg-Revisiting-a-Library-Impact-Map.pdf.

3. Sue Baughman, Gary Roebuck, and Kenning Arlitsch, "Reporting Practices of Institutional Repositories: Analysis of Responses from Two Surveys," *Journal of Library Administration* 58 (2018): 71.

4. Selena Killick, "Putting a Library Assessment Culture into Practice" (presentation, Library Assessment Conference: Assessment Programs and Organizational Issues, Online, November 18, 2020), https://www.libraryassessment.org/wp-content/uploads/2020/11/118-KI1.pdf.

5. Kristin Hall and Janet H. Clarke, "Communicating Library Impact through the Assessment Website" (presentation, Library Assessment Conference, Houston, TX, December 5–7, 2018), https://doi.org/10.29242/lac.2018.12.

6. Sherry Vokey, Christine Shaw, and Tania Gottschalk, "Implementing an Assessment Program in Response to Stakeholder Need" (presentation, 13th International Conference on Performance Measurement in Libraries, Aberystwyth, United Kingdom, July 23–25, 2019), https://libpmc13.exordo.com/programme/presentation/72.

7. Lauren Di Monte, "Leveraging Library Assessment for Research Evaluation" (presentation, Library Assessment Conference: Critical/Theoretical Assessment and Space, Online, December 16, 2020).

8. Berenika Webster and Jackie Belanger, "Assessing Library Contributions and Impact Across the Research Lifecycle: A Collaborative Approach" (presentation, Library Assessment Conference: Measurement and Methods, Online, January 21, 2021).

9. Alexa Pearce et al., "Qualifying for Services: Investigating the Unmet Needs of Qualitative Researchers" (presentation, Library Assessment Conference, Houston, TX, December 5–7, 2018), https://doi.org/10.29242/lac.2018.29.

10. Maria Casella, "Institutional Repositories: An Internal and External Perspective on the Value of IRs for Researchers' Communities," *Liber Quarterly* 20 (2010): 210–25.

11. Fatemeh Lagzian, A. Abrizah, and Mee-Chin Wee, "Measuring the Gap Between Perceived Importance and Actual Performance of Institutional Repositories," *Library & Information Science Research* 37 (2015): 147–55.

12. Holly Mercer, Brian Rosenblum, and Ada Emmett, "A Multifaceted Approach to Promote a University Repository: The University of Kansas' Experience," *OCLC Systems & Services: International Digital Library Perspectives* 23 (2007): 190–204.

13. Diane Harley et al., "Assessing the Future Landscape of Scholarly Communication: An Exploration of Faculty Values and Needs in Seven Disciplines," *UC Berkeley: Center for Studies in Higher Education* (2010), https://escholarship.org/uc/item/15x7385.

14. Gerard Van Westrienen and Clifford Lynch, "Academic Institutional Repositories: Deployment Status in 13 Nations as of Mid 2005," *D-Lib Magazine* 11 (2005): https://www.dlib.org/dlib/september05/westrienen/09westrienen.html; Rowena Cullen and Brenda Chawner, "Institutional Repositories: Assessing Their Value to the Academic Community," *Performance Management and Metrics* 11 (2010): 145; Laura Waugh et al., "Evaluating the University of North Texas' Digital Collections and Institutional Repository: An Exploratory Assessment of Stakeholder Perceptions and Use," *Journal of Academic Librarianship* 41 (2015): 749.

15. Todd Bruns and Harrison W. Inefuku, "Purposeful Metrics: Matching Institutional Repository Metrics to Purpose and Audience," in *Making Institutional Repositories Work,* eds. Burton B. Callicott, David Scherer, and Andrew Wesolek (West Lafayette, IN: Purdue University Press, 2016), 213–34.

16. Patrick O'Brien et al., "Undercounting File Downloads from Institutional Repositories," *Journal of Library Administration* 56 (2016): 854–74; Ross Macintyre and Hilary Jones, "IRUS-UK: Improving Understanding of the Value and Impact of Institutional Repositories," *The Serials Librarian* 70 (2016): 100–5.

17. Macintyre and Jones, "IRUS-UK," 2016.

18. "Repository Analytics & Metrics Portal," Repository Analytics & Metrics Portal, accessed August 10, 2021, https://www.lib.montana.edu/ramp/.

19. Stefanie Haustein, Cassidy Sugimoto, and Vincent Larivière, "Guest Editorial: Social Media in Scholarly Communication," *Aslib Journal of Information Management* 67, no. 3 (2015), https://doi.org/10.1108/AJIM-03-2015-0047.

20. Kim Holberg, Stefanie Haustein, and Daniel Beucke, "Social Media Metrics as Indicators of Repository Impact," in *Making Institutional Repositories Work*, eds. Burton B. Callicott, David Scherer, and Andrew Wesolek (West Lafayette, IN: Purdue University Press, 2016), 234–48.

21. "Overview: Research Lifecycle," University of Central Florida Libraries, accessed August 10, 2021, https://library.ucf.edu/about/departments/scholarly-communication/overview-research-lifecycle/.

22. The focus group script is available on the project website: https://library.csus.edu/scholarly-communication-assessment-forum.

23. The campus stakeholder interview script is available on the project website: https://library.csus.edu/scholarly-communication-assessment-forum.

24. Interviewed by Lili Luo, January 10, 2020.

25. Interviewed by Lili Luo, November 14, 2019.

26. Interviewed by Lili Luo, January 31, 2020.

27. Interviewed by Lili Luo, October 17, 2019.

28. Interviewed by Lili Luo, October 17, 2019.

29. Interviewed by Lili Luo, December 12, 2019.

30. Interviewed by Lili Luo, December 19, 2019.

31. Interviewed by Lili Luo, November 7, 2019.

32. Interviewed by Lili Luo, December 19, 2019.

33. Interviewed by Lili Luo, November 7, 2019.

34. Interviewed by Lili Luo, February 28, 2020.

35. Interviewed by Lili Luo, October 17, 2019.

36. Interviewed by Lili Luo, December 19, 2019.

37. Interviewed by Lili Luo, October 17, 2019.

38. Rubric and matrix are available on the project website: https://library.csus.edu/scholarly-communication-assessment-forum.

Bibliography

Association of American Colleges and Universities. "Value Rubrics." Accessed August 10, 2021. https://www.aacu.org/value-rubrics.

Baughman, Sue, Gary Roebuck, and Kenning Arlitsch. "Reporting Practices of Institutional Repositories: Analysis of Responses from Two Surveys." *Journal of Library Administration* 58 (2018): 65–80.

Bruns, Todd, and Harrison W. Inefuku. "Purposeful Metrics: Matching Institutional Repository Metrics to Purpose and Audience." In *Making Institutional Repositories Work,* edited by Burton B. Callicott, David Scherer, and Andrew Wesolek, 213–34. West Lafayette, IN: Purdue University Press, 2016.

Casella, Maria. "Institutional Repositories: An Internal and External Perspective on the Value of IRs for Researchers' Communities." *Liber Quarterly* 20 (2010): 210–25.

Crowe, Kathryn M. "Strategic Library Assessment: Aligning with your University's Strategic Plan." Presentation, Library Assessment Conference, Houston, TX, December 5–7, 2018. https://doi.org/10.29242/lac.2018.40.

Cullen, Rowena, and Brenda Chawner. "Institutional Repositories: Assessing Their Value to the Academic Community." *Performance Management and Metrics* 11 (2010): 131–47.

Di Monte, Lauren. "Leveraging Library Assessment for Research Evaluation." Presentation, Library Assessment Conference: Critical/Theoretical Assessment and Space, Online, December 16, 2020.

Hall, Kristin, and Janet H. Clarke. "Communicating Library Impact through the Assessment Website." Presentation, Library Assessment Conference, Houston, TX, December 5–7, 2018. https://doi.org/10.29242/lac.2018.12.

Harley, Diane, Sophia Krzys Acord, Sarah Earl-Novell, Shannon Lawrence, and C. Judson King. "Assessing the Future Landscape of Scholarly Communication: An Exploration of Faculty Values and Needs in Seven Disciplines." *UC Berkeley: Center for Studies in Higher Education* (2010). https://escholarship.org/uc/item/15x7385.

Haustein, Stefanie, Cassidy Sugimoto, and Vincent Larivière. "Guest Editorial: Social Media in Scholarly Communication." *Aslib Journal of Information Management* 67, no. 3 (2015). https://doi.org/10.1108/AJIM-03-2015-0047.

Holberg, Kim, Stefanie Haustein, and Daniel Beucke. "Social Media Metrics as Indicators of Repository Impact." In *Making Institutional Repositories Work*, edited by Burton B. Callicott, David Scherer, and Andrew Wesolek, 234–48. West Lafayette, IN: Purdue University Press, 2016.

Killick, Selena. "Putting a Library Assessment Culture into Practice." Presentation, Library Assessment Conference: Assessment Programs and Organizational Issues, Online, November 18, 2020. https://www.libraryassessment.org/wp-content/uploads/2020/11/118-KI1.pdf.

Lagzian, Fatemeh, A. Abrizah, and Mee-Chin Wee. "Measuring the Gap Between Perceived Importance and Actual Performance of Institutional Repositories." *Library & Information Science Research* 37 (2015): 147–55.

Macintyre, Ross, and Hilary Jones. "IRUS-UK: Improving Understanding of the Value and Impact of Institutional Repositories." *The Serials Librarian* 70 (2016): 100–5.

Mercer, Holly, Brian Rosenblum, and Ada Emmett. "A Multifaceted Approach to Promote a University Repository: The University of Kansas' Experience." *OCLC Systems & Services: International Digital Library Perspectives* 23 (2007): 190–204.

O'Brien, Patrick, Kenning Arlitsch, Leila Sterman, Jeff Mixter, Jonathan Wheeler, and Susan Borda. "Undercounting File Downloads from Institutional Repositories." *Journal of Library Administration* 56 (2016): 854–74.

Pearce, Alexa, Caroline He, Russell Peterson, Karen Downing, Alix Keener, Jacqueline Freeman, Andrea Kang, Hilary Severyn, and Elizabeth Yakel. "Qualifying for Services: Investigating the Unmet Needs of Qualitative Researchers." Presentation, Library Assessment Conference, Houston, TX, December 5–7, 2018. https://doi.org/10.29242/lac.2018.29.

"Repository Analytics & Metrics Portal." Repository Analytics & Metrics Portal. Accessed August 10, 2021. https://www.lib.montana.edu/ramp/.

"Rubrics." Rails on Track. Accessed August 10, 2021. http://railsontrack.info/rubrics.

University of Central Florida Libraries. "Overview: Research Lifecycle."Accessed August 10, 2021. https://library.ucf.edu/about/departments/scholarly-communication/overview-research-lifecycle/.

Van Westrienen, Gerard, and Clifford Lynch. "Academic Institutional Repositories: Deployment Status in 13 Nations as of Mid 2005." *D-Lib Magazine* 11 (2005): para. 21. https://www.dlib.org/dlib/september05/westrienen/09westrienen.html.

Vokey, Sherry, Christine Shaw, and Tania Gottschalk. "Implementing an Assessment Program in Response to Stakeholder Need." Presentation, 13th International Conference on Performance Measurement in Libraries, Aberystwyth, United Kingdom, July 23–25, 2019. https://libpmc13.exordo.com/programme/presentation/72.

Waugh, Laura, Jesse Hamner, Janette Klein, and Sian Brannon. "Evaluating the University of North Texas' Digital Collections and Institutional Repository: An Exploratory Assessment of Stakeholder Perceptions and Use." *Journal of Academic Librarianship* 41 (2015): 744–50.

Webster, Berenika, and Jackie Belanger. "Assessing Library Contributions and Impact Across the Research Lifecycle: A Collaborative Approach." Presentation, Library Assessment Conference: Measurement and Methods, Online, January 21, 2021.

Zaugg, Holt. "Revisiting a Library Impact Map." Paper, Library Assessment Conference: Assessment Programs and Organizational Issues, Online, November 18, 2020. https://www.libraryassessment.org/wp-content/uploads/2021/08/33-Zaugg-Revisiting-a-Library-Impact-Map.pdf.

3

Growing Deep Collaboration
for Research Support

Stephanie Crowe, Laura McBrayer, and Ashley Knox

HIGHER EDUCATION INSTITUTIONS are classified and ranked through several models, including the Carnegie Classification system. At the top of the Carnegie model are doctoral universities, which comprise around 10 percent of post-secondary institutions.[1] Those institutions are further ranked as R1: Doctoral Universities—Very high research activity; R2: Doctoral Universities—High research activity; or D/PU—Moderate research activity. R1 or R2 classification is driven by meeting thresholds in two key metrics that indicate research activity: research expenditure dollars and the number of doctoral degrees awarded.[2]

In December 2018, the University of North Carolina Wilmington (UNCW) was reclassified from a master's comprehensive university to R2. While acknowledging that the change in classification had been achieved through efforts long underway, the university recognized the reclassification as an opportunity to thoroughly embrace the research activities of the university through an assessment and planning process. A Doctoral Transition Task Force consisting of faculty, administrators, and staff from across the university was charged with assessing needs across campus related to research support.

The report that came out of this task force recognized several areas in which the UNCW library should expand in support of increased research activities. The proposed focus areas were based on recommendations provided by the library that were driven by UNCW faculty survey data and environmental scans of peer, peer aspirant, and other UNC system institutions. These areas included 1) copyright and intellectual property support; 2)

open access publishing; 3) enhancement to the institutional repository and support for ORCID IDs; 4) evaluation/visualization of scholarly impact factors; 5) research data management; 6) infrastructure and support for digital scholarship; 7) geographic information systems (GIS) support; 8) virtual and augmented reality in research and teaching; 9) 3D printing, modeling, and scanning; and 10) digital media production.[3]

Under the liaison model the library was using at the time, a basic level of some of these services was already being provided on an ad-hoc basis. However, with the move to R2 status and the subsequently increased expectation for faculty research productivity, coupled with an expanding student population, library liaisons had neither the time nor the expertise to provide the full systematic suite of research services needed on campus.

This chapter provides an overview of the literature on how increased institutional research activities have impacted library organizations and presents a case study on UNCW's shift to R2 classification and the resulting impacts on library staffing, services, and resources, with an emphasis on necessary changes in the liaison model. Lastly, the chapter outlines how a new model to deliver research services was created and implemented, with a focus on deep collaboration to enhance the liaison model by adding new functional research specialists and specializations.

Literature Review

The attainment of research activity classification has been considered a "prestige-seeking behavior, ultimately designed to help institutions generate more resources."[4] It has not been uncommon for striving universities to aim for increased research outputs, specifically in the areas of sponsored research dollars and completion of graduate degrees. However, the pursuit of R2 status is not without consequences.[5] Research conducted by Kevin R. McClure and Marvin A. Titus demonstrates that administrative spending increases as institutions seek higher classification.[6] This increase in administrative spending results in changing institutional structures and prioritization. The high price tag of R1 or R2 status has also been well documented; it requires significant investment in infrastructure and human resources in order to support the needed research activity.[7]

Beyond the cost and resources needed to achieve and maintain R2 status, there are documented effects on the institutional culture. Some data has suggested that research-focused institutions have lower student satisfaction due to fewer student-faculty interactions.[8] Leslie Gonzales found that the effects of "striving" on faculty include the perception, if not reality, that

teaching and service are less valued, as well as evidence of tenure denials and changes to evaluation criteria.[9] The impact of institutional reclassification on evaluation criteria and workload policies has also impacted librarians who are sometimes classified as tenure-track faculty. This situation is described at Idaho State University, where its Carnegie classification was elevated and, in turn, "high standards for research or scholarly activity were being implemented University wide, and library faculty, if they wanted to remain as faculty, would need to meet these standards."[10] Ultimately, the librarians created and adopted a new workload and promotion and tenure policy that met the new standards.

There are also rewards associated with increased research activity classification, including higher salaries for faculty, student and faculty recruitment benefits, increased funding from a variety of sources, and overall prestige.[11] Despite concerns that the student experience may be diminished at research-intensive institutions, some research shows that "institutional differences as fundamental as Carnegie type are not directly related to differences in students' college experiences and gains in learning."[12]

Impact of Increased Research Activity on Libraries

Many academic libraries have faced challenges in responding to an increased focus on institutional research activity. In response, libraries have recognized the need to strategically align their mission, goals, services, and support with institutional strategic priorities and to change and adapt to meet evolving institutional goals.[13] At the most basic level, data has shown that library staffing ratios are higher at doctoral research-activity institutions than masters institutions.[14] Libraries that support institutions with increasing research activity recognize that they must deliver a variety of research support services, which has been defined as "anything a library does to support the activity of scholarship and research at its parent institution."[15]

How libraries have been organized to provide the needed services varies. Trish Wilson outlined how the Victoria University of Wellington library strategized to build research support capacity through strengthening the skills of subject librarians, creating new positions, reorganizing structurally, and increasing collaboration within the library and across the university.[16] In particular, Jennifer Vinopal and Monica McCormick discussed the shortcomings of supporting digital scholarship activity through the organizational models of either having a separate unit (which prevents integration of services) or creating full integration across the organization (which leads to diffusion). Instead, they proposed a hybrid model that identified "current staff who are best situated (because of knowledge and skills) to help develop

digital scholarship services, then free them up to lead the initiative, without necessarily creating a new unit."[17]

The hybrid model was defined more broadly by Janice Jaguszewski and Karen Williams in 2013 as the combination of both traditional subject-focused liaisons and functional experts, the latter of whom provide advanced research services in areas such as copyright, GIS, and data management both to library faculty and staff and to the broader campus community.[18] Sheila Corrall surveyed how library organizations are increasingly utilizing "operational convergence," which has been defined as "separate services/departments collaborating to coordinate their activities to improve conference and effectiveness" as opposed to traditional structures of organizational convergence that merges units formally.[19] This research recommended that library organizations need to develop successful models for collaboration as opposed to hierarchical models in order to meet evolving research goals.

How to manage the change needed to adapt to reclassification can be found in literature on library reorganization. John Novak and Annette Day[20] compared their reorganization experience at the University of Nevada, Las Vegas, as well as case studies of several other library reorganizations against two prominent change management models, the eight-step process outlined by John Kotter[21] and Lee Bolman and Terrence E. Deal's *reframing* method.[22] Through this analysis, Novak and Day describe a five-stage model that they recommend libraries use to move through change processes:

1. Spur/driver for change: Internal or external influencing factors precipitate the need for change.
2. Analysis and diagnosis: Analyzing the current state of the organization and diagnosing what changes need to be made to address the influencing factors.
3. Communicating the change plan: Building consensus and overcoming resistance through clear and open communication. Allowing feedback loops to assess feasibility of change; realign change plans if appropriate.
4. Implementing the change: Moving forward with a plan for change, including support for acquiring new skills and transitioning into new roles.
5. Continuous assessment: Constant evaluation to assess the success and sustainability of the change. This continuous assessment may lead back to the first stage as the organization continually evolves to meet the changing environment.[23]

Lastly, the literature has provided an abundance of examples of how liaison librarian roles are evolving to meet the research needs of the university. Nancy Kranish et al. developed a new liaison model at their institution that

moved away from being collection-focused and instead becoming more intent on creating connections, establishing relationships, and engaging with their community.[24] In general, liaison librarians have moved away from staffing reference desks, decreased the time spent on collection development, increased the amount of instruction they provide, engaged in more activities to provide research support, and divided departmental services between subject and functional experts.[25] To describe the various ways liaison models have evolved in response to the need to provide more research support, Megan Nelson and Abigail Goben described four "models of engagement" for how liaison librarians can provide research data support services. These models include the following: 1) a hierarchical, directive model that "result[s] in updated job responsibilities which add data management as a specific duty and a potential realignment or reduction of other job responsibilities;"[26] 2) a hierarchical, triage model that develops skills for all liaisons but also includes "specific handoff strategies for more specific or advanced questions;"[27] 3) a community of practice model where groups or committees voluntarily form to tackle the development of new or expanded services; and 4) cross-functional initiatives which "drew on expertise from around the Libraries, but did not necessarily require a top-down mode of leadership."[28] Liaison librarian roles have clearly been changing; the differences lie ultimately in how these changes are accomplished.

Case Study: University of North Carolina Wilmington

The research support services offered by the library at the University of North Carolina Wilmington, until the change in Carnegie classification, had been almost exclusively delivered via a liaison program. A total of eight liaison librarians were each responsible for a group of academic departments organized around subject areas (for example, humanities librarian, business librarian, health and human services librarian, etc.). Liaisons' job descriptions included connecting with the faculty, staff, and students in their academic departments to support their stakeholders' needs in information literacy instruction, collections, and research. In practice, liaisons, by necessity, focused their efforts almost entirely on information literacy and student research assistance. The number of classes and students per liaison area meant that liaisons did not have the requisite time to devote to intensive faculty research support. In addition, although liaisons had developed expertise at searching for literature in their assigned subject areas, for the most part, they did not have the expertise to provide more than a basic level of support in more time-intensive research areas, such as research data management, digital projects, scholarly publishing, or research impact—nor did they have the time to gain such expertise.

Spurred in part by UNCW's transition to R2 status, and recognizing the need to explore new collaborative models, the library formed a small investigative team that included the following team members: the senior associate director, Library Information Technology and Scholarly Research; the associate director of Research and Instructional Services and Library Assessment; the coordinator of liaison librarian services; and the digital initiatives librarian. Three of these four individuals are the authors of this chapter. Loosely following the model for library reorganization described previously by Novak and Day, the team moved through the stages of the change process.[29] The first stage, *spur/driver for change*, was met by the transition to R2. The subsequent stages of *analysis and diagnosis, communicating change plan, implementing the plan,* and *continuous assessment* are described throughout the rest of this chapter.

The committee frequently met over a span of several months in 2019 and provided incremental progress updates at library staff meetings and senior-leadership team meetings. As part of those updates, the group invited feedback and sought approval, as the team continued to collect data and began to shape what would eventually become the new group of Scholarly Research Services. In those months, the committee members reviewed data collected from two different faculty surveys administered to the campus focused on research data management and digital humanities. More than 50 percent of 124 respondents to the data management survey reported that they would use the following services if they were offered:

- Assistance preparing data management plans or data sharing plans for grant applications;
- University-supported repository for preservation and/or sharing of research data;
- Workshops on data management practices for faculty;
- Assistance with identifying/using appropriate data repositories;
- Assistance with confidentiality/privacy/legal/intellectual property issues associated with data preservation and/or sharing;
- Personalized consultation on data management practices (for specific labs or groups);
- Digitization of print or other types of physical records;
- Support services and physical space for data visualizations and interactive systems; and
- Data citation services (e.g., assignment of permanent digital object identifiers [DOIs]).

Out of twenty-five digital humanities survey respondents from the College of Arts and Sciences, twenty reported that they viewed digital humanities as

moderately to extremely important in their own disciplines. Following the data analysis, the team looked at several other existing organizational models, from both peer and peer-aspirant institutions.

The team drafted a list of existing roles and expertise and then identified gaps in skills and responsibilities. One important finding was that many liaison librarians had picked up additional responsibilities in functional areas that spanned across disciplines and required more focused expertise that was not part of their official job descriptions. For example, the sciences liaison librarian had become involved in citation management, data management, and open access publishing in addition to their main liaison responsibilities. These types of responsibilities were identified for inclusion in planned positions, thus allowing liaison librarians to focus on building relationships with faculty and students and targeted information literacy instruction. The shifts in areas of responsibility didn't negate existing expertise but instead strengthened the number of library faculty and staff providing support in those areas.

As a result of this work, a priority position wish list was developed for new, additional positions: a scholarly communications librarian, a research data librarian, a digital scholarship librarian, and at least one support staff position in the Digital Makerspace. A second request for additional future positions included staff with GIS expertise, additional IT staff, and an associate director or coordinator position to lead the new unit.

The library's administration team presented these priority requests to campus administration, spelling out the library's goal to support faculty and student research in an R2 environment and explaining the current limitations in resources. By Fall 2021, based largely on this work and the Doctoral Transition Task Force recommendations, the library was able to hire for two of the requested new positions, the scholarly communications librarian and the research data librarian. These two librarians, in conjunction with the existing digital initiatives librarian, digital projects specialist, and Digital Makerspace coordinator, formed a team of functional experts for a new unit, called Scholarly Research Services (SRS). Simultaneously, the team continued to work on establishing a hybrid model for subject liaisons, housed in the Research and Instructional Services (RIS) unit, who would collaborate with the new SRS team of functional specialists to provide advanced research services to campus.

Developing a Deep Collaboration Mindset and Model

Collaboration has long been recognized by libraries as a mechanism for achieving results not otherwise possible when working alone.[30] Collaboration involves reaching across organizational divides, sharing responsibility, and

contributing to a common goal. Often, collaboration is informal and organic. For this organizational transformation, the librarians sought to collaborate in a well-defined and intentional way from the beginning, focusing on common goals, shared understandings, and shared benefits. Instead of relying on organizational structures to create relationships between liaisons and functional-specialist librarians and to avoid the development of "silos," the librarians followed the principles of deep collaboration. Deep collaboration involves a substantial commitment of resources, clearly defined and shared goals, intentional communication, and trust. It builds on and utilizes existing strengths and seeks to move initiatives forward in deeper ways.[31]

Within the library context, deep collaboration has been defined as "two or more people or organizations contributing substantial levels of personal or organizational commitment, including shared authority, joint responsibility, and robust resources allocation to achieve a common or mutually beneficial goal."[32] This concept has also been employed in knowledge management theory as "a design model for goal setting, communicating and sense-making across organizational boundaries to leverage knowledge to meet time-based competitive forces."[33] In the library context, framing the relationship between liaison librarians and functional specialists as one of deep collaboration allowed for a strong shared understanding of how to work together. The two groups hold the same shared goal of supporting faculty research and scholarship, and they work across the organization to partner on delivering those services.

Structures to Support Deep Collaboration

To encourage deep collaboration among the members of the two units now both charged with research-support services, the library administration designed several supportive structures. To provide clarity for both liaison librarians and functional experts about the responsibilities of various librarians and staff, the team created a responsibility matrix, a concept taken from project management that delineates who needs to be involved in a particular project and what role they should play.[34] The matrix (see Table 3.1) listed each scholarly research focus area for which the librarians planned to assist researchers in areas such as data management, researcher identity, and scholarly publishing. It then listed every position (liaison and functional specialist) that could be involved in some manner with one of the listed focus areas. Then, for each activity, the chart included an "R" if an employee would be responsible for that area, a "C" if an employee should be consulted, and an "I" if they just needed to be kept informed about the interaction.

TABLE 3.1
Sample Responsibility Matrix

Focus Area	Liaison	Sciences Librarian	Scholarly Communications Librarian	Digital Initiatives Librarian	Digital Projects Specialist	Outreach and Engagement Librarian	Digital Makerspace Coordinator	Research Data Librarian	Special Collections Librarian	University Archivist
Data Management Plans	I							**R**		
Finding and Interpreting Data	**R**							**C**		
Finding Grants	**R**			**C (if digital scholarship project)**						
Literature Searching/Reviews	**R**									
Citation Management	**R**	**C (if EndNote)**	**C (if Zotero)**							
Research Impact/Impact Factor/Researcher Identity	**C**		**R**					**I**		
Open Access	I		**R**							
Scholarly Publishing/Finding a Publication Venue	**R**		**C**					**I**		
Open Education	**C**		**R**							
Podcasts	I						**R**			
3D Printing/Scanning/Modeling	I						**R**			
Data Visualization	I							**R**		

(continued)

TABLE 3.1. Continued

Focus Area	Liaison	Sciences Librarian	Scholarly Communications Librarian	Digital Initiatives Librarian	Digital Projects Specialist	Outreach and Engagement Librarian	Digital Makerspace Coordinator	Research Data Librarian	Special Collections Librarian	University Archivist
Digital Mapping	I			C	R			C		
Text Mining and Analysis	I				R					
Video Filming and Editing	I						R			
Virtual/Augmented Reality	I						R			
Copyright and Fair Use	I		R					I		
Physical Exhibits	C			R		R				
Digital Exhibits	C			R	C	I				
Institutional Repository	I		R	R						
Research Data Curation and Depositing	I (C if **disciplinary repository**)							R		
Data Analysis	C							R		
Digitization Project Planning	I			R	C					
Digital Scholarship Project Planning	I			R	C					
Journal Hosting	I		R							
Digital Preservation	I			R					C	C

Key: R = Responsible; C = Consulted; I = Informed

In keeping with the philosophy that to provide effective liaison services a liaison needed to maintain awareness of library partnerships with scholars in their areas, each focus area that did not list a liaison as the person responsible or to be consulted included an "I" in the liaison column. This indicated that liaisons should be "in the loop" for all projects with their faculty, even if they were not active participants themselves. Library administration also encouraged liaisons to maintain their already established scholarly relationships with their faculty. If a liaison had already been working with a faculty member on research data curation, for example, it was made clear that the liaison was not required to suddenly hand off that activity to the research data librarian but, if preferred, could continue to build upon their existing relationship while keeping the research data librarian informed about the partnership. This approach clarified the collaborative roles of liaisons and functional specialists while providing flexibility to maintain existing librarian-faculty relationships. It also encouraged sustained collaboration between the two groups, as no focus area included only one individual; rather, for each area, different librarians would play different roles, but no one would be working as a solo operator.

In this model of deep collaboration, when liaisons and functional librarians work together to provide research services, a simple referral is not sufficient. Instead, a "sustained team approach is best, in which liaisons not only bring critical parties together, but also maintain engagement as problems are defined and solutions are developed."[35] For example, the computer science liaison librarian and the research data librarian since Fall 2021 have been collaborating on a project involving a computer science faculty member's datasets. The liaison was approached by a computer science researcher with a request to track down all research citing an original, licensed dataset. With the help of the research data librarian, training was offered to the disciplinary project team (including a graduate student in computer science and a commercialization coordinator) in using citation managers, data citation and deposition in a repository, and choosing impact metrics to describe the path of the dataset from inception to a sprawling area of computer science research. Future plans for this collaboration include helping them to make visualizations to show the academic reach of the dataset. These library-guided trainings will be an opportunity for the senior researcher to have a model for early-career researchers in his department about communicating their research and areas of support for the commercialization office to suggest other licensed projects. For this project, all parties—the liaison, the functional specialist, and the faculty member and their research team—have been playing a specific, defined role and have continued to engage with each other over the course of the project.

The responsibility matrix is a living document, and all involved parties understand that these responsibilities may change as the library works through new collaborative partnerships. The librarians have also discussed the need to clearly define both how to scope each focus area and how to define each of the three roles (informed, consulted, and responsible). Using a deep collaboration model, being "informed" ideally means more than just a single contact between a specialist and a liaison. Rather, it indicates that while the informed party may not play an active role in a project, they should maintain awareness of it and have an appropriate level of engagement with the project throughout its lifespan.

Professional Development for Deep Collaboration

With so many new and expanded services coming online in the library, internal professional development (which we called "inreach") also became a necessary activity to ensure that all library faculty and staff developed a baseline shared understanding of the various research-related topics covered by both liaisons and functional experts in the new SRS suite. Defined as fostering an awareness of the institution's offerings through internal professional development, inreach programming has ensured that the basic building blocks of core services are understood by everyone in the library so that all staff can offer the best available services, resources, or partnering opportunities. The overall outcome of the inreach program has been that at any service point in the library, physical or virtual, a library faculty or staff member should be able to match an inquiry with a referral to an appropriate unit. Moreover, with an effective inreach program, liaisons who encounter inquiries that touch on SRS areas should feel equipped to provide a baseline level of expertise before automatically referring the researcher to the functional expert. This has strengthened faculty relationships and has prevented SRS, a much smaller unit, from being overwhelmed with an unsustainable librarian-to-faculty/student ratio. Recognizing the perspectives of both units has allowed everyone to grow exponentially as stronger librarians.

The inreach program's central goal has been for all liaison librarians to be able to field first-line questions about SRS-related research support and to reach out to the functional experts in SRS to collaborate deeply for more involved inquiries. Fielding a question often involves providing more extensive information on a topic than can be found on the website, like giving advice on good file structures and formats, suggesting popular publishing platforms and open data repositories, explaining open access and copyright basics, describing Randall Library's grant funding opportunities, or sharing what type of digital media outputs could be created in the Digital Makerspace. A referral

is then necessary only for more complex inquiries; for example, if a faculty member wishes to record a podcast, scan and mine a corpus of texts, develop a data management plan, or investigate journal hosting.

A series of informal monthly conversations between the two departments has provided a means of accomplishing inreach goals. These monthly get-togethers have focused on specific research-related topics of interest to both units, both to keep lines of communication open and to do some informal professional development. Conversation topics are group-driven, with the department heads putting out a call for topic ideas to everyone in both departments. In addition to the in-person meetings, a Microsoft Teams site for the Academic Engagement Library Team (SRS and RIS) has allowed librarians from both units to access shared files or to share and chat about relevant topics in another informal venue.

In addition to the monthly discussion series, librarians in both units have developed more formal workshops for library faculty and staff focused on everyone's areas of expertise, such as data literacy or active learning. Although these workshops are geared toward SRS and RIS functions, the entire library faculty and staff may attend, as many of the topics apply to other units around the library as well.

Deep collaboration also requires intentional communication. As library-faculty interactions have expanded beyond assigned liaison librarians, the library administration realized that there was a need to capture contacts and communication between faculty and librarians in an accessible and organized fashion. Beyond internal communication, the library needed a place to capture expressed faculty needs related to existing or potential library partnerships as a mechanism to guide future planning. In the business world, the capturing and sharing of client data is done through customer relationship management (CRM) software platforms. Through evaluation of various software options, the library opted for a low-cost, low-barrier solution of a shared Microsoft OneNote Notebook. Organized by tabs and pages that reflect the academic college and department structure of the university, each faculty member has a templated page where various librarians can enter in information gleaned from their interactions with that individual. Dubbed "The Faculty Notebook," it provides a flexible, easily accessible way to share information about research, teaching, collection requests, curriculum, scholarship, outreach and engagement, future ideas, growth, and more. Ideally, the Faculty Notebook will also reduce the barriers for new liaison librarians to learn about faculty in their liaison areas, as well as provide a way for all functional and liaison librarians to share knowledge about faculty. To avoid concerns about privacy, access to the Faculty Notebook is limited to liaison and functional librarians, and best practices about the type of information to include

were developed. For example, specific research consultation questions are not captured verbatim. Instead, high-level information about research interests, expressed needs for library services, and instructional needs are recorded.

A final element of the deep collaboration model between library units has been the inclusion of SRS representatives in liaisons' visits to department meetings. At the beginning of each academic year, liaisons ask academic department chairs if they can visit their early fall department meetings or retreats. In addition to providing any general library updates, these visits are meant to remind the teaching faculty of the assistance that the library and the liaison can offer. After the liaison has provided a general update and a reminder about liaison services, the SRS representative gives an overview of the new advanced research services available in partnership with the research data librarian, scholarly communications librarian, digital initiatives librarian, digital projects specialist, and Digital Makerspace coordinator. In addition to introducing faculty to these new scholarly research services, these collaborative presentations have further cemented the liaisons and functional specialists as a deeply collaborative team.

Conclusion and Recommendations

The liaison roles at UNCW and the library have been changing out of necessity. No longer a one-stop shop for anything related to the library, the liaisons have been learning to work with functional specialists to bring faculty additional and deeper expertise for a whole suite of research support services. Although liaisons are still primarily responsible for assisting faculty with literature and database searching (a role that they are comfortable in and enjoy), the liaisons are now able to devote the bulk of their time to forging engaged partnerships and designing and delivering high-quality information literacy instruction. This deep collaboration between library units better supports faculty research and establishes the library as a partner not only in teaching but also in research.

It is critical that new liaison program models allow flexibility and agility for a fully collaborative model with both functional experts and traditional liaison librarians. In this time of transition in higher education more broadly, as well at UNCW, the librarians have found that plans have changed more than once out of necessity and for a variety of reasons (e.g., staffing changes and some changes in university-level and library-level organizational structures). The ability to change directions midstream and to be transparent about the reasons behind the changes is paramount both in developing effective partnerships and for creating buy-in. Although the library team has gone through some growing pains, research support services have thrived throughout and continue to provide high-quality services to the university community.

Notes

1. "Digest of Education Statistics," National Center for Education Statistics, 2020, https://nces.ed.gov/programs/digest/d20/tables/dt20_317.20.asp.

2. "Basic Classification Description," Carnegie Classification of Institutions of Higher Education, 2017, https://carnegieclassifications.iu.edu/classification_descriptions/basic.php.

3. "UNCW Doctoral Transition Task Force Final Report," University of North Carolina Wilmington, April 2020, https://uncw.edu/doctoraltransition/documents/doctoraltransitiontaskforcereport20200422final.pdf.

4. Kevin R. McClure and Marvin A. Titus, "Spending Up the Ranks? The Relationship Between Striving for Prestige and Administrative Expenditures at U.S. Public Research Universities," *Journal of Higher Education* 89, no. 6 (November 2018): 962, https://doi.org/10.1080/00221546.2018.1449079.

5. KerryAnn O'Meara, "Striving for What? Exploring the Pursuit of Prestige," in *Higher Education: Handbook of Theory and Research*, *Vol. XXII*, ed. J. C. Smart (Dordrecht, The Netherlands: Springer, 2007), 121–79.

6. McClure and Titus, "Spending Up the Ranks?"

7. Eric Kelderman, "Is Climbing the Carnegie Research Rankings Worth the Price Tag?" *Chronicle of Higher Education*, July 29, 2018, https://www-chronicle-com/article/is-climbing-the-carnegie-research-rankings-worth-the-price-tag/.

8. O'Meara, "Striving for What?"

9. Leslie D. Gonzales, "Living in the Gray Zone: Faculty Views on University Striving and Implications for Practice," *The Journal of Faculty Development* 27, no. 3 (September 2013).

10. Sandra Shropshire, Jenny Lynne Semenza, and Karen Kearns, "Promotion and Tenure: Carnegie Reclassification Triggers a Revision," *Library Management* 36, no. 4 (2015): 344, http://dx.doi.org/10.1108/LM-09-2014-0113.

11. Khaleel Seecharan, "Exploring the Impetus of R2 Universities That Attain R1 Status," Ed.D. dissertation, University of Pennsylvania, 2020.

12. Gary R. Pike, George D. Kuh, and Robert M. Gonyea, "The Relationship Between Institutional Mission and Students' Involvement and Educational Outcomes," *Research in Higher Education* 44, no. 2 (April 2003): 258, http://dx.doi.org/10.1023/A:1022055829783.

13. Trish Wilson, "Why is the Library Involved in Research Support? Demonstrating Why and How the Library Can Contribute and Add Value to the University Research Priorities," *Proceedings of the IATUL Conferences, Paper 3* (2017): 5, https://docs.lib.purdue.edu/iatul/2017/research/3.

14. Starr Hoffman and Samantha Godbey, "US Academic Libraries' Staffing and Expenditure Trends (1996–2016)," *Library Management* 41, no. 4/5 (April 2020): 247–68, http://dx.doi.org/10.1108/LM-12-2019-0093.

15. Si Li, Yueliang Zeng, Sicheng Guo, and Xiaozhe Zhuang, "Investigation and Analysis of Research Support Services in Academic Libraries," *The Electronic Library* 37, no. 2 (2019): 282, http://dx.doi.org/10.1108/EL-06-2018-0125.

16. Wilson, "Why is the Library Involved?"

17. Jennifer Vinopal and Monica McCormick, "Supporting Digital Scholarship in Research Libraries: Scalability and Sustainability," *Journal of Library Administration* 53, no. 1 (January 2013): 37, https://doi.org/10.1080/01930826.2013.756689.

18. Janice M. Jaguszewski and Karen Williams, *New Roles for New Times: Transforming Liaison Roles in Research Libraries* (Chicago, IL: Association of Research Libraries, August 2013), https://www.arl.org/resources/new-roles-for-new-times-transforming-liaison-roles-in-research-libraries/.

19. Sheila Corrall, "Designing Libraries for Research Collaboration in the Network World: An Exploratory Study," *LIBER Quarterly: The Journal of the Association of European Research Libraries* 24, no. 1 (2014): 37, https://doi.org/10.18352/lq.9525.

20. John Novak and Annette Day, "The Libraries They Are A-Changin': How Libraries Reorganize," *College & Undergraduate Libraries* 22, nos. 3–4 (July 2015): 358–73, https://doi.org/10.1080/10691316.2015.1067663.

21. John P. Kotter, "Leading Change: Why Transformation Efforts Fail," *Harvard Business Review* 73, no. 2 (May–June 1995): 59–67.

22. Lee G. Bolman and Terrence E. Deal, *Reframing Organizations: Artistry, Choice and Leadership* (San Francisco: Jossey-Bass, 2013).

23. Novak and Day, "The Libraries They Are A-Changin'," 362.

24. Nancy Kranich, Megan Lotts, Jordan Nielsen, and Judit H. Ward, "Moving from Collecting to Connecting: Articulating, Assessing, and Communicating the Work of Liaison Librarians," *portal: Libraries and the Academy* 20, no. 2 (April 2020): 285–304, http://dx.doi.org/10.1353/pla.2020.0015.

25. Anna Marie Johnson, "Connections, Conversations, and Visibility: How the Work of Academic Reference and Liaison Librarians Is Evolving," *Reference & User Services Quarterly* 58, no. 2 (January 18, 2019): 91–102, https://doi.org/10.5860/rusq.58.2.6929.

26. Megan Sapp Nelson and Abigail Goben, "Models for Engaging Liaisons in Research Data Services," *Journal of Librarianship & Scholarly Communication* 8, no. 1 (January 2020): 3, https://doi.org/10.7710/2162-3309.2382.

27. Ibid., 4.

28. Ibid., 6.

29. Novak and Day, "The Libraries They Are A-Changin'."

30. Lorcan Dempsey, "What Collaboration Means to Me: Library Collaboration Is Hard; Effective Collaboration Is Harder," *Collaborative Librarianship* 10, no. 4 (2018).

31. Valerie Horton, "Going 'All-in' for Deep Collaboration," *Collaborative Librarianship* 5, no. 2 (April 2013): 65–69, https://doi.org/10.29087/2013.5.2.01.

32. Ibid., 66.

33. Charles J. McMillan, "Old Wine in New Bottles: Docility, Attention Scarcity and Knowledge Management," *Journal of Knowledge Management* 20, no. 6 (2016): 1365, http://dx.doi.org/10.1108/JKM-03-2016-0124.

34. Russ Martinelli, and Dragan Z. Milosevic, *Project Management Toolbox, 2nd ed.* (Hoboken, NJ: Wiley, 2016).

35. Jaguszewski and Williams, *New Roles for New Times*, 16.

Bibliography

Bolman, Lee G., and Terrence E. Deal. *Reframing Organizations: Artistry, Choice and Leadership*. San Francisco: Jossey-Bass, 2013.

Carnegie Classification of Institutions of Higher Education. "Basic Classification Description." 2017. https://carnegieclassifications.iu.edu/classification_descriptions/basic.php.

Corrall, Sheila. "Designing Libraries for Research Collaboration in the Network World: An Exploratory Study." *LIBER Quarterly: The Journal of the Association of European Research Libraries* 24, no. 1 (2014): 17–48. https://doi.org/10.18352/lq.9525.

Dempsey, Lorcan. "What Collaboration Means to Me: Library Collaboration Is Hard; Effective Collaboration Is Harder." *Collaborative Librarianship* 10, no. 4 (2018).

Gonzales, Leslie D. "Living in the Gray Zone: Faculty Views on University Striving and Implications for Practice." *The Journal of Faculty Development* 27, no. 3 (September 2013): 36–43.

Hoffman, Starr, and Samantha Godbey. "US Academic Libraries' Staffing and Expenditure Trends (1996–2016)." *Library Management* 41, no. 4/5 (April 2020): 247–68. http://dx.doi.org/10.1108/LM-12-2019-0093.

Horton, Valerie. "Going 'All-in' for Deep Collaboration." *Collaborative Librarianship* 5, no. 2 (April 2013): 65–69. https://doi.org/10.29087/2013.5.2.01.

Indiana University Center for Postsecondary Research. "Carnegie Classification of Institutions of Higher Education Definitions and Methods." 2017. https://carnegieclassifications.iu.edu/definitions.php.

Jaguszewski, Janice M., and Karen Williams. *New Roles for New Times: Transforming Liaison Roles in Research Libraries*. Chicago, IL: Association of Research Libraries, August 2013. https://www.arl.org/resources/new-roles-for-new-times-transforming-liaison-roles-in-research-libraries/.

Johnson, Anna Marie. "Connections, Conversations, and Visibility: How the Work of Academic Reference and Liaison Librarians is Evolving." *Reference & User Services Quarterly* 58, no. 2 (January 18, 2019): 91–102. https://doi.org/10.5860/rusq.58.2.6929.

Kelderman, Eric. "Is Climbing the Carnegie Research Rankings Worth the Price Tag?" *Chronicle of Higher Education* (July 29, 2018). https://www-chronicle-com/article/is-climbing-the-carnegie-research-rankings-worth-the-price-tag/.

Kotter, John P. "Leading Change: Why Transformation Efforts Fail." *Harvard Business Review* 73, no. 2 (May–June 1995): 59–67.

Kranich, Nancy, Megan Lotts, Jordan Nielsen, and Judit H. Ward. "Moving from Collecting to Connecting: Articulating, Assessing, and Communicating the Work of Liaison Librarians." *portal: Libraries and the Academy* 20, no. 2 (April 2020): 285–304. http://dx.doi.org/10.1353/pla.2020.0015.

Li, Si, Yueliang Zeng, Sicheng Guo, and Xiaozhe Zhuang. "Investigation and Analysis of Research Support Services in Academic Libraries." *The Electronic Library* 37, no. 2 (2019): 281–301. http://dx.doi.org/10.1108/EL-06-2018-0125.

Martinelli, Russ, and Dragan Z. Milosevic. *Project Management Toolbox*. Hoboken, NJ: Wiley, 2016.

McClure, Kevin R., and Marvin A. Titus. "Spending Up the Ranks? The Relationship Between Striving for Prestige and Administrative Expenditures at U.S. Public Research Universities." *Journal of Higher Education* 89, no. 6 (November 2018): 961–87. https://doi.org/10.1080/00221546.2018.1449079.

McMillan, Charles J. "Old Wine in New Bottles: Docility, Attention Scarcity and Knowledge Management." *Journal of Knowledge Management* 20, no. 6 (2016): 1353–72. http://dx.doi.org.liblink.uncw.edu/10.1108/JKM-03-2016-0124.

National Center for Education Statistics. "Digest of Education Statistics." 2020. https://nces.ed.gov/programs/digest/d20/tables/dt20_317.20.asp.

Nelson, Megan Sapp, and Abigail Goben. "Models for Engaging Liaisons in Research Data Services." *Journal of Librarianship & Scholarly Communication* 8 (January 2020): 1–14. https://doi.org/10.7710/2162-3309.2382.

Novak, John, and Annette Day. "The Libraries They Are A-Changin': How Libraries Reorganize." *College & Undergraduate Libraries* 22, nos. 3–4 (July 2015): 358–73. https://doi.org/10.1080/10691316.2015.1067663.

O'Meara, KerryAnn. "Striving for What? Exploring the Pursuit of Prestige." In *Higher Education: Handbook of Theory and Research, Vol. XXII*, edited by John C. Smart, 121–79. Dordrecht, The Netherlands: Springer, 2007.

Pike, Gary R., George D. Kuh, and Robert M. Gonyea. "The Relationship Between Institutional Mission and Students' Involvement and Educational Outcomes." *Research in Higher Education* 44, no. 2 (April 2003): 241–61. http://dx.doi.org/10.1023/A:1022055829783.

Seecharan, Khaleel. "Exploring the Impetus of R2 Universities That Attain R1 Status." Ed.D. diss., University of Pennsylvania, 2020.

Shropshire, Sandra, Jenny Lynne Semenza, and Karen Kearns. "Promotion and Tenure: Carnegie Reclassification Triggers a Revision." *Library Management* 36, no. 4 (2015): 340–50. http://dx.doi.org/10.1108/LM-09-2014-0113.

University of North Carolina Wilmington. "UNCW Doctoral Transition Task Force Final Report." April 2020. https://uncw.edu/doctoraltransition/documents/doctoral transitiontaskforcereport20200422final.pdf.

Vinopal, Jennifer, and Monica McCormick. "Supporting Digital Scholarship in Research Libraries: Scalability and Sustainability." *Journal of Library Administration* 53, no. 1 (January 2013): 27–42. https://doi.org/10.1080/01930826.2013.756689.

Wilson, Trish. "Why Is the Library Involved in Research Support? Demonstrating Why and How the Library can Contribute and Add Value to the University Research Priorities." *Proceedings of the IATUL Conferences, Paper 3* (2017). https://docs.lib.purdue.edu/iatul/2017/research/3.

4

Student-Led, Cross-Institutional Collaboration Between France and Morocco

Paul Love, Michael Stöpel, and David Tresilian

M ANY POWERFUL FORCES are transforming higher education, particularly, though not only, in the humanities. However, sometimes a catalyst is required to convert such forces into action, especially in the humanities, where older models of information, research, and scholarly communication still dominate many fields. In the case of the cross-institutional project reported on in this chapter, that catalyst was the COVID-19 pandemic, which, beginning in the early months of 2020, at least in Europe, and continuing up until the present, has severely disrupted older models of university teaching and research.

This chapter discusses the project Student-Led, Cross-Institutional Collaboration between France and Morocco, which was carried out in Fall 2020 between the American University of Paris (AUP) and Al-Akhawayn University in Ifrane (AUI) in Morocco. The argument behind the experiences presented in this chapter is that the pandemic disruption was creative in that it obliged the authors to rethink the aims and methods used in the undergraduate classroom and with the university library in ways that would have taken longer in the absence of COVID-19. As many observers have said in different contexts, the pandemic sped up changes that were already underway. In this case, it created a clearer focus on how to use new technologies to achieve learning goals while at the same time allowing students to develop new skills in collaboration with the librarian and to think more about their classroom work as information (or data) that could contribute to broader research conversations. The students' work was then presented

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in various forms to different audiences and not only to their professor in the form of a traditional research paper or presentation.

In what follows, the authors provide a short literature review on international virtual exchange initiatives (cross-institutional collaborations) and student-led information literacy projects. In addition, they describe the collaborative project in detail, share the perspectives of project participants, and, finally, present lessons learned for academic librarians who might embark on similar projects.

Literature Review:
International Virtual Exchange and Student-Led Initiatives

Student-led projects and learning-by-doing, as well as students engaging in cross-institutional collaborations and exchange programs, have existed for many years in higher education. The most famous exchange programs in Europe are the Erasmus Exchange Program (since 1987)[1] and the many partnerships between European countries fostering language exchange and intercultural learning aiming at Europe-wide integration (for example, the Franco-German Youth Office founded in 1963).[2]

Since the development of online communication tools in the early 2000s, such exchange programs have expanded to become virtual exchange projects and initiatives like the Erasmus Virtual Program in Europe. They have also expanded worldwide to include the Collaborative Online Initiative Learning (COIL)[3] and the Stevens Initiative in the United States,[4] along with Soliya Connect,[5] to name just a few. Robert O'Dowd has summarized in general terms what all such programs and initiatives aim to achieve:

> Of course, on a general level, all the initiatives can be seen to share a basic educational approach which involves a commitment to experimental learning, collaborative critical inquiry, and cross-curricular learning . . . and all would also share common educational goals such as the development of transversal skills, digital literacy, intercultural awareness, and the ability to live and work together with people from other cultural backgrounds.[6]

However, in his article "From Telecollaboration to Virtual Exchange," O'Dowd also recognized that this is a large field that it is difficult to bring under one umbrella. Many different terms are used, such as cross-institutional collaboration, telecollaboration, online intercultural exchange, and e-tandem, making it difficult to draw an accurate picture of all current initiatives.[7] In addition, according to the 2021 Survey of the Virtual Exchange Field Report, a variety of approaches to virtual exchange exist, including subject-

specific, service-provider, and shared syllabus approaches, adding an extra layer of complexity.[8] Following up on this challenge, Anna Zak has provided an excellent introduction and overview of the field of virtual exchange.[9] She has identified various themes in the literature, clustering them by model, programmatic insights, and learning outcomes, such as language learning, international cultural competency development, and peace building.

Student-led projects have also had a long tradition in higher education. Renee Hobbs, a prominent scholar in media education, has highlighted the value of student-led projects and student-led creation and authorship for learning.[10] In the context of virtual exchange initiatives, O'Dowd also identified such student-led projects. He reported on virtual exchange projects in business studies, for example, where students are required to work together to produce websites or conduct ethnographic interviews in synchronous online sessions.[11] In the digital liberal arts, the Oral History in the Liberal Arts project also has provided a good example for student-led initiatives.[12]

In library instruction, the student-let approach also has a tradition behind it. Amanda Scull, Jeffrey Mortimore, Ruth Baker, Courtney Hoffner, and Antonia Osuna-Garcia reported during the ACRL Virtual Conference 2021 how student-led content creation can enhance information literacy instruction.[13] Scull et al. described how students can engage in oral history projects and the creation of websites, serials, and library guides in class. In her article "Information Creation as a Process. With an Emphasis on Creation," Scull linked the idea of "students as creators" to the Association of College and Research Libraries' (ACRL) *Framework for Information Literacy for Higher Education*: "The emphasis given by the Framework to students as creators—rather than just consumers, as was the focus of the Standards—also means that we are encouraging new ways for students to learn by doing."[14]

However, fewer projects exist that bring together the idea of student-led projects involving information literacy and virtual exchange. Digital competencies are often mentioned in virtual exchange initiatives, but there are rarely direct links to information literacy and the ACRL *Framework*. Allen Guidry, Jami Leibowitz, and Tope Adeyemi-Bello were a notable exception when they made the link to information literacy in their project, mentioning misinformation as a learning outcome: "By directly linking students from different nations and cultures through a shared educational experience, university instructors can begin to tear down the walls of stereotypes and misinformation and begin to build bridges of understanding and shared humanity."[15]

Information literacy can be woven into other learning outcomes as well when media literacy, peace building, or global issues are mentioned in course learning goals. In this spirit, O'Dowd recently put forward the idea of integrating global issues in virtual exchange programs in order to make

such projects more relevant to participants in the context of global citizen education.[16] Information literacy, along with media and digital literacy, thus certainly has a place in global citizen education.

In particular, two virtual exchange initiatives have picked up the idea of fostering dialogue between the West and the Muslim World, namely the Stevens Initiative and the Soliya Connect Program. Both initiatives aim to build bridges between the West and the Muslim World. The objective is to develop an intercultural dialogue and a "deeper understanding of the perspective of the other [. . .] and to develop critical thinking, intercultural communication, and media literacy skills."[17] However, information literacy is not a predominant content or topic area in virtual exchange programs.[18] Having said this, virtual exchange initiatives have a huge potential for information literacy instruction and overcoming of stereotypes between the West and the Muslim World, in particular by focusing on the experimental learning component, the meta-concepts of the ACRL *Framework*, and the idea of students as creators.

Project Description and Life Cycle

The project Student-Led, Cross-Institutional Collaboration between France & Morocco was carried out in Fall 2020 between the American University of Paris (AUP) and Al-Akhawayn University (AUI) in Morocco. Students at AUP in CL1099 *Modern to Contemporary in the Arab World*, a course within the university's first year program, worked with students in the AUI core course HIS1301 *History of the Arab World*. While located in Paris, France, AUP has a student body made up of North American and mostly non-French students. AUI, founded in Morocco in 1993 and opening its doors in 1995, is modeled on the American university system, with English as the language of instruction. CL1099 *Modern to Contemporary in the Arab World* is a first-year course for entering students designed to introduce a disciplinary field of study while developing university research and study skills ("First Bridge"—AUP), while HIS1301 *History of the Arab World* is a required foundation course within the framework of general education (Al-Akhawayn).

The project was an opportunity for faculty-librarian-student collaboration on research, helping students to develop interview skills along with the gathering, analysis, and presentation of primary data. It enabled students to connect study in the classroom to conditions in the field, with AUP students from a variety of backgrounds working closely with Moroccan peers under the close supervision of AUP and AUI faculty and an AUP librarian.

Work on Phase 1 of the project began in Summer 2020 between David Tresilian (faculty) and Michael Stöpel (librarian) at AUP and Paul Love (faculty) of the School of Humanities and Social Sciences at AUI on learning goals, planning, and logistics. Appropriate themes and readings were identified for AUP and AUI courses to ensure overlapping expectations and learning outcomes. Technological and other needs were identified, including the choice of an online platform, integrated interview transcription, and data preservation. Scheduling issues were noted and resolved, including dates for project activities and student presentations.

Phase 2, beginning at mid-term in Fall 2020, commenced with student-led discussions of issues emerging from readings in CL1099 *Modern to Contemporary in the Arab World* and their relation to themes treated by student peers in similar readings in their course at AUI. As part of the project, groups of students at AUP drew up open-ended questionnaires for use in interviews with peers at AUI. After review by faculty at AUP and AUI, training was given in conducting interviews and analyzing data, as set out in standard oral history protocols. Student interviews took place toward the end of the Fall 2020 semester with oversight by AUP and AUI faculty and the librarian.

Phase 3 of the project, a joint review attended by AUP and AUI students, faculty, and staff, saw AUP students present their findings from the interviews with space being given to discussion of follow-up activities and lessons learned.

The following sections present reflections on the project from the two faculty members and a librarian.

Faculty View from Paris

This section describes the project from the point of view of one of the faculty members involved (David Tresilian), looking first at background considerations concerning classroom and non-classroom-based learning and then describing the content and implementation of the project and, finally, the results and lessons learned.

Schools and universities in France moved to distance learning in March 2020, requiring faculty and students to swiftly get up to speed with video conferencing and other technologies to replace face-to-face classroom learning. Equipment had to be rapidly acquired or adapted for both faculty and students; Internet connections had to be checked for speed and bandwidth; and everyone had to take a crash course in the functionalities of new digital tools in order to meet new demands. This also meant rethinking important aspects of pedagogy in the shape of experiential learning. AUP has long encouraged faculty to make the most of the French and European environment, both as a value in itself and also as an extension of the university's

commitment to non-classroom-based learning. Suddenly, with COVID-19, experiential components could no longer be delivered to students directly in the shape of field trips and other exercises, and there was a need to think of ways in which new technologies could be used to replace, extend, or enhance the learning experience.

Field trips to various Arab countries had previously been an important component of the AUP course to help students understand more fully the ideas and issues read about and discussed in class. Film and video clips could be used, but there is little that can entirely replace the benefits of learning by experience in the field. Not only does it allow connections to be made between work done in class and conditions in the field in a predictable and planned way, but it also allows for a spectrum of additional learning experiences to take place that are more unplanned or serendipitous, such as conversations among students and outside interlocutors to passing experiences that build associations to ideas seen in other contexts, allowing new connections to be made. Having read material in class that described the plurality of languages and ethnic groups in the Arab world, it was valuable for students to see these things thematized in real life or in a museum visit, for example, where the different course presentations could be recalled and ideas could be reinforced.

The COVID-19 pandemic made such non-classroom-based learning impossible, so working with partners at the AUI during the summer before classes began, we looked at ways of providing substitute experiences using remote-learning technology. Syllabi and learning goals were compared, along with more mundane matters such as class hours and term dates, so that our two courses could work together to benefit both sets of students.

Although students could not meet physically within the framework of a field trip, they could do so virtually by video conference. They could not share ideas and perceptions conversationally through the kind of informal experiences mentioned above, but they could do so more formally by treating their interactions as a form of research. Video conferencing, as we soon discovered, has its own set of rules, with one speaker needing to finish speaking before another starts if conversations are not to become unintelligible. Video connections between France and Morocco, though generally good, were not infallible.

Having explored readings relating to modern and contemporary Morocco in class in Paris and to French-Moroccan and Euro-Arab relations, the AUP students then wrote up questions for their peers in Morocco to serve as a basis for structured interviews held by video conference. They then used the resulting interview transcripts as survey data to be mined for results that were presented in various forums, whether class-related or public-facing. This allowed students to connect study in the classroom to conditions in the field

and also allowed them to develop additional research skills, including framing survey-type questions, conducting interviews by video conference, producing transcripts, and analyzing and presenting data.

Among the issues emphasized in guides to teaching oral history are challenges in constituting appropriate interviewee samples, the need for training in conducting interviews, and the analysis and use of gathered data, including issues of access and storage.[19] We experienced few if any challenges finding interviewees, since student interviewers and interviewees were introduced to each other through cross-institutional cooperation, the paired AUP-AUI courses providing a structured environment in which students were able to accumulate common experiences and meet with shared understanding and background.

Training in conducting interviews was moved to non-class sessions and only included the use of basic protocols for two main reasons. First, by the time the interview project began in week ten of a thirteen-week semester, it had become apparent that we were dealing with a remarkable group of students exhibiting maturity and a range of relevant experiences. Second, we discovered that, in many cases, the students had already conducted peer interviews, and we wanted to preserve something of the spontaneity of unscripted conversations. The decision to pass responsibility for the conducting of the interviews directly to the students was thus made with an easy conscience, with only light-touch supervision needed during the interviews themselves.

Regarding the analysis and storage of the gathered data, the interview transcripts, made electronically, were anonymized and used only for class purposes respecting standards of research ethics, such as consent and confidentiality. The transcription software used was the one supplied with Microsoft Teams, and though this sometimes produced unintentionally comedic results, the labor of cleaning the data so that it could be made suitable for analysis was considerably less than would have been required by traditional hand transcription. Afterward, the interviews were destroyed to protect the identities of both the interviewers and the interviewees. Since this project, we have explored issues of confidentiality and the preservation of oral interviews with colleagues in different disciplines working in different countries. The conversation on such issues is ongoing, but one preliminary finding is that the legal framework for such projects in France and in Morocco is not the same as it is, for example, in the United States.

Since our project was a pilot one implemented at short notice, the decision was taken to simplify procedures as far as possible by adhering to standard protocols, neither retaining the interviews themselves nor the identities of those taking part in them. If the project is further developed in future years, and notably if the interviews will be archived, we would seek further

advice on appropriate research protocol procedures. Specific challenges related to the project taking place between France and Morocco gave rise to a fascinating debate on when human subjects approval is needed or not for curricular assignments when we presented it to a largely North American audience at the 2021 Institute for Liberal Arts Digital Scholarship (ILiADS) Conference in July 2021.

An important catalyst for this project was the COVID-19 pandemic in that it made it necessary for us to rethink how we could use new technologies to achieve our learning goals while at the same time providing students with the opportunity to develop new skills and to think about their work as data that could be mined for different purposes and with different ends in mind. Among the important lessons learned was that video conferencing, while not a full replacement for face-to-face interactions in the field, could be a very good second-best, notably for peer-to-peer student interviews. We intend to develop the project more fully in future semesters even after the pandemic improves and options for travel and field trips are restored. The issues raised regarding research protocols will also need to be resolved.

One final lesson was that students, at least our students, were keen to make the best possible use of the technology available to them even under special circumstances and restrictions introduced to halt the spread of COVID-19, and they were ready to take responsibility both for the framing of the interview questions and for the carrying out of the interviews themselves. Matters standard to any oral-interview project—among them consent, confidentiality, use of data, archiving, and storage—could thus be introduced within the framework of a hands-on project, helping the students to understand the scope of such issues as they encountered them in their work.

A Collaborative Project for AUI

This section describes the project from the point of view of the faculty member (Paul Love) from Al-Akhawayn University in Ifrane (AUI) in Morocco, describing the focus of the course, the structure of peer-to-peer interactions, and examining the lessons learned from the experience.

The HIS1301 *History of the Arab World* course at AUI surveys the history of Arabic-speaking lands from the advent of Islam to the present. Following a redesign of the syllabus in 2018, which itself resulted from a librarian-faculty collaboration, the course has focused on the theme of information literacy and history.[20] This focus has proven helpful in bridging the differences between the AUI history course and the more modern-focused AUP course described in the previous section since even in the history course there has been a constant emphasis on the value and importance of infor-

mation about the past in the present. In other words, the two courses were both focused on the Arab world in the present while also both having an appreciation for its links to the past.

Unlike the AUP course, the number of students at AUI included two sections of over thirty students each. As a result, I elected to ask for student volunteers to participate in the AUP interviews. Those who participated exchanged one of six quiz grades for participation in the interviews. By a stroke of luck, the number of students from the AUI courses (seven) was roughly half the number of students in the AUP course (fifteen). This allowed us to keep the groups for interviews quite small, forming six groups of three and one group of four.

From our perspective in Morocco, several things distinguished this collaborative experience from similar projects that our institution and our students had been involved in previously. In terms of organization, the collaboration involving three instructors proved invaluable. On the AUP side, Michael Stöpel's role as librarian and facilitator of student meetings, in particular, was logistically indispensable and helped give a conceptual cohesiveness to the entire project. For us, this was a clear demonstration that interdisciplinary collaboration across institutions has much to gain by also collaborating with the library.

Another element of the collaboration that distinguished this project from earlier ones was the complementary backgrounds of students. AUI students often engage with their counterparts in the United States, for example, who share course content but often come to the collaboration with virtually no knowledge of Morocco, contemporary Arab cultures, or the long-term history of northern Africa. One AUI student, El Mehdi El Asli, emphasized this in his response to the experience, saying:

> I also offered my [AUP] interviewers interesting questions since they were also Arabs . . . from Lebanon, Palestine and Kuwait. Our conversations kept moving from talking about Morocco in a special case from my perspective to everyone talking about their countries and making a comparison between the Arab countries. My interviewers' backgrounds were very similar to mine; they all talk and understand Arabic [and] we have common traditions and beliefs. I really like the fact of this interview not being similar to the basic interviews we all know where there [is] only one way of information [exchange]; it was more like an open floor where everyone shared their information and experiences.

While the AUP students may not have been experts, they represented a complementary blend of backgrounds, including, as suggested in the student's comment, many with families from Arabic-speaking countries in western Asia. By virtue of their being in France and learning about the legacies of colonialism

and the long-term presence of France in North Africa, they also brought a sense of Morocco's connection to France with them to the conversations.

This points to a final and especially rich element of the collaboration—the complementarity of content and context. Both the AUI and the AUP course tackled in different ways the relationship between France and the Maghrib and Morocco, in particular. This meant that AUI students in Morocco brought contemporary understandings of the legacies of French colonialism *in Morocco.* Likewise, the AUP students were exploring those legacies *in France.* This blend of course content and student contexts led to some fantastic conversation material. Students on both sides of the Mediterranean were curious to learn more about contemporary perceptions of North Africa, Europe, and Arab societies in their respective homelands. This curiosity often took them well beyond the intended boundaries of the assignment to new topics in ways that enriched and enhanced the assignments.

Based on student responses to the experience, we were delighted to find that the interviews often surprised students and that the topics covered often went well beyond those included as part of the assignment. For example, one participant wrote:

> I went into this interview with some concerns about the attitude of the students and their prejudice. I ended up being completely wrong; they were very friendly and respectful. I had the questions as all the AUI students and prepared some answers but as the interview started it felt more [like] a natural conversation [than] an interview . . . [I] have to say that their questions were very interesting; they were curious about our feeling[s] as young adults in our twenties being Moroccan and living in a time after colonialism and with everything that is happening in the world concerning Arabs and Muslims.

Another way in which the conversations took an unexpected turn was the desire of AUI students to offer questions of their own (the assignment had AUP students as the interviewers only). Several students noted that any future iteration of the project should include questions from students on both sides and that the two groups could even collaborate on the interview protocols. The enthusiasm for this idea will no doubt change the way we structure the assignment in the future.

I wanted to be cautious, however, about us providing too much structure. One of the things that I took away from this experience was that offering students the room to go beyond the boundaries of a questionnaire allowed students to talk about the topics and ideas they found most relevant and interesting. Since the conversation took place in the context of the class, virtually any topic was of relevance and importance, so there was no risk of getting "off topic."

The Instructional Librarian Perspective

The AUP-AUI student-led, cross-institutional interview project created a learning space and experience that went beyond the ordinary classroom setting, connecting students to the real world through experiential learning. For the librarian (Michael Stöpel), it was an opportunity to teach students basic concepts of information literacy in a meaningful way.

From the instructional design perspective (i.e., backward design), the student-led interviews were created with the idea and learning outcome in mind that students would learn more about the subject by participating in them, as well as about the various parts of the ACRL *Framework for Information Literacy for Higher Education*. Therefore, we were guided in the course-development process by this backward-design approach and the special value of the new learning experience.

First, the project easily connected to the ACRL frame of *Research as Inquiry*. "Follow[ing] ethical and legal guidelines in gathering and using information,"[21] as it says in the *Framework*, and the fact that matters of consent, respect, and confidentiality were discussed with the students before, during, and after the student-led interviews was the most obvious connecting point with the frame. The project can also be seen in a wider learning context of media education and intercultural exchange, where recognizing the importance of the *other*,[22] being respectful, and engaging in civic reasoning are becoming more significant to counter the rise of online hate speech and cyberbullying.

Second, students obtained experience of how academic information is created through the interviews echoing the ACRL frame of *Information Creation as Process*.[23] Students experienced the gathering of interview data as a process that laid the groundwork for reflection on the process itself in order to better understand the value of information creation, research methodologies, and academic work. By experiencing and reflecting, the students also learned to understand the transformation of data into information and knowledge. In other words, they learned how to make meaning out of the collected primary data.

In addition to these learning outcomes, students learned about different types of information sources, and the value of the interplay between sources. Put another way, there was an emphasis on encouraging students to understand the value of primary sources (the interview process) in relation to secondary sources (their readings for class). The interplay between both types of sources helped the students to understand the subject of interrogation, to make links between different types of sources, and to develop a critical view on the sources with regard to their subjects. Not everything that they read about in class was confirmed by the interviews, and surprise conversations in

the interviews often led to opportunities for critical reflective discussions of the class readings. This experience of seeing primary and secondary sources together led to an appreciation of both, which aligned with the *Framework*'s emphasis on the need to consider different types of sources.[24]

Aimed at cultivating a broader understanding of scholarly communication and academic conversation, the project introduced students to the life cycle of academic work—from data-gathering and data analysis to publishing the findings in a public-facing presentation at the end of the semester.[25] Scott Warren and Kim Duckett summarize the importance of this as a learning goal in information literacy:

> Search skills must be accompanied by a greater understanding of how scholarly information is created, debated, vetted, stored, and accessed—issues intrinsically tied to scholarly communication and the economic costs that shape not only the scholarship itself but also the tools used to discover and access that content. In the contemporary information landscape, simply teaching students how to distinguish peer-reviewed from non-peer-reviewed research is not sufficient.[26]

This also echoes the approach described in going "Beyond Tools and Clicks"[27] to improve a student's understanding of the world. It was the holistic experience of the project and the interview experience in the field that led, for the students, to more sophisticated understanding, meaning making, and critical thinking.

Emerging Liaison Roles: from Research Support to Research Partner

My role as an instructional librarian in the project evolved in several ways. First, the project pushed me to take on the role of critical instructional librarian. In traditional library instruction, students are often exposed to lists of databases or are shown one database in detail, often without being encouraged to go further. The aim of this traditional, pragmatic instructional style is to show the students where to click to find the academic articles requested for an assignment by the faculty member. Critical instruction, by contrast, emphasizes student knowledge practices and dispositions for greater understanding as outlined in the ACRL *Framework* for each frame.

In this project, my role was not only that of being a critical instructional librarian but also that of being a partner in a digital liberal arts project, being at the same time co-instructional designer, co-project manager, interview facilitator, and digital instructor in a hybrid environment, as well as a data librarian. I was co-instructional designer and co-project manager in the sense of developing and planning the online student-led interviews; interview facilitator and digital instructor through preparing interview best practices

with the students and scheduling the interviews in a hybrid environment; and, finally, data librarian by making sure that all interviews were recorded, transcribed, and stored and the data cleaned before being used for analysis purposes. In a nutshell, I was a digital librarian and partner during all the steps of the student-learning experience.

Wearing many hats led to my new role compared to traditional library instruction settings. I moved from being *only* a guest speaker (support for faculty) to being a faculty partner and to being *real* faculty in the eyes of the students, something which changed the impact of my instruction completely. Paul Love captured these many hats well when he said in the earlier section that my new roles gave a "conceptual cohesiveness to the entire project."

It is important to note that the listed roles above were not exclusive to one person. Paul, David, and I were co-instructional designers, co-project managers, and co-instructors on the project. In our case, it seemed that the balance of roles was even, and decision-making was made in concert, which helped the project to be successful.

Conclusion

The success of this pilot project has encouraged all the authors to add new elements to the student-led interview project. One aspect that was not explored in the pilot project was how to encourage students to proceed to a deeper analysis of the interviews. As a result, in Summer 2021, the authors decided to incorporate a quantitative text-analysis tool (Voyant) into the project to allow students to produce visualizations of project data. Again, from a critical pedagogy perspective, the idea was not to simply teach students the tool itself but rather to help them to appreciate the value of this digital tool for data analysis and to identify the benefits and limitations of these tools more generally. All too often, instructors have a tendency to forget this aspect in teaching—students should learn to evaluate digital tools and their affordance to a given project ("technological affordance").[28]

The success of this pilot project does not necessarily translate into future projects of equivalent status, though. Although it certainly inspires future possibilities, a more important question is how faculty-librarian partnerships can be better recognized at an institutional level and how these partnerships can find a permanent place in course and program development. This question also pushes librarians to see the value and the necessity of partnering with faculty and going beyond the traditional service support model. Jyldyz Bekbalaeva translates this idea well in her article "Partnering for Transformation: Strategically Adopting a Collaborative Library-Faculty Mind Set";

for her, it is about developing a different mindset in order to "transform the library from its service provider role into a [vibrant] campus partner."[29] It is not only about being a vibrant campus partner but also being an innovative and meaningful partner for learning transformation.

Notes

1. See https://erasmus-plus.ec.europa.eu/opportunities/individuals/students /studying-abroad for further information.

2. See https://www.ofaj.org/institution.html.

3. See https://coil.suny.edu/ for more information.

4. See https://www.stevensinitiative.org/.

5. See https://soliya.net/connect-program.

6. Robert O'Dowd, "From Telecollaboration to Virtual Exchange: State-of-the-Art and the Role of UNICollaboration in Moving Forward," *Journal of Virtual Exchange* 1 (April 24, 2018): 19, https://doi.org/10.14705/rpnet.2018.jve.1.

7. Ibid., 2.

8. Stevens Initiative, *2021 Survey of the Virtual Exchange Field Report* (Washington, DC: Aspen Institute, 2021), 11, https://www.stevensinitiative.org/resource/2021 -survey-of-the-virtual-exchange-field-report/.

9. Anna Zak, "An Integrative Review of Literature: Virtual Exchange Models, Learning Outcomes, and Programmatic Insights," *Journal of Virtual Exchange* 4 (November 5, 2021): 62–79, https://doi.org/10.21827/jve.4.37582.

10. Renee Hobbs, *Create to Learn: Introduction to Digital Literacy* (Hoboken, NJ: Wiley/Blackwell, 2017).

11. O'Dowd, "From Telecollaboration to Virtual Exchange," 10.

12. Oral History in the Liberal Arts, "Oral History in the Liberal Arts," accessed December 6, 2021, https://ohla.info/.

13. Amanda Scull et al., "Enhancing Information Literacy Instruction through Student-Led Content Creation," ACRL Virtual Conference 2021, YouTube Video, accessed December 5, 2021, https://www.youtube.com/watch?v=RqHE5TszYVc.

14. Amanda Scull "Information Creation as a Process: With an Emphasis on Creation," *College & Research Libraries News* 80, no. 2 (February 4, 2019): 78, https://doi .org/10.5860/crln.80.2.78.

15. Allen Guidry, Jami Leibowitz, and Tope Adeyemi-Bello, "Global BEEHIVE: Developing Good Practice for Multilateral, Scalable, and Sustainable Virtual Exchange," *Journal of Virtual Exchange* 3 (November 20, 2020): 14, https://doi.org /10.21827/jve.3.35808.

16. Robert O'Dowd, "A Transnational Model of Virtual Exchange for Global Citizenship Education," *Language Teaching* 53, no. 4 (2020): 477, https://doi.org/10.1017 /S0261444819000077.

17. Francesca Helm, "A Dialogic Model for Telecollaboration," *Bellaterra Journal of Teaching & Learning Language & Literature* 6, no. 2 (June 23, 2013): 28, https:// doi.org/10.5565/rev/jtl3.522.

18. Stevens Initiative, *2021 Survey of the Virtual Exchange Field Report*, 8.

19. "Start Here," *Oral History in the Liberal Arts*, updated March 17, 2017, https://ohla.info/start-here/.

20. Paul M. Love Jr. and Aziz El Hassani, "Revising the Syllabus: Integrating Information Literacy into a General Education History Course at Al Akhawayn University in Ifrane, Morocco," in *Faculty-Librarian Collaborations: Integrating the Information Literacy Framework into Disciplinary Courses*, eds. Michael Stöpel, Livia Piotto, Xan Goodman, and Samantha Godbey (Chicago, IL: Association of College and Research Libraries, 2020), 37.

21. Association of College and Research Libraries, *Framework for Information Literacy for Higher Education* (Chicago, IL: Association of College and Research Libraries, 2015), 19, http://www.ala.org/acrl/standards/ilframework.

22. Whitney Phillips and Ryan M. Milner, *You Are Here: A Field Guide for Navigating Polarized Speech Conspiracy Theories, and Our Polluted Media Landscape* (Cambridge, MA: The MIT Press, 2021), 6.

23. Association of College and Research Libraries, *Framework for Information Literacy for Higher Education*, 14–15.

24. Ibid.

25. Catherine Riehle and Merinda Hensley, "What Do Undergraduate Students Know about Scholarly Communication? A Mixed Methods Study," *portal: Libraries and the Academy* 17, no. 1 (January 2017): 145, https://digitalcommons.unl.edu/libraryscience/359.

26. Scott Warren and Kim Duckett, "'Why Does Google Scholar Sometimes Ask for Money?' Engaging Science Students in Scholarly Communication and the Economics of Information," *Journal of Library Administration* 50, no. 4 (2010): 350.

27. Beth McDonough, "Beyond Tools and Clicks: Putting Information Back into Information Literacy," in *Not Just Where to Click: Teaching Students How to Think about Information*, eds. Heather Jagman and Troy A. Swanson (Chicago, IL: Association of College and Research Libraries, 2015), 37.

28. Char Booth, *Reflective Teaching, Effective Learning: Instructional Literacy for Library Educators* (Chicago, IL: American Library Association, 2011), 87–88.

29. Bekbalaeva, Jyldyz, "Partnering for Transformation: Strategically Adopting a Collaborative Library-Faculty Mind Set," in *Library Partnerships in International Liberal Arts Education: Building Relationships Across Cultural and Institutional Lines*, eds. Jeff Gima and Kara Malenfant (Chicago, IL: Association of College and Research Libraries, 2020), 63.

Bibliography

Association of College and Research Libraries. *Framework for Information Literacy for Higher Education*. Chicago, IL: Association of College and Research Libraries, 2015. http://www.ala.org/acrl/standards/ilframework.

Bekbalaeva, Jyldyz. "Partnering for Transformation: Strategically Adopting a Collaborative Library-Faculty Mind Set." In *Library Partnerships in International Liberal*

Arts Education: Building Relationships Across Cultural and Institutional Lines, edited by Jeff Gima and Kara Malenfant, 63–72. Chicago, IL: Association of College and Research Libraries, 2020.

Booth, Char. *Reflective Teaching, Effective Learning: Instructional Literacy for Library Educators.* Chicago, IL: American Library Association, 2011.

Guidry, Allen, Jami Leibowitz, and Tope Adeyemi-Bello. "Global BEEHIVE: Developing Good Practice for Multilateral, Scalable, and Sustainable Virtual Exchange." *Journal of Virtual Exchange* 3 (November 20, 2020): 13–26. https://doi.org/10.21827/jve.3.35808.

Helm, Francesca. "A Dialogic Model for Telecollaboration." *Bellaterra Journal of Teaching & Learning Language & Literature* 6, no. 2 (June 23, 2013): 28–48. https://doi.org/10.5565/rev/jtl3.522.

Hobbs, Renee. *Create to Learn: Introduction to Digital Literacy*. Hoboken, NJ: Wiley/Blackwell, 2017.

Love, Jr., Paul M., and Aziz El Hassani. "Revising the Syllabus: Integrating Information Literacy into a General Education History Course at Al Akhawayn University in Ifrane, Morocco." In *Faculty-Librarian Collaborations: Integrating the Information Literacy Framework into Disciplinary Courses*, edited by Michael Stöpel, Livia Piotto, Xan Goodman, and Samantha Godbey, 37–44. Chicago, IL: Association of College and Research Libraries, 2020.

McDonough, Beth. "Beyond Tools and Clicks: Putting Information Back into Information Literacy." In *Not Just Where to Click: Teaching Students How to Think About Information*, edited by Heather Jagman and Troy A. Swanson, 36–52. Chicago, IL: Association of College and Research Libraries, 2015.

O'Dowd, Robert. "A Transnational Model of Virtual Exchange for Global Citizenship Education." *Language Teaching* 53, no. 4 (2020): 477–90. https://doi.org/10.1017/S0261444819000077.

O'Dowd, Robert. "From Telecollaboration to Virtual Exchange: State-of-the-Art and the Role of UNICollaboration in Moving Forward." *Journal of Virtual Exchange* 1 (April 24, 2018): 1–23. https://doi.org/10.14705/rpnet.2018.jve.1.

Oral History in the Liberal Arts. "Oral History in the Liberal Arts." Accessed December 6, 2021. https://ohla.info/.

Phillips, Whitney, and Ryan M. Milner. *You Are Here: A Field Guide for Navigating Polarized Speech Conspiracy Theories, and Our Polluted Media Landscape*. Cambridge, MA: The MIT Press, 2021.

Riehle, Catherine, and Merinda Hensley. "What Do Undergraduate Students Know about Scholarly Communication? A Mixed Methods Study." *portal: Libraries and the Academy* 17, no. 1 (January 2017): 145–78. https://digitalcommons.unl.edu/libraryscience/359.

Scull, Amanda, Jeffrey Mortimore, Ruth Baker, Courtney Hoffner, and Antonia Osuna-Garcia. "Enhancing Information Literacy Instruction through Student-Led Content Creation." ACRL Virtual Conference 2021. YouTube Video. Accessed December 5, 2021. https://www.youtube.com/watch?v=RqHE5TszYVc.

Scull, Amanda. "Information Creation as a Process: With an Emphasis on Creation." *College & Research Libraries News* 80, no. 2 (February 4, 2019): 78–81. https://doi .org/10.5860/crln.80.2.78.

Stevens Initiative. *2021 Survey of the Virtual Exchange Field Report*. Washington, DC: Aspen Institute, 2021. https://www.stevensinitiative.org/resource/2021-survey-of -the-virtual-exchange-field-report/.

Warren, Scott, and Kim Duckett. "'Why Does Google Scholar Sometimes Ask for Money?' Engaging Science Students in Scholarly Communication and the Economics of Information." *Journal of Library Administration* 50, no. 4 (2010): 349–72.

Zak, Anna. "An Integrative Review of Literature: Virtual Exchange Models, Learning Outcomes, and Programmatic Insights." *Journal of Virtual Exchange* 4 (November 5, 2021): 62–79. https://doi.org/10.21827/jve.4.37582.

5

Librarians as Research Partners for Developing Evidence Synthesis Protocols

Gregory Laynor and Stephanie Roth

ACADEMIC LIBRARIANS ARE increasingly involved in supporting research-ers who are pursuing evidence synthesis projects, such as systematic and scoping reviews. Evidence synthesis, also known as knowledge synthesis or research synthesis, involves a structured approach to reviewing the literature on a research question.[1] These projects require a research team that can bring together multiple skill sets and areas of expertise to successfully produce an evidence synthesis.[2] A research team for an evidence synthesis project should include members with subject area expertise as well as members with meth-odological expertise in evidence synthesis, such as a librarian with training in advanced database searching for conducting a systematic review or a statisti-cian with training in statistical analysis for conducting a meta-analysis.

Librarians can be vital to the success of an evidence synthesis project, par-ticularly in the crucial first step of the process, the development of a protocol. There are a variety of types of evidence synthesis, and protocol development is a key part of the process for conducting any type of evidence synthesis.[3] The protocol establishes the framework for conducting the evidence syn-thesis, including the research question, search strategy, eligibility criteria for study inclusion, and data extraction method. The protocol also establishes the roles of the research team members. A protocol can be thought of as the foundation of an evidence synthesis project and is considered a best research practice. Many journals now request that a protocol be registered before submitting an evidence synthesis article. In the health sciences, in particular, major journals such as *JAMA*, *The Lancet*, and *PLOS One* now state in their instructions to authors that evidence synthesis articles should be submitted

with a link to a registered protocol or a protocol registration number from a protocol registry, such as PROSPERO.

However, some researchers omit the protocol planning phase altogether, resulting in problems later in the process. A librarian research partner can facilitate the development of the protocol, ensuring that the protocol meets appropriate guidelines and standards for evidence synthesis. The librarian can then guide the team in registering or publishing the protocol. After the development of the protocol, the librarian can help make sure the team follows the protocol to conduct a methodologically sound evidence synthesis.

As a research partner facilitating the development and implementation of a protocol, a librarian contributes skills and expertise that can help an evidence synthesis project have a strong foundation. Although it is often assumed that the role of a librarian in an evidence synthesis project is limited to only providing search services (e.g., developing database search strategies, conducting searches, and providing citations), librarians can offer valuable expertise throughout the evidence synthesis process. From the beginning stages of protocol development through the final stages of manuscript submission and revision, research teams can benefit from including librarians as key members. Librarians can be co-investigators and co-authors on evidence synthesis projects, not only providers of search services.

This chapter introduces evidence synthesis protocols, discussing the roles librarians have in improving the overall quality of evidence synthesis. The chapter begins with a review of the literature on the value of evidence synthesis and the importance of protocols, library services for evidence synthesis, and librarian involvement in evidence synthesis, especially at the protocol development stage. Along with detailing the necessary steps for evidence synthesis protocol development, this chapter closely examines how librarians can facilitate the evidence synthesis process by using protocols as a tool for collaboration and project management. Based on the authors' experiences partnering with evidence synthesis research teams and supporting protocol development, case studies from the authors' institutions provide strategies for successful collaboration and effective communication when facilitating the development and implementation of evidence synthesis protocols. In addition, the authors discuss how library organizations can support their librarians contributing to evidence synthesis projects and how librarians can demonstrate their value with co-authorship on both the protocol and the final evidence synthesis publication. Although the focus of this chapter is on collaborations with research teams, the chapter also considers how protocols can be used for course assignments constructed with librarian feedback. The chapter concludes with a list of resources for further learning about evidence synthesis protocols.

Literature Review

There is growing literature on evidence synthesis processes and library services for evidence synthesis. In particular, there is increasing attention in the literature about the importance of protocols as well as the roles of librarians throughout the evidence synthesis process. This literature review situates opportunities for librarian involvement in evidence synthesis protocol development as part of broader trends in librarians serving as research partners.

Why Evidence Synthesis? Why Evidence Synthesis Protocols?

Attempts to systematically collect and synthesize the literature on a research question in order to reduce research bias and combine data across studies can be traced back to as early as the eighteenth century.[4] Evidence synthesis in its contemporary form emerged with the rise of systematic reviews as a core part of evidence-based medicine in the 1990s.[5] Since the 1990s, evidence synthesis methods have spread beyond the health sciences into many other fields, in part as a way of coping with information overload and research abundance.[6] Different types of evidence synthesis have emerged to meet different research needs, including quantitative, qualitative, and mixed-methods review types as well as reviews of reviews (i.e., umbrella reviews that synthesize multiple systematic reviews on a topic). One thing all evidence synthesis methods share is the need for a protocol.

Experts in evidence synthesis methods have long emphasized the importance of protocols. In an editorial in the journal of the Joanna Briggs Institute, an organization that supports evidence synthesis in nursing research, Micah Peters stated: "Protocols are a necessary and indispensable stage of the systematic review process that can frequently save a lot of time, sleep, and headaches later on."[7] The Cochrane Collaboration, an international network that sponsors systematic reviews on health outcomes, described in its latest *Cochrane Handbook for Systematic Reviews of Interventions*: "Developing a protocol for a systematic review has benefits beyond reducing bias. Investing effort in designing a systematic review will make the process more manageable throughout and help to inform key priorities for the review."[8]

What is the Protocol Development Process?

Different types of evidence synthesis may require different protocol components, and some journals and review-sponsoring organizations have specific requirements for what is required in a protocol. However, there are some key components that are generally part of all evidence synthesis protocols,

usually based on the PRISMA-P guidelines.[9] The PRISMA-P can be viewed as a minimum set of items for the reporting needed in an evidence synthesis protocol. Key components of a protocol include the following items: review title; anticipated start date and completion date; research team members and roles; review question; search strategy (usually at least one preliminary search strategy for a key database); inclusion and exclusion criteria for study screening; the data extraction strategy; the plan for risk of bias assessment and critical appraisal; and dissemination plans. When developing the protocol, it is best practice for the search strategy to be peer-reviewed by another librarian, utilizing the PRESS (Peer Review of Electronic Search Strategies) guidelines.[10]

The protocol may be made into a public document, establishing that the review is being conducted. Protocols can be registered in a protocol registry, and in some cases, they can even be published as peer-reviewed journal articles themselves. The benefits of registering and/or publishing a protocol are many: establishing a public document stating that the research team is working on a topic; reducing duplicate reviews; addressing methodological issues at the beginning of the review process; receiving peer-review feedback and then improving review methods before conducting the project; and improving the quality of the review and increasing the likelihood of publication.

However, as Konstantinos Siontis and John Ioannidis have noted, "Most systematic reviews are never registered despite the availability of platforms for prospective registration, such as PROSPERO. Thus, many teams working on the same topic concurrently may have no knowledge of each other's work-in-progress."[11] Protocol registration helps avoid unnecessary duplication of evidence synthesis projects on the same research question.[12] A recent survey of authors of systematic reviews published from 2010 to 2016 found that the vast majority of respondents agreed that protocol registries play a role in preventing unnecessary duplication of reviews.[13]

There are several options for registering and/or publishing a protocol. The most suitable option for protocol registration depends on the type of evidence synthesis and the area of research. The best-known registry, PROSPERO, was founded in 2011 as a registry for systematic reviews for health outcomes.[14] A 2018 study found an association between registering a protocol in PROSPERO and increased review quality, considering the time taken at the beginning of the process to think through and plan the review methods.[15]

Other options for protocol registration include the Open Science Framework (not limited to systematic reviews and not limited to health sciences topics), as well as more focused registries such as JBI (for evidence syntheses on topics related to nursing). Protocols may also be registered in pre-print servers (such as arXiv or MedRxiv) and institutional repositories. When

registering a protocol in a repository, adding a Creative Commons license to establish terms for use and sharing should be a consideration.

Additionally, a research team may want to publish a protocol as a peer-reviewed journal article in a subject-specific journal or a multi-disciplinary journal that publishes evidence synthesis protocols (such as *BMC Systematic Reviews* or *BMJ Open*). Many researchers are still unaware that protocols can be published.[16] Librarians can help research teams become aware of the possibility of publishing a protocol. A study has found that "systematic reviews with published protocols are more transparently reported and tend to be of higher quality" compared to reviews without published protocols.[17]

Why Should Librarians Be Involved in Evidence Synthesis and Protocol Development?

Studies have found that systematic reviews with librarian co-authors have higher-quality reported search strategies[18] and a lower risk of bias.[19] A scoping review on the roles that librarians have in evidence synthesis projects found that "librarians play central roles in systematic review teams, including roles beyond searching."[20] A survey of health sciences librarians who work on systematic reviews noted that because "the most frequent and challenging methodological issues relate to the development of the research question, and very often researchers come to librarians with inadequate research plans," librarians involved in systematic reviews often "put forth much effort to become the educator in addition to being the searcher."[21] Librarians who have participated in evidence synthesis research teams have pointed out how "not only are librarians able to provide comprehensive searches that save researchers time and limit bias, but they can also facilitate collaboration and education, keep records, solve technology problems, and write methodologies."[22] Specifically relevant to protocol development, librarians often take on "the role of methodologist" in evidence synthesis projects.[23]

Expertise in protocol development has been identified as one of the key competencies for librarians involved in evidence synthesis.[24] Librarians can effectively contribute to evidence synthesis research teams by "staying current with reporting guidelines, making team members aware of existing or new guidelines, and contributing content to review protocols or final manuscripts."[25] Librarians have a particularly impactful role to play in making sure that protocols document methods and search strategies so that the evidence synthesis can be reproducible.

The involvement of academic librarians in evidence synthesis projects can be seen as part of a broader trend of librarians increasingly taking on roles as

co-investigators and co-authors of research—not just as service providers.[26] Lisa Federer has outlined how librarians can function as "research informationists" who "work with research teams at each step of the research process, from project inception and grant seeking to final publication."[27] A study of "research-embedded health librarians" specifically examined the roles that health sciences librarians have taken on when included as part of research teams. The roles have extended beyond literature searching to include attending research team meetings, providing analysis of research literature, managing data, and writing research reports.[28] Librarians becoming research partners on evidence synthesis projects exemplifies a trend seen across many academic fields of "more collaborative models which acknowledge librarians' roles in knowledge production."[29] As the roles of librarians as research collaborators grow in forms of research such as evidence synthesis, academic libraries are increasingly offering more structured services for systematic reviews and other types of evidence synthesis.

Library Services for Evidence Synthesis

There is extensive literature on library systematic review services. Although systematic review services originated in health sciences libraries, a growing number of academic libraries beyond the health sciences have established services for systematic reviews and other types of evidence synthesis. There are a variety of library systematic review service models that vary depending on library capacity, librarian training, and the needs of researchers at particular institutions. Service models include free services, fee-based services, and different tiers of service.

Case studies of library systematic review services highlight some of the successes that libraries have had in tailoring systematic review services to the specific needs and capacities of their institutions. For example, Sandra McKeown and Amanda Ross-White describe how the Bracken Health Sciences Library at Queen's University in Kingston, Ontario developed two levels of systematic review support—a consultation level and a collaboration level. At the consultation level of support, a librarian advises on the steps of the process, such as refining the topic, identifying appropriate databases and gray literature sources, and selecting software for citation screening. At the collaboration level of support, a librarian participates as a member of the research team (possibly in a co-author role) and provides more extensive support, including conducting the searches and writing up the methods.[30] In another case study, Mellanye Lackey, Heidi Greenberg, and Melissa Rethlefsen describe how the University of Utah's Eccles Health Sciences Library developed a "systematic review core" in partnership with the university's

Center for Clinical & Translational Science. The "systematic review core" developed fee-based services for systematic reviews and other types of evidence service. The fees enabled the core to dedicate librarian time to support evidence synthesis projects.[31] Amy Knehans, Esther Dell, and Cynthia Robinson have described how the Harrell Health Sciences Library at Penn State College of Medicine offers two tiers of service: free services and fee-based services. Free services include consultation on question formulation, guidance with understanding the process, feedback on database selection, and training in citation management software. Fee-based services extend to developing search strategies, conducting searches, downloading citations and de-duplicating results, and writing the search methods in accordance with PRISMA guidelines. At either tier in the Harrell Health Sciences Library's systematic review service, librarians provide training on obtaining full-text articles but will not retrieve full-text as part of the service.[32] These case studies show how it is important for libraries to delineate what specific services a systematic review service can and cannot provide to faculty.

As evidence synthesis methods become more common in fields outside the health sciences, there is a need for multi-disciplinary evidence synthesis service models. Cornell University Libraries have developed a systematic review service model across disciplines in which librarians provide consultations to help determine appropriate review methodologies, adapt protocol guidelines to specific disciplines, and develop appropriate search strategies.[33] Finally, some libraries focus their evidence synthesis services primarily on consultation and education. For example, librarians at the University of Maryland have developed a workshop series on systematic reviews across disciplines in addition to online forms for requesting systematic review consultations or customized workshops.[34]

Case Studies

In this section, the authors share case studies of how protocols function as a central part of systematic review services at the Scott Memorial Library at Thomas Jefferson University in Philadelphia and Ginsburg Health Sciences Library at Temple University in Philadelphia. Although both case studies are focused on academic health sciences libraries supporting large, urban universities and health systems, the recommendations are intended to have broad relevance to many other types of libraries and settings. Overall, the case studies and subsequent recommendations highlight how an emphasis on protocol development can enable libraries to effectively offer support for evidence synthesis and generate successful research collaborations.

Thomas Jefferson University

Scott Memorial Library supports clinicians, students, faculty, and research staff at Thomas Jefferson University. The library provides three levels of service for systematic reviews and other types of evidence synthesis. Free consultations, available to all library uses, include librarian instruction and feedback on key areas of protocol development such as formulation of a viable research question, selection of databases and search terms, and identification of screening process tools and methods. Two levels of additional paid services are also available for faculty and staff but not for student projects. The paid levels of service include support beyond consultation, in which a librarian takes a more active role as a research team member. Tier 1 includes twenty hours of service for a $1,500 fee. Tier 2, for projects requiring more than twenty hours of librarian time, is billed at $75 per hour. Protocol changes after the start of searching may incur additional costs. In the paid service, librarians develop search strategies, conduct the database searches, de-duplicate results, and contribute to the methods section of the protocol and resulting evidence synthesis article. In order to make the best use of librarian time, the service does not include searching for gray literature beyond library databases (though librarians will provide consultation on identifying appropriate sources of gray literature) or retrieval of full text (though librarians will provide instruction to research teams on how to retrieve the full text of articles).

Research teams at Jefferson are encouraged to write the library's systematic review service into grant funding. Research teams utilizing the paid systematic review service tend to involve librarians in the research team and as co-authors. Six librarians in the library's Information Service Department provide support for evidence synthesis, whether in consultations, paid services, or instruction. The service has a LibGuide, including a section on protocol preparation.[35] Library users interested in evidence synthesis consultations or paid services are asked to complete a protocol form before meeting with a librarian.

The library at Jefferson is integrated into many courses with assignments related to evidence synthesis. Librarians provide instruction and, in some cases, feedback and grading on PRISMA guidelines and key protocol components. Through course integration and through the systematic review service, the library helps generate understanding of the importance of evidence synthesis protocols across the institution.

Ginsburg Health Sciences Library, Temple University

The Ginsburg Health Sciences Library began its formal systematic review service in 2016 with the hiring of a new position for the library, a Biomedi-

cal and Research Services Librarian. The service is provided free to students, residents, staff, and faculty, including the Temple University Hospital staff. In 2018, a new team-based service model was introduced. In the new model, two core services were introduced: a search service and an educational service. The educational service serves as a standalone service, or it can be used in partnership with the search service. Librarians involved in the service are grouped into four classes depending on their level of expertise with systematic reviews. Class 1 librarians can provide basic consultations, while Class 2 librarians support protocol planning. Class 3 librarians provide expert searching and more advanced support for developing and carrying out a protocol. Finally, Class 4 librarians offer advanced methodological support.[36] In Fall 2021, the service expanded beyond the health sciences library to include support for researchers at the university's main campus in other disciplines. In addition to delivering expert searching and protocol development support, the library also provides education on evidence synthesis methods, including the importance of protocol development.

At Temple University, researchers (including students working with faculty) who are interested in publishing and collaborating with a librarian to perform the search for their evidence synthesis project are asked to complete a protocol form available on the library's Systematic Review Service Library Guide.[37] This protocol form serves a basis for a protocol that can be registered. While Temple University does not require protocol registration, they offer education to researchers on how to turn the protocol form into a registered protocol.

At the beginning of the service, only some researchers took the advice to register the protocol, but now, more Temple community members are registering their protocols. The Temple protocol form follows the PRISMA-P reporting guidelines for protocols and is similar to the requirements for PROSPERO registration, so that a researcher can easily turn the form into a registered protocol. Researchers who use the systematic review search service at Temple University also have the opportunity to have their search strategies deposited into the Temple University institutional repository, TUScholar-Share, a new optional add-on service launched in November 2020 that helps researchers meet the PRISMA-S reporting guidelines for searching.[38]

Recommendations

The Protocol as a Method of Collaboration

There is a lot of planning that goes into evidence synthesis projects that is done a priori, before the evidence synthesis takes place. Because careful plan-

ning is the key to the success and quality of an evidence synthesis project, a protocol is a necessary part of the process. As explained in this chapter, a protocol is a written plan that explains what the researchers will do for each stage of the evidence synthesis process. The protocol is a document that, once registered, is considered permanent. Although updated versions of a protocol are allowed, researchers should avoid major revisions to the original protocol. The rationale for the protocol is to promote transparency and to avoid major changes later in the process that can introduce bias. Evidence synthesis projects are of high methodological quality when they are designed to reduce bias by design. For this reason, significant and thoughtful planning should go into writing the protocol prior to its registration. It typically takes at least one to two months to prepare a high-quality protocol and, in many cases, longer.

By developing a protocol, a research team develops a structure for the evidence synthesis project and a plan for each stage of the project, including what each research team member's role will be in the evidence synthesis process. The protocol can thus help clarify confusion before an evidence synthesis project gets started. The protocol helps establish the need for the evidence synthesis and the methods that the project will use. Thus, a protocol ensures that an evidence synthesis project complies with guidelines and standards such as PRISMA. Clear documentation of evidence synthesis methods is an important step toward research reproducibility. The protocol additionally improves the transparency and rigor of the project, reducing the likelihood of research waste and unnecessary duplication. Registration of the protocol is a best practice and is increasingly becoming a requirement for publication of evidence synthesis articles in academic journals in many disciplines.

Having a protocol benefits the research team and specifically benefits the librarian working with the research team. Having a well-designed protocol enables the librarian to develop and carry out an effective search strategy. The protocol further helps facilitate collaboration by enabling early discussion of the methods. By providing expertise in evidence synthesis methods through active involvement at the protocol development stage, a librarian can emerge as an equal collaborator on a research team. Promoting the importance of protocols can make for more effective and efficient collaborations on evidence synthesis projects.

At the beginning of the evidence synthesis process, librarians can help research teams search protocol registries to see if there are already any protocols registered on the research question and to read other protocols as examples that can inform the development of the protocol. Librarians may also help the research team find additional collaborators whose expertise may be needed to successfully plan and conduct aspects of the evidence synthesis (such as bringing a statistician onto the research team to develop a plan in the proto-

col for meta-analysis of extracted data). It is a good practice to identify with the research team some target journals at the beginning of the process to see if the journal accepts evidence synthesis projects and whether they require a pre-registered or published protocol. Librarians can also help a research team identify the appropriate registry and/or publication for making the protocol public. Language from the registered protocol may eventually be used in developing the final evidence synthesis article; however, the protocol should be cited in the resulting evidence synthesis article and considerations should be made to avoid self-plagiarism.[39]

The Protocol as a Project Management Tool

When researchers first come to a librarian with an interest in doing an evidence synthesis project, it is important to set expectations at the beginning about what is involved in an evidence synthesis project and how long it can take. The success of each stage of the evidence synthesis process depends on having a solid protocol. With a librarian collaborator, the research team should develop the protocol at the beginning planning stage. The protocol then guides each subsequent stage of the process. Protocols also help establish important deadlines, such as a realistic timeframe for conducting the searches. Librarian involvement early in the process allows them to negotiate these timeframes.

Overall, a protocol functions as the primary project management tool for an evidence synthesis project. A protocol helps the entire research team, including the librarian research partner, successfully conduct the evidence synthesis project by providing in advance an outline of everything they plan to do. In particular, a protocol helps the librarian manage the project as a researcher collaborator who is responsible for the search strategy, without which the evidence synthesis cannot be conducted.

Along with utilizing the protocol as a project management tool, other project management tools can supplement the protocol and help the research team carry out the plan. Librarians can recommend project management tools to help researchers follow through on the protocol. A project management tool for an evidence synthesis project can be as simple as a shared drive or team folder. Having a shared timeline or review schedule can also be helpful. Finally, thinking about time-saving alternatives to email can also improve team communication during the steps of the evidence synthesis project. Librarians may want to create a schedule for checking back in with the research team, in accordance with a project timeline established when developing the protocol. If researchers are not keeping the librarian in the loop as the project progresses, the protocol can serve as a useful tool for improving

communication. Librarians thus demonstrate to researchers how protocols function both to improve the methodological rigor of evidence syntheses and help ensure the completion and publication of evidence syntheses.

Negotiating Roles as Co-Investigators and Co-Authors

Working with a research team to develop an evidence synthesis protocol before conducting the searches for a project empowers the librarian to negotiate authority on the project and establish a written agreement with the team. A protocol makes the work of the librarian more apparent as, too often, this work is disregarded as "invisible labor."[40] If the protocol is being published, the librarian's name should be included on the protocol as a co-author. Librarians should establish co-authorship roles with research teams early on to avoid misunderstandings about a librarian's role on the protocol and the resulting evidence synthesis article. If the research team does not want to include the librarian as a co-author, this often indicates a misunderstanding about the librarian's level of involvement as a research collaborator. As Margaret Foster has suggested, "with each step of the process, it is valuable to pilot processes, evaluate levels of agreement (when appropriate), and obtain expert advice when needed."[41]

It is always much easier to negotiate authorship at the very beginning of an evidence synthesis project than having to negotiate in the middle or end of the process. Therefore, it is helpful for a library systematic review service to have a protocol template that researchers fill out when they are interested in receiving library support for an evidence synthesis project. The protocol form thus serves as an agreement about the librarian's role and co-authorship. The protocol form can establish that not only will the librarian's name be added to the final article but also that the librarian will be part of reviewing the manuscript draft to make sure the project meets professional standards for evidence synthesis before it is submitted for publication.

Utilizing a protocol form at the beginning of the process clarifies research team roles and methodological decisions. A protocol form provides the basis for librarians to serve as instructors and facilitators in the protocol development process. Especially for researchers new to evidence synthesis, it is helpful for a librarian to collaborate with them as co-learners. The process of developing a protocol works well as a collaborative learning experience, where a research team learns with a librarian how to approach protocol development by collaboratively reading existing protocols to inform the development of a new protocol.

Protocols can help remove divides between researchers and librarians. Librarians become true co-investigators with common research goals. Rather than being an uncredited service provider without a say in the structure of the

project, the librarian co-investigator becomes part of the protocol planning process, making suggestions to improve the protocol overall (not only the search methods). Protocol development, especially when a library systematic review service requires a protocol form, provides an opportunity early in the process for the librarian to emerge as an equal research partner—not an invisible, uncredited provider of search services.

By guiding protocol development, a librarian is showing the value librarians add to the research team. Establishing such involvement early in the process opens the door to the research team seeing the librarian as an essential part of the review team. Co-authorship for librarian involvement in protocol development is consistent with editorial guidelines, such as those written by the International Committee of Medical Journal Editors, for what counts as a contribution or authorship for a research publication.[42]

After collaborating with a librarian on protocol development, a researcher may get in the habit of always thinking of the librarian as an essential part of the planning process for future evidence synthesis projects. Close collaboration with a librarian as a research partner shifts the perception that the library is only providing search services. Researchers with whom a librarian has collaborated may tell other colleagues to reach out to the library whenever beginning a new evidence synthesis project.

Approaching the Protocol Development Process with Empathy and Collaborative Learning

Evidence synthesis is often a stressful process, which frequently turns out to be much more complicated than researchers initially anticipate. Thus, it is helpful for librarians to engage in the evidence synthesis process with empathy by approaching the process through an awareness of the needs of researchers.[43] Having a protocol requirement from the library can sometimes create conflict when a research team refuses to complete a protocol. Instead of simply saying that the library requires a protocol without explanation, librarians should approach the situation with empathy by trying to understand why researchers may be pushing back, why they may think they do not need a protocol, or why they are refusing to do a protocol. The researchers may need education on why a protocol is methodologically important for completing a successful evidence synthesis project. Librarians should make sure to convey that a protocol is not just something that the library is asking for arbitrarily but should explain how a protocol is a core component of evidence synthesis designed to ensure that a project is feasible and publishable. Communication about the importance of writing a protocol at the beginning of an evidence synthesis project can be framed in a way that is about what the research team needs and not just what the library needs.

A librarian may want to approach evidence synthesis collaboration, especially at the protocol development stage, as an opportunity for *learning with* a research team. It is okay for a librarian or other research team member to not initially feel like an expert on every aspect of evidence synthesis methods. The librarian does not have to have all the answers to start with but can instead help the research team navigate the protocol development process with an empathetic, collaborative learning approach. Doing an evidence synthesis project can be unexpectedly stressful, but if it is approached from a place of mutual empathy and commitment to collaborative learning, the process will be smoother for the librarian and the rest of the research team.

How Libraries Can Support Librarians Working on Evidence Synthesis

A primer on systematic reviews for library administrators has highlighted how important it is that library administrators "understand the steps involved in a systematic review or research synthesis, and the issues and opportunities that these methodologies raise in the use of library services and resources."[44] It is crucial for library administrators to understand that more goes into conducting a high-quality evidence synthesis project than just database searching. It is also vital that library administrators ensure adequate time and resources for librarians to develop evidence synthesis competencies if the library wants to offer a systematic review service. In particular, libraries can support librarians in becoming proficient in developing evidence synthesis protocols by sponsoring targeted professional development.

To recover the cost of professional development and service provision, libraries may want to consider developing fee-based systematic review services, including asking researchers to write the library's service into their grants. Fee-based services can help make sure that librarians have the time and resources needed to effectively serve as research collaborators on evidence synthesis projects. Fee-based services can encompass protocol development support and not just search support.

As shown in the case studies in this chapter, librarians have a role to play both in their libraries and in their institutions in heightening awareness of the importance of protocols for evidence synthesis. Protocols should be at the core of an evidence synthesis service. It is important to challenge assumptions that protocols are just superfluous paperwork or that protocols are beyond the knowledge and expertise of librarians. When a library advocates for the importance of protocol development, and for the importance of librarian involvement in protocol development, a library has an opportunity to promote itself as a key institutional resource for learning and coordinating evidence synthesis protocol development (not just search services).

Beyond Project Management: Protocols as Course Assignments

In addition to being a vital tool for research teams, protocols can be an effective educational tool and course assignment for students. While some faculty may have unrealistic expectations and try to assign an entire systematic review in a semester, students can more realistically develop a systematic review protocol (or protocol for another type of review, such as a rapid review) within a semester. When evidence synthesis projects are assigned for course assignments, a librarian can take on an instructional role regarding evidence synthesis protocol development. Learning how to write an evidence synthesis protocol can be an educational opportunity for an entire class, incorporating librarian instruction and feedback. There is an emerging body of research literature about successful examples of making evidence synthesis protocol development a structured course assignment.[45] Librarians can help construct protocol assignments and be involved in providing feedback on student-developed protocols.

Conclusion

Whether working with research teams or with students, librarians provide vital feedback on protocol development that improves the overall quality of evidence synthesis projects. Librarians have opportunities to make themselves visible as the go-to support for evidence synthesis, whether working with research teams or instructional faculty. Librarians are well-positioned to develop valuable methodological expertise on evidence synthesis and share this expertise with research collaborators and students who are becoming researchers.

Further Resources

The following list of resources is provided for librarians wanting to learn more about protocol development and associated library services.

Protocol Guidelines

- PRISMA-P (http://www.prisma-statement.org/Extensions/Protocols)
- Equator Network (https://www.equator-network.org/reporting-guidelines)
- An Integrative Framework for Planning and Conducting Non-Intervention, Reproducible, and Open Systematic Reviews (https://osf.io/preprints/metaarxiv/8gu5z)

Protocol Templates

- Evidence Synthesis Protocol Template, Cornell University (https://osf .io/zwd6n/)
- Systematic Review Protocol Form, Temple University (https://osf.io /rb7a2/)
- Systematic Review Protocol Form for Students, Temple University (https://osf.io/m3ekz)
- Scoping Review Protocol Form, Joanna Briggs Institute (https://jbi .global/scoping-review-network/resources)

Protocol Registries

- PROSPERO (https://www.crd.york.ac.uk/prospero)
- Open Science Framework (https://osf.io/registries)
- Cochrane Collaboration (http://www.cochrane.org)
- Campbell Collaboration (http://campbellcollaboration.org)
- JBI (http://jbi.global/systematic-review-register)
- Syreaf (http://www.syreaf.org)
- Zenodo (http://zenodo.org)
- Figshare (https://figshare.com)

Examples of Journals Publishing Protocols

- *BMC Systematic Reviews* (https://www.biomedcentral.com/getpublished)
- *JMIR Research Protocols* (http://www.researchprotocols.org)
- *BMJ Open* (https://bmjopen.bmj.com)
- *JBI Evidence Synthesis* (https://journals.lww.com/jbisrir)

Notes

1. "Systematic review" is often used as a generic term to refer to evidence synthesis. Systematic reviews, however, are a specific type of evidence synthesis.

2. Lesley Uttley and Paul Montgomery, "The Influence of the Team in Conducting a Systematic Review," *Systematic Reviews* 6, no. 1 (August 2017): 1–4, https://doi .org/10.1186/s13643-017-0548-x.

3. Maria J. Grant and Andrew Booth, "A Typology of Reviews: an Analysis of 14 Review Types and Associated Methodologies," *Health Information and Libraries Journal* 26, no. 2 (June 2009): 91–108, https://doi.org/10.1111/j.1471-1842.2009.00848.x; Anthea Sutton et al., "Meeting the Review Family: Exploring Review Types and Asssociated Information Retrieval Requirements," *Health Information and Libraries Journal* 36, no. 3 (September 2019): 202–22, https://doi.org/10.1111/hir.12276.

4. Iain Chalmers, Larry V. Hedges, and Harris Cooper, "A Brief History of Research Synthesis," *Evaluation & the Health Professions* 25, no. 1 (March 2002): 12–37, https://doi.org/10.1177/0163278702025001003.

5. Mike Clarke and Iain Chalmers, "Reflections on the History of Systematic Reviews," *BMJ Evidence-Based Medicine* 23, no. 4 (August 2018): 121–22, https://doi.org/10.1136/bmjebm-2018-110968.

6. Michael Gusenbauer, "The Age of Abundant Scholarly Information and Its Synthesis: A Time When 'Just Google It' Is No Longer Enough," *Research Synthesis Methods* 12, no. 6 (November 2021): 684–91, https://doi.org/10.1002/jrsm.1520.

7. Micah D. J. Peters, "Not Just a Phase: JBI Systematic Review Protocols," *JBI Database of Systematic Reviews and Implementation Reports* 13, no. 2 (March 2015): 1–2, https://doi.org/10.11124/jbisrir-2015-2217.

8. Toby J. Lasserson, James Thomas, and Julian P. T. Higgins, "Starting a Review," in *Cochrane Handbook for Systematic Reviews of Interventions*, ed. Julian P. T. Higgins et al. (Hoboken, NJ: Wiley, 2019), 1–12, https://doi.org/10.1002/9781119536604.ch1.

9. David Moher et al., "Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) 2015 Statement," *Systematic Reviews* 4, no. 1 (January 2015): 1–9, https://doi.org/10.1186/2046-4053-4-1.

10. Jessie McGowan et al., "PRESS Peer Review of Electronic Search Strategies: 2015 Guideline Statement," *Journal of Clinical Epidemiology* 75 (March 2016): 40–46, https://doi.org/10.1016/j.jclinepi.2016.01.021.

11. Konstantinos C. Siontis and John P. A. Ioannidis, "Replication, Duplication, and Waste in a Quarter Million Systematic Reviews and Meta-Analyses," *Circulation: Cardiovascular Quality and Outcomes* 11, no. 12 (December 2018): 1–3, https://doi.org/10.1161/CIRCOUTCOMES.118.005212.

12. David Moher, Alison Booth, and Lesley Stewart, "How to Reduce Unnecessary Duplication: Use PROSPERO," *BJOG: An International Journal of Obstetrics and Gynaecology* 121, no. 7 (June 2014): 784–86, https://doi.org/10.1111/1471-0528.12657.

13. Gehad Mohamed Tawfik et al., "Protocol Registration Issues of Systematic Review and Meta-Analysis Studies: A Survey of Global Researchers," *BMC Medical Research Methodology* 20, no. 1 (August 2020): 1–9, https://doi.org/10.1186/s12874-020-01094-9.

14. Matthew J. Page, Larissa Shamseer, and Andrea C. Tricco, "Registration of Systematic Reviews in PROSPERO: 30,000 Records and Counting," *Systematic Reviews* 7, no. 1 (February 2018): 1–9, https://doi.org/10.1186/s13643-018-0699-4; Alison Booth et al., "The Nuts and Bolts of PROSPERO: An International Prospective Register of Systematic Reviews," *Systematic Reviews* 1 (February 2012): 2, https://doi.org/10.1186/2046-4053-1-2.

15. Sofia Sideri, Spyridon N. Papageorgiou, and Theodore Eliades, "Registration in the International Prospective Register of Systematic Reviews (PROSPERO) of Systematic Review Protocols Was Associated with Increased Review Quality," *Journal of Clinical Epidemiology* 100 (August 2018): 103–10, https://doi.org/10.1016/j.jclinepi.2018.01.003.

16. Tanja Rombey et al., "Inconsistent Views Among Systematic Review Authors Toward Publishing Protocols as Peer-Reviewed Articles: An International Survey,"

Journal of Clinical Epidemiology 123 (July 2020): 9–17, https://doi.org/10.1016/j .jclinepi.2020.03.010.

17. Katharina Allers et al., "Systematic Reviews with Published Protocols Compared to Those Without: More Effort, Older Search," *Journal of Clinical Epidemiology* 95 (March 2018): 102–10, https://doi.org/10.1016/j.jclinepi.2017.12.005.

18. Melissa L. Rethlefsen et al., "Librarian Co-Authors Correlated with Higher Quality Reported Search Strategies in General Internal Medicine Systematic Reviews," *Journal of Clinical Epidemiology* 68, no. 6 (June 2015): 617–26, https://doi.org /10.1016/j.jclinepi.2014.11.025.

19. Mikaela Aamodt, Hugo Huurdeman, and Hilde Strømme, "Librarian Co-Authored Systematic Reviews Are Associated with Lower Risk of Bias Compared to Systematic Reviews with Acknowledgment of Librarians or no Participation by Librarians," *Evidence Based Library and Information Practice* 14, no. 4 (December 13, 2019): 103–27, https://doi.org/10.18438/eblip29601.

20. Angela J. Spencer and Jonathan D. Eldredge, "Roles for Librarians in Systematic Reviews: A Scoping Review," *Journal of the Medical Library Association* 106, no. 1 (January 2018): 46–56, https://doi.org/10.5195/jmla.2018.82.

21. Joey Nicholson, Aileen McCrillis, and Jeff D. Williams, "Collaboration Challenges in Systematic Reviews: A Survey of Health Sciences Librarians," *Journal of the Medical Library Association* 105, no. 4 (October 2017): 385–93, https://doi .org/10.5195/jmla.2017.176.

22. Rosalind F. Dudden and Shandra L. Protzko, "The Systematic Review Team: Contributions of the Health Sciences Librarian," *Medical Reference Services Quarterly* 30, no. 3 (2011): 301–15, https://doi.org/10.1080/02763869.2011.590425.

23. Martin Morris, Jill T. Boruff, and Genevieve C. Gore, "Scoping Reviews: Establishing the Role of the Librarian," *Journal of the Medical Library Association* 104, no. 4 (October 2016): 346–54, https://doi.org/10.3163/1536-5050.104.4.020.

24. Whitney A. Townsend et al., "A Competency Framework for Librarians Involved in Systematic Reviews," *Journal of the Medical Library Association* 105, no. 3 (July 2017): 268–75, https://doi.org/10.5195/jmla.2017.189.

25. Mary Lou Klem and Charles Wessel, "Summarizing: Writing Review Protocols and Reports," in *Assembling the Pieces of a Systematic Review: Guide for Librarians*, eds. Margaret J. Foster and Sarah T. Jewell (Lanham, MD: Rowman & Littlefield, 2017), 163–82.

26. Robert Janke and Kathy L. Rush, "The Academic Librarian as Co-Investigator on an Interprofessional Primary Research Team: A Case Study," *Health Information and Libraries Journal* 31, no. 2 (June 2014): 116–22, https://doi.org/10.1111/hir.12063; Ángel Borrego, Jordi Ardanuy, and Cristóbal Urbano, "Librarians as Research Partners: Their Contribution to the Scholarly Endeavour Beyond Library and Information Science," *The Journal of Academic Librarianship* 44, no. 5 (July 2018): 663–70, https:// doi.org/10.1016/j.acalib.2018.07.012; Ángel Borrego and Stephen Pinfield, "Librarians Publishing in Partnership with Other Researchers: Roles, Motivations, Benefits, and Challenges," *portal: Libraries and the Academy* 20, no. 4 (2020): 655–75, https:// doi.org/10.1353/pla.2020.0031.

27. Lisa Federer, "The Librarian as Research Informationist: A Case Study," *Journal of the Medical Library Association* 101, no. 4 (October 2013): 298–302, https://doi.org/10.3163/1536-5050.101.4.011.

28. Devon Greyson et al., "You're Just One of the Group When You're Embedded: Report from a Mixed-Method Investigation of the Research-Embedded Health Librarian Experience," *Journal of the Medical Library Association* 101, no. 4 (October 2013): 287–97, https://doi.org/10.3163/1536-5050.101.4.010.

29. Emilia C. Bell and Mary Anne Kennan, "Partnering in Knowledge Production: Roles for Librarians in the Digital Humanities," *Journal of the Australian Library and Information Association* 70, no. 2 (April 3, 2021): 157–76, https://doi.org/10.1080/24750158.2021.1907886.

30. Sandra McKeown and Amanda Ross-White, "Building Capacity for Librarian Support and Addressing Collaboration Challenges by Formalizing Library Systematic Review Services," *Journal of the Medical Library Association* 107, no. 3 (July 2019): 411–19, https://doi.org/10.5195/jmla.2019.443.

31. Mellanye J. Lackey, Heidi Greenberg, and Melissa L. Rethlefsen, "Building the Systematic Review Core in an Academic Health Sciences Library," *Journal of the Medical Library Association* 107, no. 4 (October 2019): 588–94, https://doi.org/10.5195/jmla.2019.711.

32. Amy Knehans, Esther Dell, and Cynthia Robinson, "Starting a Fee-Based Systematic Review Service," *Medical Reference Services Quarterly* 35, no. 3 (September 2016): 266–73, https://doi.org/10.1080/02763869.2016.1189779.

33. Amelia Kallaher et al., "Library Systematic Review Service Supports Evidence-Based Practice Outside of Medicine," *The Journal of Academic Librarianship* 46, no. 6 (November 2020): 1–5, https://doi.org/10.1016/j.acalib.2020.102222.

34. Nedelina Tchangalova et al., "Working Across Disciplines and Library Units to Develop a Suite of Systematic Review Services for Researchers," *Collaborative Librarianship* 11, no. 4 (2020), https://doi.org/10.13016/2nxe-ud2d.

35. Thomas Jefferson University, "Systematic Reviews," accessed November 22, 2021, https://jefferson.libguides.com/systematicreviews.

36. Stephanie Clare Roth, "Transforming the Systematic Review Service: A Team-Based Model to Support the Educational Needs of Researchers," *Journal of the Medical Library Association* 106, no. 4 (October 2018): 514–20, https://doi.org/10.5195/jmla.2018.430.

37. Temple University, "Systematic Review Service," accessed November 22, 2021, https://guides.temple.edu/systematicreviews/systematicreviewservice.

38. Temple University, "TUScholarShare," accessed November 22, 2021, https://scholarshare.temple.edu/; Melissa L. Rethlefsen et al., "PRISMA-S: An Extension to the PRISMA Statement for Reporting Literature Searches in Systematic Reviews," *Systematic Reviews* 10, no. 1 (January 2021): 1–19, https://doi.org/10.1186/s13643-020-01542-z.

39. Dawid Pieper, Long Ge, and Ahmed Abou-Setta, "Is Reusing Text from a Protocol in the Completed Systematic Review Acceptable?" *Systematic Reviews* 10, no. 1 (May 2021): 1–4, https://doi.org/10.1186/s13643-021-01675-9.

40. Amanda Ross-White, "Search Is a Verb: Systematic Review Searching as Invisible Labor," *Journal of the Medical Library Association* 109, no. 3 (July 2021): 505–6, https://doi.org/10.5195/jmla.2021.1226.

41. Margaret J. Foster, "An Overview of the Role of Librarians in Systematic Reviews: From Expert Search to Project Manager," *Journal of the European Association for Health Information and Libraries* 11, no. 3 (2015): 3–7.

42. International Committee of Medical Journal Editors, "Defining the Role of Authors and Contributors," *Roles and Responsibilities of Authors, Contributors, Reviewers, Editors, Publishers, and Owners*, 2019, http://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html.

43. Edward J. Luca and Yulia Ulyannikova, "Towards a User-Centered Systematic Review Service: The Transformative Power of Service Design Thinking," *Journal of the Australian Library and Information Association*, 69, no. 3 (May 2020): 1–18, https://doi.org/10.1080/24750158.2020.1760506.

44. Genevieve C. Gore and Julie Jones, "Systematic Reviews and Librarians: A Primer for Managers," *Partnership: The Canadian Journal of Library and Information Practice and Research* 10, no. 1 (July 2015): 1–16, https://doi.org/10.21083/partnership.v10i1.3343.

45. Bethany Sheriese McGowan, Jason B. Reed, and Jane Kinkus Yatcilla, "Graduate Student Confidence Following a For-Credit Systematic Review Course Pilot," *Journal of the Medical Library Association* 109, no. 2 (April 2021): 323–29, https://doi.org/10.5195/jmla.2021.1073; Zahra Premji, K. Alix Hayden, and Shauna Rutherford, "Teaching Knowledge Synthesis Methodologies in a Higher Education Setting: A Scoping Review of Face-to-Face Instructional Programs," *Evidence Based Library and Information Practice* 16, no. 2 (June 2021): 111–44, https://doi.org/10.18438/eblip29895; Hiraku Tsujimoto et al., "A Model Six-Month Workshop for Developing Systematic Review Protocols at Teaching Hospitals: Action Research and Scholarly Productivity," *BMC Medical Education* 21, no. 1 (February 2021): 1–8, https://doi.org/10.1186/s12909-021-02538-6.

Bibliography

Aamodt, Mikaela, Hugo Huurdeman, and Hilde Strømme. "Librarian Co-Authored Systematic Reviews Are Associated with Lower Risk of Bias Compared to Systematic Reviews with Acknowledgment of Librarians or No Participation by Librarians." *Evidence Based Library and Information Practice* 14, no. 4 (December 2019): 103–27. https://doi.org/10.18438/eblip29601.

Allers, Katharina, Falk Hoffmann, Tim Mathes, and Dawid Pieper. "Systematic Reviews with Published Protocols Compared to Those Without: More Effort, Older Search." *Journal of Clinical Epidemiology* 95 (March 2018): 102–10. https://doi.org/10.1016/j.jclinepi.2017.12.005.

Bell, Emilia C., and Mary Anne Kennan. "Partnering in Knowledge Production: Roles for Librarians in the Digital Humanities." *Journal of the Australian Library and*

Information Association 70, no. 2 (April 2021): 157–76. https://doi.org/10.1080/24 750158.2021.1907886.

Booth, Alison, Mike Clarke, Gordon Dooley, Davina Ghersi, David Moher, Mark Petticrew, and Lesley Stewart. "The Nuts and Bolts of PROSPERO: An International Prospective Register of Systematic Reviews." *Systematic Reviews* 1, no. 2 (February 2012): 1–8. https://doi.org/10.1186/2046-4053-1-2.

Borrego, Ángel, and Stephen Pinfield. "Librarians Publishing in Partnership with Other Researchers: Roles, Motivations, Benefits, and Challenges." *portal: Libraries and the Academy* 20, no. 4 (2020): 655–75. https://doi.org/10.1353/pla.2020.0031.

Borrego, Ángel, Jordi Ardanuy, and Cristóbal Urbano. "Librarians as Research Partners: Their Contribution to the Scholarly Endeavour Beyond Library and Information Science." *The Journal of Academic Librarianship* 44, no. 5 (July 2018): 663–70. https://doi.org/10.1016/j.acalib.2018.07.012.

Chalmers, Iain, Larry V. Hedges, and Harris Cooper. "A Brief History of Research Synthesis." *Evaluation & The Health Professions* 25, no. 1 (March 2002): 12–37. https://doi.org/10.1177/0163278702025001003.

Clarke, Mike, and Iain Chalmers. "Reflections on the History of Systematic Reviews." *BMJ Evidence-based Medicine* 23, no. 4 (August 2018): 121–22. https://doi .org/10.1136/bmjebm-2018-110968.

Dudden, Rosalind F., and Shandra L. Protzko. "The Systematic Review Team: Contributions of the Health Sciences Librarian." *Medical Reference Services Quarterly* 30, no. 3 (2011): 301–15. https://doi.org/10.1080/02763869.2011.590425.

Federer, Lisa. "The Librarian as Research Informationist: A Case Study." *Journal of the Medical Library Association* 101, no. 4 (October 2013): 298–302. https://doi .org/10.3163/1536-5050.101.4.011.

Foster, Margaret J. "An Overview of the Role of Librarians in Systematic Reviews: From Expert Search to Project Manager." *Journal of the European Association for Health Information and Libraries* 11, no. 3 (2015): 3–7.

Gore, Genevieve C., and Julie Jones. "Systematic Reviews and Librarians: A Primer for Managers." *Partnership: the Canadian Journal of Library and Information Practice and Research* 10, no. 1 (July 2015): 1–16. https://doi.org/10.21083/part nership.v10i1.3343.

Grant, Maria J., and Andrew Booth. "A Typology of Reviews: An Analysis of 14 Review Types and Associated Methodologies." *Health Information and Libraries Journal* 26, no. 2 (June 2009): 91–108. https://doi.org/10.1111/j.1471-1842.2009.00848.x.

Greyson, Devon, Soleil Surette, Liz Dennett, and Trish Chatterley. "You're Just One of the Group When You're Embedded: Report from a Mixed-Method Investigation of the Research-Embedded Health Librarian Experience." *Journal of the Medical Library Association* 101, no. 4 (October 2013): 287–97. https://doi.org/10.3163/1536 -5050.101.4.010.

Gusenbauer, Michael. "The Age of Abundant Scholarly Information and its Synthesis: A Time When 'Just Google It' is no Longer Enough." *Research Synthesis Methods* 12, no. 6 (November 2021): 684–91. https://doi.org/10.1002/jrsm.1520.

International Committee of Medical Journal Editors. "Defining the Role of Authors and Contributors." *Roles and Responsibilities of Authors, Contributors, Reviewers, Edi-*

tors, Publishers, and Owners, 2019. http://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html.

Janke, Robert, and Kathy L Rush. "The Academic Librarian as Co-Investigator on an Interprofessional Primary Research Team: A Case Study." *Health Information and Libraries Journal* 31, no. 2 (June 2014): 116–22. https://doi.org/10.1111/hir.12063.

Kallaher, Amelia, Erin R. B. Eldermire, Christine T. Fournier, Kate Ghezzi-Kopel, Kelly A. Johnson, Jim Morris-Knower, Sara Scinto-Madonich, and Sarah Young. "Library Systematic Review Service Supports Evidence-Based Practice Outside of Medicine." *The Journal of Academic Librarianship* 46, no. 6 (November 2020): 1–5. https://doi.org/10.1016/j.acalib.2020.102222.

Klem, Mary Lou, and Charles Wessel. "Summarizing: Writing Review Protocols and Reports." In *Assembling the Pieces of a Systematic Review: A Guide for Librarians*, edited by Margaret J. Foster and Sarah T. Jewell, 163–82. Lanham, MD: Rowman & Littlefield, 2017.

Knehans, Amy, Esther Dell, and Cynthia Robinson. "Starting a Fee-Based Systematic Review Service." *Medical Reference Services Quarterly* 35, no. 3 (September 2016): 266–73. https://doi.org/10.1080/02763869.2016.1189779.

Lackey, Mellanye J., Heidi Greenberg, and Melissa L. Rethlefsen. "Building the Systematic Review Core in an Academic Health Sciences Library." *Journal of the Medical Library Association* 107, no. 4 (October 2019): 588–94. https://doi.org/10.5195/jmla.2019.711.

Lasserson, Toby J., James Thomas, and Julian P. T. Higgins. "Starting a Review." In *Cochrane Handbook for Systematic Reviews of Interventions*, edited by Julian P. T. Higgins, James Thomas, Jacqueline Chandler, Miranda Cumpston, Tianjing Li, Matthew J. Page, and Vivian A. Welch, 1–12. Hoboken, NJ: Wiley, 2019. https://doi.org/10.1002/9781119536604.ch1.

Luca, Edward, and Yulia Ulyannikova. "Towards a User-Centered Systematic Review Service: The Transformative Power of Service Design Thinking." *Journal of the Australian Library and Information Association* 69, no. 3 (May 2020): 1–18. https://doi.org/10.1080/24750158.2020.1760506.

McGowan, Bethany Sheriese, Jason B. Reed, and Jane Kinkus Yatcilla. "Graduate Student Confidence Following a For-Credit Systematic Review Course Pilot." *Journal of the Medical Library Association* 109, no. 2 (April 2021): 323–29. https://doi.org/10.5195/jmla.2021.1073.

McGowan, Jessie, Margaret Sampson, Douglas M. Salzwedel, Elise Cogo, Vicki Foerster, and Carol Lefebvre. "PRESS Peer Review of Electronic Search Strategies: 2015 Guideline Statement." *Journal of Clinical Epidemiology* 75 (March 2016): 40–46. https://doi.org/10.1016/j.jclinepi.2016.01.021.

McKeown, Sandra, and Amanda Ross-White. "Building Capacity for Librarian Support and Addressing Collaboration Challenges by Formalizing Library Systematic Review Services." *Journal of the Medical Library Association* 107, no. 3 (July 2019): 411–19. https://doi.org/10.5195/jmla.2019.443.

Moher, David, Alison Booth, and Lesley A. Stewart. "How to Reduce Unnecessary Duplication: Use PROSPERO." *BJOG: An International Journal of Obstetrics and Gynaecology* 121, no. 7 (June 2014): 784–86. https://doi.org/10.1111/1471-0528.12657.

Moher, David, Larissa Shamseer, Mike Clarke, Davina Ghersi, Alessandro Liberati, Mark Petticrew, Paul Shekelle, Lesley A. Stewart, and PRISMA-P Group. "Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) 2015 Statement." *Systematic Reviews* 4, no. 1 (January 2015): 1–9. https://doi.org/10.1186/2046-4053-4-1.

Morris, Martin, Jill T. Boruff, and Genevieve C. Gore. "Scoping Reviews: Establishing the Role of the Librarian." *Journal of the Medical Library Association* 104, no. 4 (October 2016): 346–54. https://doi.org/10.3163/1536-5050.104.4.020.

Nicholson, Joey, Aileen McCrillis, and Jeff D. Williams. "Collaboration Challenges in Systematic Reviews: A Survey of Health Sciences Librarians." *Journal of the Medical Library Association* 105, no. 4 (October 2017): 385–93. https://doi.org/10.5195/jmla.2017.176.

Page, Matthew J., Larissa Shamseer, and Andrea C. Tricco. "Registration of Systematic Reviews in PROSPERO: 30,000 Records and Counting." *Systematic Reviews* 7, no. 1 (February 2018): 1–9. https://doi.org/10.1186/s13643-018-0699-4.

Peters, Micah D. J. "Not Just a Phase: JBI Systematic Review Protocols." *JBI Database of Systematic Reviews and Implementation Reports* 13, no. 2 (March 2015): 1–2. https://doi.org/10.11124/jbisrir-2015-2217.

Pieper, Dawid, Long Ge, and Ahmed Abou-Setta. "Is Reusing Text from a Protocol in the Completed Systematic Review Acceptable?" *Systematic Reviews* 10, no. 1 (May 2021): 1–4. https://doi.org/10.1186/s13643-021-01675-9.

Premji, Zahra, K. Alix Hayden, and Shauna Rutherford. "Teaching Knowledge Synthesis Methodologies in a Higher Education Setting: A Scoping Review of Face-to-Face Instructional Programs." *Evidence Based Library and Information Practice* 16, no. 2 (June 2021): 111–44. https://doi.org/10.18438/eblip29895.

Rethlefsen, Melissa L., Ann M. Farrell, Leah C. Osterhaus Trzasko, and Tara J. Brigham. "Librarian Co-Authors Correlated with Higher Quality Reported Search Strategies in General Internal Medicine Systematic Reviews." *Journal of Clinical Epidemiology* 68, no. 6 (June 2015): 617–26. https://doi.org/10.1016/j.jclinepi.2014.11.025.

Rethlefsen, Melissa L., Shona Kirtley, Siw Waffenschmidt, Ana Patricia Ayala, David Moher, Matthew J. Page, Jonathan B. Koffel, and PRISMA-S Group. "PRISMA-S: An Extension to the PRISMA Statement for Reporting Literature Searches in Systematic Reviews." *Systematic Reviews* 10, no. 1 (January 2021): 1–19. https://doi.org/10.1186/s13643-020-01542-z.

Rombey, Tanja, Livia Puljak, Katharina Allers, Juan Ruano, and Dawid Pieper. "Inconsistent Views Among Systematic Review Authors Toward Publishing Protocols as Peer-Reviewed Articles: An International Survey." *Journal of Clinical Epidemiology* 123 (July 2020): 9–17. https://doi.org/10.1016/j.jclinepi.2020.03.010.

Ross-White, Amanda. "Search Is a Verb: Systematic Review Searching as Invisible Labor." *Journal of the Medical Library Association* 109, no. 3 (July 2021): 505–6. https://doi.org/10.5195/jmla.2021.1226.

Roth, Stephanie Clare. "Transforming the Systematic Review Service: A Team-Based Model to Support the Educational Needs of Researchers." *Journal of the Medical*

Library Association 106, no. 4 (October 2018): 514–20. https://doi.org/10.5195/jmla.2018.430.

Sideri, Sofia, Spyridon N. Papageorgiou, and Theodore Eliades. "Registration in the International Prospective Register of Systematic Reviews (PROSPERO) of Systematic Review Protocols Was Associated with Increased Review Quality." *Journal of Clinical Epidemiology* 100 (August 2018): 103–10. https://doi.org/10.1016/j.jclinepi.2018.01.003.

Siontis, Konstantinos C., and John P. A. Ioannidis. "Replication, Duplication, and Waste in a Quarter Million Systematic Reviews and Meta-Analyses." *Circulation: Cardiovascular Quality and Outcomes* 11, no. 12 (December 2018): 1–3. https://doi.org/10.1161/CIRCOUTCOMES.118.005212.

Spencer, Angela J., and Jonathan D. Eldredge. "Roles for Librarians in Systematic Reviews: a Scoping Review." *Journal of the Medical Library Association* 106, no. 1 (January 2018): 46–56. https://doi.org/10.5195/jmla.2018.82.

Sutton, Anthea, Mark Clowes, Louise Preston, and Andrew Booth. "Meeting the Review Family: Exploring Review Types and Associated Information Retrieval Requirements." *Health Information and Libraries Journal* 36, no. 3 (September 2019): 202–22. https://doi.org/10.1111/hir.12276.

Tawfik, Gehad Mohamed, Hoang Thi Nam Giang, Sherief Ghozy, Ahmed M. Altibi, Hend Kandil, Huu-Hoai Le, Peter Samuel Eid, et al. "Protocol Registration Issues of Systematic Review and Meta-Analysis Studies: A Survey of Global Researchers." *BMC Medical Research Methodology* 20, no. 1 (August 2020): 1–9. https://doi.org/10.1186/s12874-020-01094-9.

Tchangalova, Nedelina, Eileen G. Harrington, Stephanie Ritchie, Sarah Over, and Jodi Coalter. "Working Across Disciplines and Library Units to Develop a Suite of Systematic Review Services for Researchers." *Collaborative Librarianship* 11, no. 4 (2020). https://doi.org/10.13016/2nxe-ud2d.

Temple University. "Systematic Review Service." Accessed November 22, 2021. https://guides.temple.edu/systematicreviews/systematicreviewservice.

Temple University. "TUScholarShare." Accessed November 22, 2021. https://scholarshare.temple.edu/.

Thomas Jefferson University. "Systematic Reviews." Accessed November 22, 2021. https://jefferson.libguides.com/systematicreviews.

Townsend, Whitney A., Patricia F. Anderson, Emily C. Ginier, Mark P. MacEachern, Kate M. Saylor, Barbara L. Shipman, and Judith E. Smith. "A Competency Framework for Librarians Involved in Systematic Reviews." *Journal of the Medical Library Association* 105, no. 3 (July 2017): 268–75. https://doi.org/10.5195/jmla.2017.189.

Tsujimoto, Hiraku, Yuki Kataoka, Yukihito Sato, Masahiro Banno, Emi Tsujino-Tsujimoto, Yukiyoshi Sumi, Ryuichi Sada, et al. "A Model Six-Month Workshop for Developing Systematic Review Protocols at Teaching Hospitals: Action Research and Scholarly Productivity." *BMC Medical Education* 21, no. 1 (February 2021): 1–8. https://doi.org/10.1186/s12909-021-02538-6.

Uttley, Lesley, and Paul Montgomery. "The Influence of the Team in Conducting a Systematic Review." *Systematic Reviews* 6, no. 1 (August 2017): 1–4. https://doi.org/10.1186/s13643-017-0548-x.

6

Beyond Collaborations

Transforming Liaison Practices into Impactful Research Partnerships

Danielle Mihram and Melissa L. Miller

IN 1989, WILLIAM WULF (a computer scientist) coined the word "collaboratory" in science to denote "a center without walls, in which the nation's researchers can perform their research without regard to physical location interacting with colleagues, accessing instrumentation, sharing data and computational resources, [and] accessing information in digital libraries."[1]

At the University of Southern California (USC) Libraries, Collaboratories is a student-based program that provides access to interdisciplinary, team-based "laboratories" designed to engage students in activities that bridge critical thinking and digital fabrication in multiple disciplines. They are polymathic[2] in nature, bringing faculty, experts, artists, designers, and students together at the Ahmanson Lab[3] over an academic year. They are organized around topics or problems or sets of questions that are best explored via the hands-on design and production of digital artifacts. These Collaboratories are designed and coordinated by one or more USC faculty in cooperation with Ahmanson Lab staff.[4]

This chapter is a case study that focuses on a different, yet equally successful, form of collaboration at the university, dynamic evolutions of collaborations and partnerships between librarians and faculty in the creation and development of three projects: *USC Digital Voltaire*; *USC Illuminated Medieval Manuscripts*; and *The Silk Roads* (exhibition and one-day event).

Literature Review

The digital humanities have advanced a wide range of diversity in learning, teaching, and scholarship. Digital technologies are essential for examining

not only critical questions in the humanities but also across academic fields, allowing for an inclusive environment of perspectives. This is representative of the next wave of digital humanities research, teaching, and engagement. The inclusivity that digital humanities fosters is evident in the diversity of practitioners, including individuals who have been historically marginalized within the academy, subject-area specializations, roles, and institutions.[5]

Digital humanities bring together interdisciplinary scholars and professionals with students of all levels in the pursuit of multifaceted research. This type of collaboration lends itself as an engaging opportunity to allow students to find agency in an authentic and meaningful learning experience. Librarians, and their expertise, are situated at the intersection of the shifting role of research, learning, and teaching with new technologies. As interdisciplinary research partners, academic librarians continue to lead digital humanities scholarship with new creative tools, technologies, and as educators.

Publications relating to libraries' collaborative initiatives are numerous, and literature reviews on that subject have led to a substantial amount of research on a variety of topics. A small sampling of titles relating to recurring publications in these categories is noted here. For example, "Collaborations" have been examined in the context of interdisciplinary/multidisciplinary collaborations of librarians involved in projects,[6] or extensive collaborations with academic research centers[7] or new partnership models;[8] hybrid models— evolving librarian liaison roles, where liaisons pair their expertise with that of functional specialists, both within and outside of libraries;[9] co-authorship of papers with faculty in fields outside of library and information science;[10] and library-faculty partnerships in course delivery and student engagement.[11] In many cases, librarians are "embedded" in undergraduate courses, and more recently, so are archivists.[12]

Clearly, libraries are uniquely positioned to foster the cutting-edge collaborations and partnerships that are essential in developing and institutionalizing experimental modes of scholarly research and communication for librarians, faculty, and students.

Case Study: Collaborative Projects at USC

The University of Southern California (USC) is a highly ranked, private R1 research university in Los Angeles, California. USC's central mission "is the development of human beings and society as a whole through the cultivation and enrichment of the human mind and spirit."[13] Within the twenty-three USC Libraries, the special collections department manages USC's primary

sources, comprising over 200,000 manuscripts and rare books, one thousand archival collections, and two million photographs. Their "mission is to lend intellectual excitement and vitality to the campus and community through access to their collections of archives, rare books, and other unique materials."[14] Special collections materials are available to the USC community and the public, and the department provides primary source instruction, workshops, and online tutorials. Their current areas of strength include Holocaust and genocide studies, Iberian and Latin American studies, Lewis Carroll and *Alice in Wonderland*, Lion Feuchtwanger and the twentieth-century European exiles in Southern California, natural history, Southern California regional history, and USC history.

This case study focuses on manuscripts in the USC Libraries special collections. The 2017 publication of *USC Digital Voltaire*, a librarian-led, polymathic, multimodal digital humanities project, was developed as a proof-of-concept, and it marks the origin of the transformation of librarian collaborative liaison practices into several research partnerships starting with the publication in 2019 of *USC Illuminated Manuscripts,* the second librarian-led publication.

Two of *USC Digital Voltaire*'s goals were 1) to provide multiple levels of discovery and 2) to develop a model for classroom instruction and research, to teach students multiple literacies and new multimodal forms of expression, thus engaging them at all levels of scholarship in the humanities.

USC Illuminated Manuscripts has led to research partnerships and publications with several schools and centers at USC, which are described as follows: 1) a collaboration with the USC Center for the Premodern World; 2) a partnership with several departments and schools leading to the Spring 2022 exhibit *The Silk Roads, 300 BCE to 1700 CE: Connecting the World for Two Millennia*; and 3) *Borrowed Recipes: Migrant Food Worlds of the Silk Roads* (April 7, 2022), an event selected for Visions and Voices, a USC Arts & Humanities grant-funded, year-long initiative.

USC Digital Voltaire: From Project Collaborations to Student Engagement and Partnerships

A collection of manuscripts located in the USC Libraries special collections department, *Voltaire Correspondence, 1741–1777,*[15] covers the years 1742–1777 and includes thirty original autographed letters and four poems authored by Voltaire (François-Marie Arouet, 1694–1778) and his correspondents, including leading figures of the Enlightenment such as Jean le Rond d'Alembert (1717–1783), Frederick II (the Great) of Prussia (1712–1786, King of Prussia:

1740–1786), and Madame de Pompadour (1721–1764), the acknowledged mistress of Louis XV (1710–1774, King of France: 1715–1774). This correspondence, in common with others of its time, includes letters containing verse. Those letters exchanged between Voltaire and Frederick (five from Voltaire, and fifteen from Frederick) often alternate between verse and prose.

Voltaire's voluminous correspondence[16] (by 2009, 22,000 letters were published, of which 16,136 are by Voltaire[17]) is a multifaceted, private, and, at times, moving expression of self through epistolary exchanges. It offers an engaging, multilayered perspective of one of the leading minds that defined the Enlightenment. Though somewhat minuscule in scope when compared to the overall enormity of the Voltaire correspondence spread over seventy years, the letters in this collection are of great interest because they include a wealth of topics: both religious freedom and the freedom of expression in France; the Catholic Church and its social impact; Voltaire's judicial campaigns in favor of the victims of intolerance; Frederick the Great's military campaigns during the Seven Years War and the War of Austrian Succession; Voltaire's own remarks on many of his works as well as his commentary (at times quite biting) on his contemporaries' writings; discussions on the theatrical life of the period; and Voltaire's comments about his own health.

A Unique Opportunity

Within today's digital humanities research and its role in the advancement of knowledge, these letters, though small in number, allow researchers both to explore (and understand) the human experience as illustrated in these letters and to feel a sense of connection to Voltaire and his correspondents. With this collection of letters, librarians had a unique opportunity to engage in current and newly emerging modes of scholarly communication by enriching these letters via a digital multimodal critical edition and lay the foundation for an experimental, librarian-led digital humanities project. Indeed, one of the project's six goals has been to serve as one of the very first collaborative, interdisciplinary digital humanities initiatives *being entirely created and authored by librarians*, sponsored by the USC Libraries.[18]

With the support of a seed grant from the Libraries Dean, library and staff digitized the letters (as a start), and they can now be accessed via the USC Libraries Digital Library.[19] Digital productions can help researchers to visualize and better understand the past; yet, at the same time, such a project also allows work with an array of tools to uncover patterns of information and different kinds of "meanings" that may not otherwise be seen. This work gives the opportunity for scholars and students to ask new questions and approach the letters with a larger frame of reference. In essence, this project contributes

to a deeper understanding of the many aspects of the Enlightenment and of Voltaire's thoughts and actions.

Developing a Digital Multimodal Critical Edition: USC Digital Voltaire

The *USC Digital Voltaire* strategic planning began in Spring 2016. The aim was to create a critical edition that included a seamless integration of digital resources as well as a digital methodological approach to broader issues connected to existing research on the intellectual culture of the eighteenth-century Enlightenment.

The project team selected Scalar[20] as the publishing platform. Scalar is a USC-based, open-source authoring and publishing platform that was developed by the Alliance for Networking Visual Culture for the electronic journal *Vectors*.[21] It is designed to make it easy for authors to write long-form, born-digital scholarship online. It enables users to assemble media from multiple sources and juxtapose them with their own writing in a variety of ways, with minimal expertise required. Multimedia-rich, it supports embedded video and audio along with functionalities for visualizations, annotations, extensive media tagging, and direct importations of content from the partnership with several archives, such as the Hemispheric Institute's Digital Video Library,[22] the Internet Archive,[23] and Critical Commons.[24]

By using this polymathic approach, the project team was able to highlight the multiple interdisciplinary dimensions of the letters by including the following items:

- The compilation of metadata;
- High-resolution images of our original manuscripts;
- An examination of the letters as "artifacts" (e.g., quality of paper, pen strokes, overstrikes, etc.);
- Paleographic elements, as well as each letter's translation in English; plus
- The writing of a multitude of detailed notes relating to the people, events, and places that are noted within the Voltaire letters.

The *USC Digital Voltaire* can be envisioned as a "node" to which concepts relating to the Enlightenment can be linked, visualized, and interconnected. The concept of expanding the idea of digital humanities through digital transformations of scholarly connectedness spans many, if not all, digital humanities projects. The opportunities for interdisciplinary and innovative scholarly communications are made possible through the critical study of digital culture globally. A few important aspects of digital humanities were included in this project: the integration of research methods, both qualitative

and quantitative, by interlinking digitized text, images, and time-based media with maps, timelines, data, and visualizations; data analysis and management done through mining and mapping, which leads to the discovery of trends and themes; enhanced research, learning, and teaching where students are able to access, engage, and collaborate together; and increased and improved local, national, and international collaboration. Not only has this project demonstrated the value of the study of humanities, but digital humanities projects, such as this one, can also reach a wider and more diverse audience outside the university setting.

In this context, the team needed to design a critical edition that would accommodate various audiences and uses with the goal of supporting scholarly inquiry at all levels of research on the Enlightenment. Therefore, the aim was to develop strategic alliances by bringing together scholars and students from different fields of the humanities (e.g., history, literature, philosophy, art history, etc.) together with disciplines in the social sciences (such as international relations and political science) at the university. The team aimed to elicit reflections from scholars on the role that epistolary and historical sources could play in contemporary humanistic and social sciences debates, and particularly so in the case of Voltaire's multifaceted writings. In the end, the project's goal became similar to the Legacies of the Enlightenment, a website that "is addressed to scholars, teachers, students, and anyone generally interested in the Enlightenment and its legacies."[25] It includes a database of teaching and research materials and an annotated bibliography. The database topics include five distinct groups that document the continued impact of long-held beliefs rooted in the scientific discoveries and philosophies of the Enlightenment.

The project team included nine library employees from the USC Libraries whose specific skill sets and expertise included metadata creation, web design, Scalar "know-how," and also included the author Danielle Mihram (as principal investigator), along with librarians with specific knowledge-based specialization.[26] The project also included four student assistants, two volunteers (one a former student, and the other a former library intern), and a consultant, an eighteenth-century scholar, Natania Meeker, in the French and Italian Department and the holder of the French Ministry of Education's award *Ordre des Palmes Académiques*.

The team developed a carefully-planned structure,[27] made manifest through a navigation scheme, as well as a model and a tool for classroom instruction and research designed through collaborations with the teaching faculty. In response to mounting institutional pressures, the project also needed to include how to teach students multiple literacies and new multimodal forms of expression and also to engage students at all levels of scholarship and research, specifically in the humanities.[28]

Moving Beyond Collaborations—USC Digital Voltaire *as a Model for Student Engagement and Partnerships*

One of the foundational tenets in the creation of the project's team echoed Maria Bonn's comment relating to the value of scholarly collaboration: "I advocate for and have my own experience of the value of scholarly collaboration, a value arising from the interplay of perspectives and expertise made possible by collaboration and from the efficiency engendered by a suite of complementary strengths."[29] Without interdisciplinary collaboration and the subsequent cross-fertilization of ideas and approaches, this project would not exist.

With *USC Digital Voltaire*, the team has established a pedagogical workflow in which students can create and submit a variety of content, including annotations, mini-essays, visualizations, or films. Students who are using the *USC Digital Voltaire* content in classes also contribute their own scholarship based on the sources they used. This is done via a Word document, and once it has been fully edited, a member of the team uploads the content into the platform, Scalar, with full credit given to the student author for their contribution. In addition, students may be asked to embed their content within the overall hypermedia structure of the project—that is, students are asked to think about the multiple contexts in which the content may live and the various pathways by which readers may navigate to and from it. Work on *USC Digital Voltaire* thus requires students to master content related to Voltaire's letters and poems and, at the same time, encourages them to apply critical digital literacy skills in situating that content within an architecture of scholarly information.

In this way, *USC Digital Voltaire* facilitates core aspects of the Association of College and Research Libraries *Framework for Information Literacy for Higher Education* by motivating students to see themselves as both producers and consumers of knowledge and as contributors to informational and scholarly ecosystems.[30] In addition, asking students to reflect on issues of information structure, while generating scholarly content, invites them to take part in shaping the project's expansive, multimedia (Scalar-based) critical edition. In doing so, the project takes seriously the role that undergraduates can have in thinking through the organization, interactivity, and readability of emergent scholarly genres in the digital humanities.

Examples of Students as Creators and Partners

In Fall 2017, the project's faculty consultant (in the department of French and Italian) included a research assignment in her undergraduate course Equality and Difference around the Enlightenment[31] that provided detailed

guidelines on annotating letters in *USC Digital Voltaire* that were not yet annotated. One of the unanticipated outcomes of this course assignment was the decision of one of the students to successfully compete for a USC Provost's Undergraduate Research Fellowship for Summer 2018 to write "mini-essays" for several letters in *USC Digital Voltaire*.[32] The result supported the project goals for student engagement, and it was particularly encouraging to see as the team has begun to develop more opportunities for students to create scholarly modules, including visualizations, music, and cinematic art, related to Voltaire and the Enlightenment.

Student interest in this project led to another undergraduate student's desire to work with the team but, this time, as a partner in the creation of a new humanities project, *Emotionally Intelligent Robots*, which explored the complexities of human-machine interaction, including human emotional bonds with machines, society's efforts to replicate or artificially model humanity, as well as what it means to be human overall. She successfully competed for a year-long research award for the academic year 2018–2019 from the USC Undergraduate Research Associates Program,[33] and this partnership led to an event, "Emotionally Intelligent Robots: More Human Than Human?" on October 24, 2019, in the USC Visions and Voices Program.[34]

This partnership clearly demonstrates the principles outlined in the New Media Consortium and the Consortium for School Networking's *Horizon Report,*[35] which identified "students as creators" and noted that creative skills are often the positive outcomes when students are allowed to take control of their own learning and set their own goals and design ways to meet them.[36]

As a cautionary remark, these opportunities for students to create must be carefully planned, and the project's collaborative curricular and mentoring initiatives with departmental faculty are critical to continued success. Without such collaborations, as well as student engagement and partnership, and the ensuing cross-fertilization of ideas and approaches, this project would be limited to just a digital *Catalogue Raisonné* of Voltaire's manuscripts in the library's collection.

Re-Discovering a Collection: *USC Illuminated Medieval Manuscripts*

USC Libraries' collection of illuminated medieval and Renaissance manuscripts, incunabula, and rare books includes sixteen unique and invaluable illuminated medieval manuscripts, as well as twelve other medieval manuscripts (with pen-flourished initials or borders) originating in Europe.[37]

The existence, as well as the scope of these unique historical artifacts, has remained largely unknown by the USC community of scholars and students, as well as by researchers nationwide and worldwide, primarily because pre-

modern manuscripts frequently require individual paleographical, codico-logical, or diplomatic analysis. As a result of the monograph publication *Descriptive Cataloging of Ancient, Medieval, Renaissance, and Early Modern Manuscripts*,[38] the showcasing of the USC Hoose Library of Philosophy Collection of manuscripts and incunabula became possible, and this led, in 2019, to the successful proposal for a Dean's Challenge Grant (FY 2019–2020). The creation (in Spring 2020) of the Scalar publication, *USC Illuminated Medieval Manuscripts*,[39] constitutes the second USC Libraries librarian-led digital humanities project that builds upon the successful model of its predecessor, created in 2017, *USC Digital Voltaire*.

Medieval Manuscripts as Cultural Artifacts

Compared to the holdings of other research institutions, the number of USC illuminated medieval manuscripts is relatively small. Yet, as is the case for *USC Digital Voltaire*, a second opportunity arose to create a digital multimodal critical edition, and the polymathic approach provided the chance to explore the multiple interdisciplinary dimensions of these manuscripts.

By reading the texts of these manuscripts, and looking at their illustrations, scholars can learn a great deal about the social, spiritual, and cultural conditions of the medieval period. For example, prayers centered around the adoration of the Virgin Mary can be seen as moving literary expressions of core human emotions, while the frequency (within marginalia) of scribal invocations[40] to Saints Sebastian, Apollonia, and Margaret informs readers about "the chronic problem of plague, the annoyance of toothache, and the dangers of childbirth."[41]

Such marginalia were not uncommon. In Europe, before the invention of the printing press, books were copied by hand, originally onto vellum. It was not unusual for scribes to add their own commentaries (e.g., prayers, opinions, observations, etc.) in the margins of manuscripts that they copied. In medieval illuminated manuscripts, figurative marginalia provide a rich terrain of artistic expression, with distinctive characteristics according to period, locus of production, and school or scriptorium. Because manuscripts were costly to produce, they were considered long-term investments expected to be handed down to succeeding generations. Readers commonly wrote notes in the margins of books in order to enhance the understanding of later readers.

USC Illuminated Medieval Manuscripts: A Second Polymathic Multimodal Project

The original goal of the *USC Illuminated Medieval Manuscripts* project focused on four manuscripts[42] that offered a variety of complexity, and the

librarians aimed to digitize them for inclusion in the USC Libraries' Digital Library. By using the current technology and tools available, the librarians meant to determine the initial digitization preferences for each unique manuscript and then create (in Scalar) a detailed polymathic, multimodal *Catalogue Raisonné* for all manuscripts, in order to develop best practices and prototypes. In collaboration with the USC Dornsife Center for the Premodern World as well as with the USC Dornsife Classics Department and the USC Thornton School of Music, the librarians also discussed research and editorial preferences for each of the unique manuscripts, to pave the way for its discovery and its eventual research and learning potential.[43]

Three goals for the project emerged from these discussions. First, the librarians wanted to showcase the rich USC special collections' resources to expand awareness for research, learning, and teaching engagement. The second goal was to provide an exemplar of interdisciplinary collaboration, with multiple levels of discovery, so as to encourage new approaches to research on both medieval Europe and antiquity, as evidenced by the library's collection of manuscripts, which are quite diverse, including thirteenth- to fifteenth-century religious and secular manuscripts. Lastly, the librarians sought to encourage the development of a community of practice by bringing together interdisciplinary scholars and students within the humanities, including (as a start) history, philosophy, religion, art history, music, classics, manuscript culture, and medieval studies, to reflect upon the historical and contemporary roles that resources from the medieval period have to offer future scholarship.

Moving from Project Collaborations to Partnerships

Lecture Series

The first collaboration with Jay Rubinstein, Director of the USC Center for the Premodern World, based on the 2019 Project *USC Illuminated Medieval Manuscripts*,[44] led to a partnership with the Center in the creation of a lecture series, "Prehistory of the Book" (2020). It featured the inaugural invited lecture on February 5, 2020, by Gregory Clark from the University of the South in Sewanee, Tennessee.[45] His lecture and presentation were titled "The Book of Hours, the Best Seller of the Middle Ages: Two Southern Netherlandish Manuscript Exemplars at the University of Southern California." He focused on the two Books of Hours included in the USC project. He detailed the findings of his thorough investigation into the probable origins and dates of each manuscript.[46]

Another project currently in progress with faculty in the USC Thornton School of Music[47] is focusing on a breviary fragment (*Currus pharaonis et exercitum eius proiecit in mare Adiutor*) and an illuminated medieval manuscript

(*Commentary upon Peter Lombard's Quatuorum libri sententiarium*) written by Petrus de Palude, Patriarch of Jerusalem in 1480. This very rare manuscript once belonged to Federico da Montefeltro (1422–1482), Duke of Urbino. This collaboration includes the modern notation of the musical score, as well as the recording by faculty and graduate students of the Thornton School, of the medieval Gregorian chant featured in the breviary fragment.

> *Exhibition:* The Silk Roads, 300 BCE to 1700 CE:
> Connecting the World for Two Millennia

The second productive collaboration with the Center, which started in 2020, has been focusing on the trade networks of the Silk Roads. This initiative has included two phases. First, working with faculty, staff, and students across USC, as well as external collaborators, the team has been focusing on written artifacts—the books, manuscripts, and other vehicles for nonverbal communication that connected different Silk Roads communities and created entirely new cultures. Rather than impose chronological or historical divisions, the organization of the exhibition, which will be held in Spring 2022, will be based on geography. Visitors will walk through and view objects as they would travel along the Silk Roads. The aim will be both to introduce visitors to specific peoples and places that mark the Eurasian landmass while at the same time preserving the sense of bewilderment that so many interlinked empires and ideas can cause for modern travelers. Secondly, a companion one-day event, *Borrowed Recipes: Migrant Food Worlds of the Silk Roads*, will trace the hidden cultural exchanges underlying the foods originating along the Silk Roads that are still widely available in Los Angeles today.[48]

The team has also been working with multiple USC faculty and colleagues in the USC Libraries to finalize other aspects for this Spring 2022 exhibition. The team is also conducting more in-depth research on the artifacts and working with Sonya Lee's (USC East Asian Studies Center) upper-level undergraduates to create an online catalog in Scalar,[49] investigating the best practices in the handling, displaying, and conservation of paper products and other related materials from the ancient Silk Roads and focusing on developing effective media strategies to make the exhibition content accessible and engaging to different audiences. The goal will be to produce a range of visual and pedagogical aids for visitors to the exhibition.

The anticipated contributions from two undergraduate researchers will likely be exemplars of student creativity and engagement (like the *USC Digital Voltaire* project). They will produce written reports on their respective research projects, which will form the basis for display labels, information pamphlets, online catalogs, and social media posts for the Silk Roads exhibition.

They will also be encouraged to document their research experience by producing photographs and videos to be shared through the exhibition website.

Event: Borrowed Recipes: Migrant Food Worlds of the Silk Roads

Borrowed Recipes, a one-day event, will explore the history of food and its culinary and cultural exchanges. The event will focus on what might have been the foods exchanged along the Silk Roads in their ancient, modern, and international incarnations that allow visitors to enjoy these foods in Los Angeles. The event will include a conversation between food archaeologist Farrell Monaco, who recreates ancient recipes for her blog Tavola Mediterranea,[50] Harvard University Irish studies professor and food historian Joseph Nagy,[51] LA food editor Elina Shatkin,[52] who will help USC students explore and taste these foods in Southern California, food historian and science writer Nicola Twilley, creator of the popular Gastropod podcast,[53] and an LA-area chef or restauranteur such as USC alum Bughra Arkin of Dolan's Uyghur Cuisine[54] in Alhambra, who draws inspiration from one or more cuisines that originated along the ancient Silk Roads.[55]

Borrowed Recipes will encourage USC students to think reflectively and critically about the hidden backstories of familiar foods in Los Angeles and gain a fuller appreciation for the many distinctive culinary cultures that have found a home in Southern California.

Conclusion

The 2017 publication of *USC Digital Voltaire* served as a proof-of-concept that marked the start of the transformation of USC Libraries liaison practices into research collaborations. The second publication (2019) of *USC Illuminated Manuscripts* is an exemplar of interdisciplinary collaboration, in that it provides for multiple levels of discovery and new approaches to research on both Medieval Europe and antiquity. *The Silk Roads* exhibition and one-day event will signal the beginning of more extensive collaborations and partnerships with faculty, staff, and students across USC departments, as well as external collaborators, which should lead to further scholarly conversations, programming, collaborations, and events. The collaborative initiatives described in this case study contribute to the ongoing discussion of the evolving roles for librarians working in partnership with scholars, faculty, and students in research universities. A key output of any digital humanities project is the open access availability of the project's background information, methods, and lessons learned for recommended best practices for peers and a wider audience.

Notes

1. W. A. Wulf, "The National Collaboratory—A White Paper," in *Towards a National Collaboratory: Report of an Invitational Workshop at the Rockefeller University, March 17–18 (Appendix A),* eds. Joshua Lederberg and Keith Uncaphar (Washington, DC: National Science Foundation, Directorate for Computer and Information Science Engineering, 1989).

2. Polymathic (adj. of *Polymathy,* from ancient Greek *πολυμαθία* = great learning) denotes "acquaintance with many branches of knowledge" (*Oxford English Dictionary*).

3. Ahmanson Lab Collaboratories, https://polymathic.usc.edu/ahmanson-lab/collaboratory/2019-2020. The Ahmanson Lab is part of the USC Libraries' USC Sidney Harman Academy for Polymathic Study.

4. Curtis Fletcher, "A Case for Scholarly Making in the Library: Makerspaces, Innovation Labs, and the Evolution of Scholarly Communications," *College & Undergraduate Libraries* (2021): 1–16.

5. Will Fenton, "The New Wave in Digital Humanities," *Inside Higher Ed,* August 2, 2017, https://www.insidehighered.com/digital-learning/article/2017/08/02/rising-stars-digital-humanities.

6. Marci D. Brandenburg et al., "Interdisciplinary Collaboration: Librarian Involvement in Grant Projects," *College & Research Libraries* 78, no. 3 (2017): 272–82; Elias Tzoc, "Libraries and Faculty Collaboration: Four Digital Scholarship Examples," *Journal of Web Librarianship* 10, no. 2 (2016): 124–36; Jessica Wagner Webster, "Digital Collaborations: A Survey Analysis of Digital Humanities Partnerships Between Librarians and Other Academics," *Digital Humanities Quarterly* 13, no. 4 (2019).

7. Raymond Pun, "The Library and the Academic Resource Center," *Digital Library Perspectives* 32, no. 1 (2016): 31–40.

8. Jane Harvell and Joanna Ball, "Why We Need to Find Time for Digital Humanities: Presenting a New Partnership Model at the University of Sussex," *Insights* 30, no. 3 (November 2017): 38–43.

9. Janice M. Jaguszewski and Karen Williams, *New Roles for New Times: Transforming Liaison Roles in Research Libraries* (Washington, DC: Association of Research Libraries, August 2013), https://www.arl.org/resources/new-roles-for-new-times-transforming-liaison-roles-in-research-libraries/.

10. Angel Borrego and Stephen Pinfield, "Librarians Publishing in Partnership with Other Researchers: Roles, Motivations, Benefits and Challenges," *portal: Libraries and the Academy* 20, no. 4 (2020): 655–75.

11. Pamela R. Lach and Elizabeth A. Pollard, "Visualizing History in the Classroom: A Faculty-Librarian Partnership in the Digital Age," *New Review of Academic Librarianship* 25, nos. 2–4 (2019): 335–56; Jenny McBurney, Shanda L. Hunt, Mariya Gyendina, Sarah Jane Brown, Benjamin Wiggins, and Shane Nackerud, "Library Research Sprints as a Tool to Engage Faculty and Promote Collaboration," *portal: Libraries and the Academy* 20, no. 2 (April 2020): 305–38; Matthew Vetter and Sara Harrington, "Integrating Special Collections into the Composition Classroom: A Case Study of Collaborative Digital Curriculum," *Research Library Issues: A Bimonthly Report from ARL, CNI, and SPARC* no. 283 (January 2013): 16–20.

12. Christy Fic, "Working as an Embedded Archivist in an Undergraduate Course: Transforming Students into Scholars through an Archival Workshop Series," *The American Archivist* 81, no. 2 (Fall 2018): 290, https://doi.org/10.17723/0360-9081 -81.2.290.

13. University of Southern California, "About," accessed February 28, 2022, https://about.usc.edu/policies/mission-statement/.

14. USC Libraries, Special Collections, accessed February 28, 2022, https://libraries .usc.edu/locations/special-collections.

15. Frederick II Voltaire, *Voltaire Correspondence, 1741–1777*, Special Collections, University of Southern California.

16. Online access is through the Electronic Enlightenment database at http:// www.e-enlightenment.com/info/.

17. Christiane Mervaud, "Voltaire's Correspondence," in *The Cambridge Companion to Voltaire*, ed. Nicholas Cronk (Cambridge; New York: Cambridge University Press, 2009), 153–66.

18. For a list of project goals, see "About the USC Voltaire Letters Project." http:// scalar.usc.edu/works/voltaire/the-usc-voltaire-letters-project-a-polymathic-multi media-rich-digital-initiative.

19. *Voltaire Correspondence, 1742–1777*, https://digitallibrary.usc.edu/Archive /Voltaire-Correspondence—1742-1777-2A3BF1ODETR.

20. Scalar, http://scalar.usc.edu.

21. Tara McPherson, "Introduction: Media Studies and Digital Humanities," *Cinema Journal* 48, No. 2 (Winter 2009): 119–23.

22. The Hemispheric Institute Digital Video Library (HIDVL) is the first major digital video library of performance practices in the Americas. Created in partnership with NYU Libraries and with the support of the Andrew W. Mellon Foundation, this growing repository guarantees historical preservation and free, online access to almost 900 hours of video through the Hemispheric Institute website at http://archive .hemisphericinstitute.org/hemi/en/hidvl.

23. The Internet Archive is a non-profit library of millions of free books, movies, software, music, websites, and more at https://archive.org.

24. Critical Commons is an online repository of user-generated media. The archive is a project of the Media Arts and Practice division of the USC School of Cinematic Arts. The project supports the fair use of copyrighted media by educators. https://criticalcommons.org/.

25. *Legacies of the Enlightenment*. This site "is addressed to scholars, teachers, students, and anyone generally interested in the Enlightenment and its legacies. In addition to a robust annotated bibliography, it also includes teaching materials that have been implemented by college instructors and that might be useful in your own classrooms." https://legaciesoftheenlightenment.hcommons.org.

26. See "Project Developers" at https://scalar.usc.edu/works/voltaire/the-usc -voltaire-letters-project—-project-developers.

27. See "Navigating the Letters in this Collection" at http://scalar.usc.edu/works /voltaire/navigating-the-project.

28. For examples, see Danielle Mihram, "The University of Southern California Voltaire Letters—A Polymathic Multimodal Digital Project," *College & Research Libraries News* 78, no. 11 (2017): 592–96; and Danielle Mihram and Curtis Fletcher, "*USC Digital Voltaire*: Centering Digital Humanities in the Traditions of Library and Archival Science," *portal: Libraries and the Academy* 19, no. 1 (2019): 7–17.

29. Maria Bonn, "Collaborating and Communicating: Humanities Scholars Working and Talking Together," *College & Research Libraries News* 78, no. 4 (2017): 206.

30. Association of College and Research Libraries, *Framework for Information Literacy for Higher Education* (Chicago, IL: Association of College and Research Libraries, 2015), http://www.ala.org/acrl/standards/ilframework.

31. This four-unit course is taught every academic year. For more information, see https://web-app.usc.edu/soc/syllabus/20191/34274.pdf.

32. For the requirements of the USC Provost's Undergrad Research Fellowships, see https://undergrad.usc.edu/experience/research/undergrad_research/.

33. For additional details on the USC Undergraduate Research Associates Program, see https://undergrad.usc.edu/faculty/%20urap/. In this case, Mihram was the faculty mentor and research supporter.

34. *USC Visions and Voices* is a university-wide arts and humanities initiative that was launched in 2006. Highlighting USC's excellence in the arts and humanities, the initiative provides a transformative and provocative experience for all USC students, regardless of their major or year in school, and challenges them to expand their perspectives and become engaged citizens. Emphasizing the university's commitment to interdisciplinary approaches, the initiative features a spectacular array of events, many conceived and organized by faculty and schools throughout the university. Performances and presentations by acclaimed artists and distinguished speakers are offered free for USC students, and most are free to the general public. For information, see https://visionsandvoices.usc.edu/overview/.

35. Larry Johnson et al., *NMC Horizon Report: 2015 K-12 Edition* (Austin, TX: The New Media Consortium, 2015), http://www.ctdinstitute.org/sites/default/files/file_attachments/2015-nmc-horizon-report-k12-EN.pdf.

36. See also Bryan Alexander et al., *Digital Literacy in Higher Education, Part II: An NMC Horizon Project Strategic Brief Volume 3.4* (Austin, TX: The New Media Consortium, August 2017), https://library.educause.edu/resources/2017/8/digital-literacy-in-higher-education-part-ii-an-nmc-horizon-project-strategic-brief.

37. See the Research Guide, *Medieval Studies and Research*, the page titled "Medieval Manuscripts at USC," at https://libguides.usc.edu/MedRenMSSandRareMatStudies/atUSCbyauthor.

38. Gregory A. Pass, *Descriptive Cataloging of Ancient, Medieval, Renaissance, and Early Modern Manuscripts* (Chicago, IL: Association of College and Research Libraries, 2003).

39. Danielle Mihram and Melissa Miller, eds., *USC Illuminated Medieval Manuscripts* (Los Angeles: University of Southern California, 2020), https://scalar.usc.edu/works/usc-illuminated-medieval-manuscripts/index. "Medieval Studies and Research," https://libguides.usc.edu/MedRenMSSandRareMatStudies, complements this

publication. See also Danielle Mihram and Melissa Miller, "USC Illuminated Medieval Manuscripts: A Second Polymathic Multimodal Digital Project at the University of Southern California," *College & Research Libraries News* 83, no. 9 (2021): 420–23.

40. Marginalia (the Latin word for "things in the margin") refers to writing or decoration in the margins of a manuscript. Such features can form part of the original program of work, but they also can be of a secondary or even extraneous nature. Marginalia include glosses (a word or words commenting on, elucidating, or translating those of the main text), annotations, and diagrams. (British Library,"Marginalia," *Catalogue of Illuminated Manuscripts*, https://www.bl.uk/catalogues/illuminatedman uscripts/GlossM.asp).

41. Charles E. Pierce, "Preface," in *Painted Prayers—The Book of Hours in Medieval and Renaissance Art,* ed. Roger S.Wieck (New York: George Braziller, 1997), 7.

42. Giles of Rome, *Liber sententiarium, cum duobus tabulis* (thirteenth century); Cicero, *De Officiis* (fifteenth century); Petrus de Palude, *Commentary upon Peter Lombard's* 'Quatuorum libri sententiarium' (fifteenth century); William of Ockham, *Scriptum* a*ureum inceptoris Willielmi Occham supra praedicabilia et praedicamenta, with the quodlibets of Walter Burley* (fourteenth century).

43. For a listing of the project team, see "Project Developers" at https://scalar.usc .edu/works/usc-illuminated-medieval-manuscripts/project-developers.

44. For more information, see https://scalar.usc.edu/works/usc-illuminated-medi eval-manuscripts/index.

45. "Pre-history of the Book" is a collaboration between the USC Center for the Premodern World and USC Libraries' "A Lecture by Gregory Clark (University of the South) on The Book of Hours, the Best Seller of the Middle Ages: Two Southern Netherlandish Manuscript Exemplars of the 15th Century at the University of Southern California." The Center for the Premodern World at USC creates space and offers resources for the study of cultures and civilizations, beginning with the earliest historical eras up to the end of the Middle Ages and the beginning of the modern world. The USC Libraries possesses quite a number of invaluable and rare illuminated medieval manuscripts from the thirteenth century to the fifteenth century. Professor Clark is an expert on medieval Books of Hours, one of the most popular genres in the Middle Ages, of which the Special Collections Department at the University of Southern California holds two examples. For more information, see https://dornsife. usc.edu/center-for-the-premodern-world/events/.

46. See https://scalar.usc.edu/works/usc-illuminated-medieval-manuscripts/greg -clark-lecture.

47. See Thornton School of Music at https://music.usc.edu.

48. *Borrowed Recipes: Migrant Food Worlds of the Silk Roads*, USC Visions & Voices, April 7, 2022, https://visionsandvoices.usc.edu/eventdetails/?event_id=37458 745396289&s_type=&s_genre=.

49. *The Silk Roads, 300 BCE to 1700 CE: Connecting the World for Two Millennia*, https://scalar.usc.edu/works/the-silk-roads-300-bce-to-1700-ce-connecting-the -world-for-two-millennia/index.

50. See https://tavolamediterranea.com/.

51. See https://medieval.fas.harvard.edu/people/joseph-nagy.

52. See https://laist.com/people/elina-shatkin.

53. See https://gastropod.com/.

54. See https://www.ladolans.com/.

55. The history of the Silk Roads is now presented in the UNESCO Silk Roads Programme. For additional information, see https://en.unesco.org/silkroad/unesco -silk-roads-programme-0.

Bibliography

Alexander, Bryan, Samantha Adams Becker, Michele Cummins, and Courtney Hall Giesinger. *Digital Literacy in Higher Education, Part II. An NMC Horizon Project Strategic Brief Volume 3.4.* Austin, TX: The New Media Consortium, August 2017. https://library.educause.edu/resources/2017/8/digital-literacy-in-higher-educa tion-part-ii-an-nmc-horizon-project-strategic-brief.

Association of College and Research Libraries. *Framework for Information Literacy for Higher Education.* Chicago, IL: Association of College and Research Libraries, 2015. http://www.ala.org/acrl/standards/ilframework.

Bonn, Maria. "Collaborating and Communicating: Humanities Scholars Working and Talking Together." *College & Research Libraries News* 78, no. 4 (2017): 206–9.

Borrego, Angel, and Stephen Pinfield. "Librarians Publishing in Partnership with Other Researchers: Roles, Motivations, Benefits and Challenges." *portal: Libraries and the Academy* 20, no. 4 (2020): 655–75. https://doi.org/10.1353/pla.2020.0031.

Brandenburg, Marci D., Sigrid Anderson Cordell, Justin Joque, Mark P. MacEachern, and Jean Song. "Interdisciplinary Collaboration: Librarian Involvement in Grant Projects." *College & Research Libraries* 78, no. 3 (2017): 272–82.

Fenton, Will. "The New Wave in Digital Humanities." *Inside Higher Ed*, August 2, 2017. https://www.insidehighered.com/digital-learning/article/2017/08/02/rising -stars-digital-humanities.

Fic, Christy. "Working as an Embedded Archivist in an Undergraduate Course: Transforming Students into Scholars through an Archival Workshop Series." *The American Archivist* 81, no. 2 (Fall 2018): 290. https://doi.org/10.17723/0360-9081 -81.2.290.

Fletcher, Curtis. "A Case for Scholarly Making in the Library: Makerspaces, Innova-tion Labs, and the Evolution of Scholarly Communications." *College & Under-graduate Libraries* (2021): 1–16. https://doi.org/10.1080/10691316.2021.1899881.

Harvell, Jane, and Joanna Ball. "Why We Need to Find Time for Digital Humanities: Presenting a New Partnership Model at the University of Sussex." *Insights* 30, no. 3 (November 2017): 38–43.

Jaguszewski, Janice M., and Karen Williams. *New Roles for New Times: Transform-ing Liaison Roles in Research Libraries.* Washington, DC: Association of Research Libraries, August 2013. https://www.arl.org/resources/new-roles-for-new-times -transforming-liaison-roles-in-research-libraries/.

Johnson, Larry, Keith Krueger, Samantha Adams Becker, and Michele Cummins. *NMC Horizon Report: 2015 K-12 Edition.* Austin, TX: The New Media Consortium,

2015. http://www.ctdinstitute.org/sites/default/files/file_attachments/2015-nmc
-horizon-report-k12-EN.pdf.

Legacies of the Enlightenment. https://legaciesoftheenlightenment.hcommons.org.
Accessed February 28, 2022.

Lach, Pamela R., and Elizabeth A. Pollard. "Visualizing History in the Classroom:
A Faculty-Librarian Partnership in the Digital Age." *New Review of Academic
Librarianship* 25, nos. 2–4 (2019): 335–56. https://doi.org/10.1080/13614533.2019
.1627562.

McBurney, Jenny, Shanda L. Hunt, Mariya Gyendina, Sarah Jane Brown, Benjamin
Wiggins, and Shane Nackerud. "Library Research Sprints as a Tool to Engage Fac-
ulty and Promote Collaboration." *portal: Libraries and the Academy* 20, no. 2 (April
2020): 305–38. http://dx.doi.org/10.1080/15420353.2013.767765.

McPherson, Tara. "Introduction: Media Studies and Digital Humanities." *Cinema
Journal* 48, no. 2 (Winter 2009): 119–23.

Mervaud, Christiane. "Voltaire's Correspondence." In *The Cambridge Companion
to Voltaire*, edited by Nicholas Cronk, 153–66. Cambridge; New York: Cambridge
University Press.

Mihram, Danielle, ed. *USC Digital Voltaire*. Los Angeles, CA: University of Southern
California, 2017. https://scalar.usc.edu/works/voltaire/index.

Mihram, Danielle. "The University of Southern California Voltaire Letters: A Poly-
mathic Multimodal Digital Project." *College & Research Libraries News* 78, no. 11
(2017): 592–96.

Mihram, Danielle, and Curtis Fletcher. "*USC Digital Voltaire*: Centering Digital Hu-
manities in the Traditions of Library and Archival Science." *portal: Libraries and
the Academy* 19, no. 1 (2019): 7–17.

Mihram, Danielle, and Melissa Miller. "USC Illuminated Medieval Manuscripts: A
Second Polymathic Multimodal Digital Project at the University of Southern Cali-
fornia." *College & Research Libraries News* 83, no. 9 (October 2021). https://crln
.acrl.org/index.php/crlnews/article/view/25154/33011.

Mihram, Danielle, and Melissa Miller (2021). "The Silk Roads, 300 BCE to 1700 CE:
Connecting the World for Two Millennia." *The European Conference on Arts and
Humanities (ECAH), The International Academic Forum (iafor)*. http://papers
.iafor.org/submission60271.

Pass, Gregory A. *Descriptive Cataloging of Ancient, Medieval, Renaissance, and Early
Modern Manuscripts.* Chicago, IL: Association of College and Research Libraries,
2003.

Pierce, Charles E. "Preface." In *Painted Prayers—The Book of Hours in Medieval and
Renaissance Art*, edited by Roger S.Wieck. New York: George Braziller, 1997.

Pun, Raymond. "The Library and the Academic Resource Center." *Digital Library
Perspectives* 32, no. 1 (2016): 31–40. http://dx.doi.org/10.1108/DLP-07-2015-0008.

Tzoc, Elias. "Libraries and Faculty Collaboration: Four Digital Scholarship Exam-
ples." *Journal of Web Librarianship* 10, no. 2 (2016): 124–36.

University of Southern California. "USC Provost's Undergrad Research Fellowships."
Accessed February 28, 2022. http://undergrad.usc.edu/experience/research/under
grad_research/.

University of Southern California. "USC Undergraduate Research Associates Program." Accessed February 28, 2022. http://undergrad.usc.edu/faculty/urap/.

Voltaire, Frederick II. *Voltaire Correspondence, 1741–1777*. Special Collections, University of Southern California.

Vetter, Matthew, and Sara Harrington. "Integrating Special Collections into the Composition Classroom: A Case Study of Collaborative Digital Curriculum." *Research Library Issues: A Bimonthly Report from ARL, CNI, and SPARC* no. 283 (2013): 16–20.

Webster, Jessica Wagner. "Digital Collaborations: A Survey Analysis of Digital Humanities Partnerships Between Librarians and Other Academics." *Digital Humanities Quarterly* 13, no. 4 (2019). http://www.digitalhumanities.org/dhq/vol/13/4/000441/000441.html.

Wulf, W. A. "The National Collaboratory—A White Paper." In *Towards a National Collaboratory: Report of an Invitational Workshop at the Rockefeller University, March 17–18 (Appendix A)*, edited by Joshua Lederberg and Keith Uncaphar. Washington, DC: National Science Foundation, Directorate for Computer and Information Science Engineering, 1989.

7

Archives and the Incarceral State

The Louisiana State Penitentiary at Angola Museum Project

Zachary G. Stein, David N. Khey, and Scott T. Jordan

Academic libraries are constantly evolving as scholarship hubs. They provide access to resources for students' and researchers' needs, and librarians engage in fruitful collaborations that stimulate additional resources and contribute to scholarship. Archives and special collections departments often collaborate with other units to provide access to unique and rare materials. Common collaborations involve integrating library instruction into curricula and garnering support for acquiring and preserving valuable collections. Special collections departments also partner with academic units on grant projects to assist in processing large collections or digitizing collections at risk of deterioration. Often, special collections departments support individual projects and disseminate the final research products, but with the continuing evolution of the digital humanities field, archives are playing more prominent roles in augmenting and redefining scholarship.

Beginning in July 2020, the Edith Garland Dupré Library's Special Collections (hereafter Special Collections) of the University of Louisiana at Lafayette (UL Lafayette) partnered with the University's Department of Criminal Justice (hereafter Criminal Justice) and the Louisiana State Penitentiary at Angola Museum (hereafter Museum) on a grant project. Specifically, this grant was funded by the Louisiana Office of Cultural Development using a pass-through allocation provided to the state by the National Park Service Historic Preservation Fund. This project sought to digitize a sizeable collection of photographic negatives possessed by the Museum that depicted prison life in Louisiana, the history of the prison, and historical context for the Louisiana justice system. This partnership allowed Special Collections to go beyond the traditional

library liaison role and act as a partner with Criminal Justice to preserve these items and make them accessible to researchers. This chapter focuses on the partnership between Special Collections and Criminal Justice, the benefits of the digitized resources for criminology and criminal justice researchers, and the potential for future collaborations. Through collaboration between Special Collections and Criminal Justice, the principal investigators strived to use digitization to push forward a digital humanities initiative.

Literature Review

The following literature review covers general special collections departments' roles in instruction and the collaborations that form through these sessions, digital humanities scholarship and its relationship with archives, and a brief history on narrative criminology.

Special Collections Collaborations

Special collections departments have a long history of collaboration with academic departments on university campuses. These collaborations often involve instructional sessions designed to help students become engaged with archival materials, which encourages "participatory learning."[1] Instead of being told how to conduct research, students are given the opportunity to actively participate in it for themselves. In their study on archives impact on student learning, Morgan Daniels and Elizabeth Yakel found that students gained more confidence in research the more they engaged with archival collections, and consequently, students felt encouraged to return to use the collections on their own.[2] Therefore, it is imperative for archivists to not only disseminate primary source information but also to actively educate students on how to use that information instead of being merely gatekeepers of the collections.

Researchers must be given space to delve into the past, since collecting rare materials without promoting their use defeats the overall purpose of archives.[3] In a famous critique of institutional repository management, Dorothea Salo provided the metaphor of the "roach motel"—if digital repositories do not provide the services and resources needed for their communities, then faculty will fail to see the value in them, and the submitted materials end up unused.[4] The same is true for physical archives, as they need to become seen as more than just a second attic for donors. Simply providing a space, be it physical or digital, to store content is no longer an acceptable outreach model for special collections departments. By making themselves

available to partner with professors, or academic units in general, archivists become an important ally in learning and can even influence higher education curricula.[5] One example of this type of collaboration involved the Waring Historical Library, Medical University of South Carolina, which partnered with the institution's nursing college to process and digitize historical items documenting nursing administration and activities.[6] By making the items available in their digital library, the Waring Historical Library preserved and displayed the work the nursing college had accomplished over the years. Critically, this partnership was then utilized as a benchmark for soliciting collections from other departments.[7]

Anne Bahde has described these partnerships as opportunities for archivists to develop methods for embedding special collections materials into curricula and for enticing students to use primary sources.[8] Examining the impact of bringing special collection items to a large journalism class, Badhe concluded that this kind of instruction caused students to gain more appreciation for archival materials.[9] The effectiveness of the instruction depended largely on the relationship with the professor and making sure their needs, and the needs of their students, were accommodated.[10] Archivists must understand what their patrons need, and instruction is one way to meet those needs.

Tanya Clement, Wendy Hagenmaier, and Jennie Levine Knies have suggested that archivists' duties are to "shape" scholars' "interactions with the archive."[11] Their study solicited insights from several scholars who had used digital collections in their research. One scholar noted the importance of librarians' scholarly roles, stating there needs to be a "continued blurring of the lines separating the scholar, librarian/archivist, the editor, and the information technology (IT) expert."[12] This amalgamation of roles is crucial for the further development and innovation of digital humanities initiatives.

Digital Humanities

Digital access to materials has become ubiquitous among libraries and archives, which has provided obvious advantages for scholars. Digitized collections introduce researchers to easily accessible archival materials and facilitate a comprehensive and enriched understanding of cultural heritage resources. Due to the increased opportunities provided by digitized materials, researchers have increasingly pursued digital humanities projects. These efforts have yielded a diverse and continuously evolving field combining humanities research with information technology. With such practices as text mining and digital curation, digital humanists can analyze the significance of historical items through technological means, as well as form their own narratives to present a broader meaning of the topics at hand.[13]

Academic institutions and research organizations have collaborated in multiple ways to provide extensive digital humanities collections offering educational opportunities for students to interact with diverse materials. Online access to digitized materials provides an easy way for students to directly connect with primary sources. One prime example of a successful digital humanities project is the HathiTrust Digital Library and Research Center. This digital library "preserves and provides lawful access to [the] 17+ million digitized items," including books, historical manuscripts, and even legal documents.[14] The research center takes things a step further by inviting digital humanities scholars to use technological methods, such as data and text mining, to study the library's holdings. Instead of simply viewing a digital item, technology tools allow scholars to analyze digitized items and treat them as data.[15]

The Louisiana Digital Library[16] (LDL) from Louisiana State University (LSU), like the HathiTrust Research Center, also provides resources for scholars to use digital items as data. The LDL contains spaces for member institutions (e.g., UL Lafayette) and allows them to ingest digital objects from archival repositories. In addition to building digital collections, other services the LDL can provide include developing statistics on the types of digital items from each institutional collection and creating charts and maps to plot the data.[17] For example, one available collection has allowed researchers to create a map identifying regions where Louisiana-native plant specimens have been discovered.[18] Additionally, the LDL has sponsored a fellowship program providing funds to researchers to use the LDL's holdings and services for digital humanities projects. Such projects include mapping locations of Louisiana oral histories and analyzing sex and gender through the text of the 1825 Civil Code of Louisiana.[19] These examples show the abundance of opportunities digital humanists can take advantage of when utilizing digital archives, spanning a multitude of topics and genres.

Narrative Criminology as Digital Humanities Research

Digitized collections, such as those available through HathiTrust and the LDL, are also being widely used in social science fields, such as sociology and criminology. For example, in a study involving historical items from a state penitentiary, S. L. Ziegler described how staff from the American Philosophical Society Library in Pennsylvania digitized handwritten admission books from the 1830s to the 1850s listing personal information on prisoners.[20] Ziegler also inferred the significance of this curation and how the digitized materials could be used as data, including analyzing the kinds of prisoner attributes the recorder wrote down based on handwriting and visualizing the data to view it in a new light.[21]

Narrative criminology is an emerging research method that has mirrored a digital humanities approach to scholarship. Specifically, Heith Copes and Jared Ragland describe narrative criminology as a field that "prioritizes stories when analyzing crime and justice" for "explaining past events and for contributing to future actions."[22] As one example of combining digital humanities and narrative criminology research, Copes[23] participated in a lecture series, also recorded as a podcast, at the 2017 Academy of Criminal Justice Sciences professional conference sponsored by Springer Nature. The presentation, entitled "Caught Being Stupid,[24] detailed the lives of methamphetamine users in rural Alabama. Copes partnered with Ragland, an award-winning photojournalist, to give their vivid research a vital enhancement—adding photography to accompany the oral narratives of the participants who often live on the margins of society. These visceral images, layered on top of deep ethnographic details, gave audience members an immersive experience into something *more human.* Lives on the fringe often get dehumanized in mass media, popular culture, and in the public's broad misunderstanding of addiction. These rich stories help flip the script on public misperceptions of addicts and addiction.

In fact, Lois Presser has argued that the "use of offenders' *own* stories has a venerable tradition in criminology, and criminologists have not exploited the potential of stories to theorize the etiology of crime."[25] Presser has encouraged criminologists to explore narrative criminology to help enrich stories and to provide context to the antecedents of crime and criminality. This research has challenged other researchers to explore narrative criminology as a method to frame matters of life course criminology, the intergenerational transference of trauma, and beyond.

Case Study: The Louisiana State Penitentiary at Angola Museum Project

The collaboration between Special Collections, Criminal Justice, and Angola Museum came about spontaneously. In March 2020, UL Lafayette's president received a letter from Secretary James M. Le Blanc of the Louisiana Department of Public Safety and Corrections. Within the letter was a request to develop a partnership between the University and the Museum. Secretary Le Blanc pointed out that broad collaboration could align with both the University's and Museum's missions. As the letter filtered down the chain of command from the Office of the President to the department head of Criminal Justice, all parties were in complete agreement on the benefits of forming a collaboration. This triggered a series of meetings between the Criminal Justice department head, head of Special Collections, and the digitization

archivist of Dupré Library. As content matter experts, these three individuals quickly understood the value of this potential endeavor.

Surreptitiously, the Louisiana Division of Historic Preservation was offering a competitive grant opportunity, with the Museum Foundation being an eligible recipient, and the partners agreed to seek grant funds to process the Museum's collection of photographic negatives. The application process was straightforward, and the Criminal Justice department head collaborated with Museum Foundation leadership to develop a project narrative, a scope of work, and a detailed budget for review by state officials. The following sections describe the grant project partners, the timeline for the project, and the benefits and challenges of the collaboration.

Special Collections

Special Collections, as of March 2022, consists of three faculty members (head of Special Collections, digitization archivist, and reference archivist) and two staff assistants. The Acadiana Manuscripts Collection is a section of Special Collections that holds over 700 collections dedicated to representing the Acadiana region, an area devoted to the history and culture of the people of south and southwest Louisiana, including Cajuns, Creoles, African Americans, Native Americans, and many more. Such collections include the papers of Ambassador Jefferson Caffery and Congressman Edwin E. Willis, as well as the records of the Rice Millers' Association and Council for the Development of French in Louisiana (CODOFIL).

The archivists often work with other departments to provide instruction or assist with projects. For example, professors from the History and English departments have scheduled instruction sessions for their classes when student assignments require the usage of archival materials. The sessions typically entail instructional presentations on the different Special Collections sections, samples of archival collections, and demonstrations of primary and secondary sources. Students may be required to use Special Collections materials for their class projects, or professors may use the materials themselves for personal research. Some of these class sessions or research projects have included the creation of digital exhibits. Professors have scheduled instructional sessions for their students specifically to learn about digitization initiatives and how to devise personal exhibits using archival collections and Special Collections equipment. With these exhibits, students have not only presented digitized images and descriptions, but they have also produced narratives highlighting the historical significance of the collections. To assist with projects, Special Collections staff offer specialized digitization services on request. Digitization makes it possible to disseminate the large and diverse holdings

of Special Collections so researchers can observe materials without needing to travel long distances. This has provided an efficient way for researchers to access a wide variety of historical and cultural documents on demand.

The digital images used for the Museum project were donated to Special Collections as part of the Acadiana Manuscripts Collection. While there are only a few collections specifically devoted to criminal justice, there are many law collections, including the Henry Garland Dupré Papers, the Mouton-Debaillon Law Firm Legal Papers, and the Richard Putnam Federal Case Records. Special Collections also contains an extensive collection of historical and modern-day law books. These materials provide ample scholarship for criminal justice students and researchers.

Special Collections Collaboration with Criminal Justice

The Department of Criminal Justice at UL Lafayette is one of the oldest of its kind in Louisiana. The scholarship produced by its faculty over the decades has given the department the distinction of being a top producer in broadly cited scholarship in Louisiana in the domain of criminology and criminal justice. Until this grant project, there had been limited scholarly collaboration between Dupré Library and Criminal Justice's faculty. The department faculty have been users of the library's vast collection to perform their traditional roles as teachers, scholars, and advisors/mentors and to engage in service efforts. However, they had not engaged in joint scholarship with the library. Special Collections has archived valuable details of Criminal Justice's history, which has given the University a wealth of details on this vibrant unit for future promotion and recruitment and to provide alumni a sense of being a part of the institution's history.

Angola Museum

Louisiana State Penitentiary at Angola Museum[26] was conceptualized by Warden Burl Cain in 1995 to document and educate the public on how corrections in Louisiana has evolved over time. It is located just outside of the prison gates in Angola, Louisiana, which is along the Mississippi River, overlooking the bottom, farthest-west corner of Mississippi. To get there, visitors drive down highways that lead to scenic byways, eventually winding to a large swath of fertile land that was once a working plantation—a three-hour drive from Jackson, Mississippi, or New Orleans, Lousiana. The roughly 18,000-acre former plantation that makes up "The Farm," Angola Prison's nickname, still operates as an active farm in many ways to this day. While other museums of its kind (e.g., Eastern State Penitentiary, Texas Prison Museum, Ohio State Reformatory, etc.) exist as tourist attractions and revenue generators

for their hosts, the Museum is unique in its affiliation with active prison life, including those incarcerated at Angola, its staff, and the families of prisoners and workers alike. For this reason, the Museum Foundation has sought to partner with a variety of stakeholders, including community partners, prisoners, staff, and their families, as well as scholars, to help shape its exhibits. It remains quite difficult to disentangle controversies with the history of the criminal justice system from the history of the institution itself; however, the administrators hope that collaborations, such as the project documented in this chapter, can aid the Museum in its efforts to educate the public about the criminal justice system of Louisiana from all perspectives. Truly, the main purpose of the Museum is to serve the public as a source of education on the storied past, present, and future of justice in Louisiana.

The breadth and depth of the images collected and stored by the Museum has the potential to offer researchers a wealth of data. While the subjects of the images have passed on, many families of the subjects are alive. Of equal importance, subsequent generations of prisoners and staff could easily identify with the imagery. From religious ceremonies over the years to prison musical groups playing instruments, the activities that occur within the prison continue to have shared characteristics. Part of the mission of the Museum is, therefore, to provide context for the humanity behind and beyond the prison walls. As such, this archive adds to a broader array of established collections held by the Museum, including an additional photography collection from 1916–1925, the Professor Burk Foster Collection (featuring an organized collection of writings about prison history, crime and punishment, and the death penalty), the Angola Prison Rodeo collection (official rodeo programs that date back to 1970 through present), a multimedia and documentary collection featuring 675 analog audio and videotapes (including some captured by KLSP-TV, the prisoner-run television station at Angola, from 1994 to present), and an oral history collection.

Project Timeline and Outcomes

Once the grant was awarded, Special Collections and Criminal Justice devised plans for completing the project. This entailed understanding the types of materials being digitized and the resources needed to accomplish the tasks. The work produced a fruitful collaboration, with both units lending their expertise to deliver an exemplary final product.

Scope of Work

The Museum's collection consisted mostly of 4×5 negatives, with some 5×7s and 8×10s, and a few prints and negatives of smaller or non-standard sizes.

The negatives were generally in good physical condition, with only minor imperfections such as discoloration and cracks. While the digital images were to be donated to Special Collections, the Museum sent the physical negatives to the library on long-term loan for the work to be conducted; the physicals will be returned to the Museum once the project is completed. After receiving the first few shipments of the photographic negatives from the Museum, which were all black-and-white and from the mid-twentieth century, Special Collections staff appraised the items for their physical condition, negative type, approximate age, arrangement, and identification. The grant had initially called for physical processing to occur, but after observing the negatives in the boxes and folders they came in, it was determined that little, if any, processing was needed. The remaining collection materials, subsequently received in increments, had also been well arranged and identified by the Museum staff.

Upon award, grant funds were used to hire two graduate students from Criminal Justice. They were tasked with scanning, editing, and applying watermarks to the images. The students also added descriptive metadata and performed digital restoration wherever possible and appropriate. After completing these tasks, the digitization archivist conducted quality checks, converted images to suitable file types, modified metadata if needed, and prepared the images for storage and access. The preservation copies were archived as high-resolution, uncompressed .tiff files, and copies for general access were stored as high-quality .jpeg files.

Preservation and Access Requirements

Due to Special Collections' limited staff and resources, fully robust digital preservation was not going to be possible for the grant project. Currently, most digitized collections are stored in a private network drive, a space only assigned to Special Collections staff. The department is given a finite amount of storage space from the University, and the library is charged for what is used. Since the Museum collection contained close to two thousand negatives, Special Collections needed to plan for sufficient space to accommodate uncompressed master files and duplicate access files. Grant funding allowed the principal investigators to invest in a separate network drive specifically devoted to the Museum project. The University's Campus IT department provided two hundred gigabytes worth of storage, covering a span of ten years. This flexibility has ensured the digitized items remain on the University's server and has given time to prepare for any technological changes that may arise over time.

With the preservation requirements in place, Special Collections also needed to consider how patrons would access the collection. UL Lafayette

is a member of the Louisiana Digital Consortium, which runs and manages the LDL. Many other higher education institutions have their own spaces in the LDL, where they upload and display a wide variety of digital collections. Given this option, the LDL was chosen as Special Collection's digital library with five hundred gigabytes worth of storage space. One benefit of using the LDL included leaving the technical duties to LSU Libraries staff, the host of the digital library. As Dupré Library does not have a full IT department at its disposal, this arrangement allowed Special Collections to solely ingest collections and provide metadata. With the LDL's storage space and associated technical support, the Museum collection had a suitable space for online accessibility.

Careful consideration was given to ethically broadening the reach of the public to this collection. Each image in the collection is the property of the Museum Foundation, with most of the images taken by a photographer employed by the State of Louisiana. The state has delegated the collection and its copyright to the Museum Foundation to help preserve the collection. Many of the images in the collection are also featured in *The Angolite,* a prisoner-led publication available for sale and widely distributed. Standard practice ensured that each image received releases by the state to use these photographs before publication. On the rare occasion that individuals in the collection were identifiable, their identity in the images was already part of the public domain upon publication of *The Angolite.* In light of these considerations, the Museum Foundation chose a Creative Commons license of attribution-noncommercial to fit its mission of education and dissemination while only identifying individuals who had previously been identified in publication.

Benefits of the Collaboration

The digitized photographic negatives have helped to fuel the expansion of narrative criminology methods. In essence, oral storytelling layered with raw photographs has deeply immersed observers into the world of the subjects. This, in turn, has helped researchers detail the lives of individuals who continue to be deeply misunderstood. It also has aided in the understanding of behaviors that happen behind closed doors or in places shielded from the public view. In this fashion, narrative criminology has documented how criminal behavior—and deviance, more broadly—is part of humanity. In this case, the negatives provided by the Museum will fuel such research for years to come, given the breadth and scope of the collection. For example, the Criminal Justice department head is seeking to collaborate with well-known narrative criminologists to present the images of this collection to current

prisoners and staff to reflect on shared lived experiences of generations past while seeking to uncover potential for change. It also remains possible for criminologists to better understand the lives of people in the years after conviction and before release. Given that Angola remains an active prison, this sort of research can be critical to aid in future improvements to the system and its "participants," through careful reflection on its past. In this vein, this sort of effort will directly expand the existing resources found in the Museum's oral history collections.

Beyond the direct benefit of producing scholarship, this collaboration has led to additional educational uses. Any time storytelling is utilized within the classroom, these images can provide an opportunity for students to interact with primary source materials not normally available to them. Students of sociology, political science, history, psychology, music, the arts, and beyond can all immerse themselves in narratives of crime and punishment, public policy and intended versus unintended consequences, race relations, resiliency and perseverance, faith, salvation, redemption, and much more. Just as incarceration is depicted in feature films such as *The Shawshank Redemption,*[27] *Monster's Ball,*[28] and *Dead Man Walking,*[29] the still images found within the collection can offer insight into human experiences that continue to be misunderstood, oversimplified, and sensationalized by the American media and general public.

On the practical side, the Museum project has also greatly benefitted Special Collections archivists and staff by providing them with a more active role in production. By leading the processes of scanning, editing, and describing the negatives, Special Collections staff gained essential and vital skills concerning the creation of digital objects. As Special Collections' role in this digital project grew, it also allowed for a more robust partnership with the Criminal Justice faculty. The Special Collections staff applied its expertise in digitization and preserving provenance and original order, while the Criminal Justice faculty used their expertise in assisting with content description and application.

Additionally, the Museum project will help inspire future collaborative efforts with other academic units. As this project was the first major collaboration between Special Collections and Criminal Justice, the successes will not only encourage more special collections projects with Criminal Justice, but it may also encourage other departments not normally associated with archives to consider potential projects. For example, Special Collections is currently working with the College of Liberal Arts on its centennial celebration, which includes building exhibits containing materials from the college's departments and creating an online space to store and display a memory vault of oral histories from faculty and alumni. Further, Special Collections

is partnering with the College of Education's Department of Curriculum and Instruction by providing instruction on using primary sources and displaying original children's stories written by students in the University's institutional repository. These kinds of collaborations help stimulate other special collections projects and, ultimately, bring seemingly disparate departments and divisions together to promote university scholarship.

Challenges of the Collaboration

While the project ran smoothly overall, it was not without its challenges. The first problem that needed to be overcome was the result of a delay in the delivery of the materials. The grant period was set from July 1, 2020, through June 30, 2021, and yet, the first batch of negatives did not arrive until February 24, 2021. The shipments of materials came to the University in increments, as staff at the Museum wanted to retain its own organizational style, producing additional delays in processing the materials. In the interim, the graduate students worked on other digitization projects for training, but the actual scanning started much later than expected, causing the University team to modify its schedule. This delay was due, in part, to the inconsistent communication among the team given pandemic-related challenges. These communication challenges certainly placed a burden on the time for the students, as they only had a certain amount of funding devoted to their work.

There were also difficulties with spending the grant funds in the allotted time given. The team had to wait until all the scans were finished to determine how much space was needed for storage. The request then needed to go through the University Computing Support Services, with an invoice signed by Dupré Library's dean. The team was given an extension through August 31, 2021, but even that date was tenuous, given the third wave of COVID-19 that impacted the state in July. The project team was able to negotiate an extension through the end of 2021 to be able to complete the entire scope of work and to provide for better quality assurance and control.

Speaking of COVID-19, protocols related to the pandemic produced substantial delays in collaboration. Special Collections and Criminal Justice had very little access to the materials in advance to effectively anticipate the needs of the project. For example, Special Collections and Criminal Justice could not predict the condition of the negatives or the amount of time and effort required to organize and detail the collection's metadata. Critically, the team had to work collaboratively to remain on schedule despite constantly changing public health requirements for all participants in the project. To stay on schedule, routine Zoom meetings were utilized to engage in troubleshooting and to aid in navigating critical next steps to make progress. Given that Loui-

siana was impacted by three major COVID-19 waves, there were substantial disruptions to the meetings in that many of them had to be put on hold due to the state's public health emergencies.

The digitization work itself also was not without its challenges. Certain constraints prevented the team from creating digital surrogates with pristine quality. Since photographic negatives warp over time, the trays for the photograph scanner were designed, in part, to keep the negative lying flat to prevent shape distortions or blurriness. However, some negatives—those larger than the standard 4×5—could not fit into the tray and had to be scanned without the aid of a device holding them down flat. This produced a slightly convex shape along the outer edges, which can alter true perspectives. Some images, especially those portraying some sort of action (e.g., a boxing match), were blurry. In such instances, it was often difficult to discern whether the blurriness was caused by a lack of focus during the digitization process or if such imperfections were already present in the original negative.

Conclusion

As of March 2022, the Museum project is nearing the final stages of production. All negatives have been scanned and edited, and the graduate students have finalized the watermark placement on the access copies. The images are currently being shared with the Museum staff so they can add more accurate and succinct descriptions to the negatives. Once these descriptions are complete, the images will be placed onto the LDL.[30]

This project acts as a major step for Special Collections because the collaboration has shown the kind of work archival departments are capable of and how they can assist other academic departments. Given the active collaboration between Special Collections and Criminal Justice, both units could engage in a marketing campaign to help foster subsequent collaborations among units on campus. This effort would certainly dovetail with the University's strategic plan to become involved in *research for a reason*—to focus on research endeavors that produce engaged scholarship within the community. These are the relationships that give added value to the communities the University is embedded with to produce better outcomes. In this case, this partnership is likely to produce a better understanding of Louisiana's history with criminal justice and how justice outcomes can be shaped for years to come.

Since the project is ongoing, further research is needed on the impact the project will have on the various parties who will utilize these images. At the time of this writing, the stakeholders are trying to better understand how to track usage of the collection to better detail the broader impacts of such

endeavors. To increase awareness of the collection and its opportunities, it may behoove Special Collections and Criminal Justice to have instruction sessions to outline the contents of the collection and how they can contribute to narrative criminology. This will not only sustain the relationship between the two departments but also continue to build on adopted roles of special collections departments.

Notes

1. Theresa Quill et al., "Working Across Borders: Building Collaborations for Primary Source Instruction," *Journal of Map & Geography Libraries* 15, nos. 2–3 (2019): 153.

2. Morgan Daniels and Elizabeth Yakel, "Uncovering Impact: The Influence of Archives on Student Learning," *The Journal of Academic Librarianship* 39, no. 5 (2013): 420.

3. Maristella Agosti, Nicola Orio, and Chiara Ponchia, "Promoting User Engagement with Digital Cultural Heritage Collections," *International Journal on Digital Libraries* 19, no. 4 (2018): 353.

4. Dorothea Salo, "Innkeeper at the Roach Motel," *Library Trends* 57, no. 2 (2008): 99.

5. Sonia Yaco, Caroline Brown, and Lee Konrad, "Linking Special Collections to Classrooms: A Curriculum-to-Collection Crosswalk," *The American Archivist* 79, no. 2 (2016): 421.

6. Jennifer M. Welch, Susan D. Hoffius, and E. Brooke Fox, "Archives, Accessibility, and Advocacy: A Case Study of Strategies for Creating and Maintaining Relevance," *Journal of the Medical Library Association: JMLA* 99, no. 1 (2011): 59.

7. Ibid., 60.

8. Anne Bahde, "Taking the Show on the Road: Special Collections Instruction in the Campus Classroom," *RBM: A Journal of Rare Books, Manuscripts, and Cultural Heritage* 12, no. 2 (2011): 80.

9. Ibid., 86.

10. Ibid., 81.

11. Tanya Clement, Wendy Hagenmaier, and Jennie Levine Knies, "Toward a Notion of the Archive of the Future: Impressions of Practice by Librarians, Archivists, and Digital Humanities Scholars," *The Library Quarterly* 83, no. 2 (2013): 114.

12. Ibid., 119.

13. Jolie A. Sheffer and Stefanie Dennis Hunker, "Digital Curation," *Pedagogy* 19, no. 1 (2019): 79–80.

14. HathiTrust Digital Library, "Welcome to HathiTrust!," *HathiTrust Digital Library*, https://www.hathitrust.org/about.

15. HathiTrust Digital Library, "Our Research Center," *HathiTrust Digital Library*, https://www.hathitrust.org/htrc.

16. See: https://louisianadigitallibrary.org/.

17. S. L. Ziegler and Cara Key, "More Than a Pretty Interface: The Louisiana Digital Library as a Data Hub," *Codex: the Journal of the Louisiana Chapter of the ACRL* 5, no. 2 (2019): 160, 164–66.

18. Ibid., 165.

19. Louisiana Digital Library, "LDL as Data Fellowship," *Louisiana Digital Library,* https://louisianadigitallibrary.org/LDLasData/fellowship.

20. S. L. Ziegler, "Open Data in Cultural Heritage Institutions: Can We Be Better Than Data Brokers?," *Digital Humanities Quarterly* 14, no. 2 (2020): para. 9.

21. Ibid., 10.

22. Heith Copes and Jared Ragland, "Considering the Implicit Meanings in Photographs in Narrative Criminology," *Crime, Media, Culture* 12, no. 2 (2016): 271.

23. Dr. Copes is also an alumnus of the University of Louisiana at Lafayette.

24. Heith Copes, "Caught Being Stupid," *Before the Abstract*, podcast audio, March 1, 2017, https://beforetheabstract.com/2017/03/01/caught-being-stupid/.

25. Lois Presser, "The Narratives of Offenders," *Theoretical Criminology* 13, no. 2 (2009): 177. See: https://www.angolamuseum.org.

26. See: https://www.angolamuseum.org.

27. See: https://www.imdb.com/title/tt0111161/?ref_=nv_sr_srsg_0.

28. See: https://www.imdb.com/title/tt0285742/?ref_=nv_sr_srsg_0.

29. See: https://www.imdb.com/title/tt0112818/?ref_=nv_sr_srsg_0.

30. See https://louisianadigitallibrary.org/islandora/object/ull-lsp:collection.

Bibliography

Agosti, Maristella, Nicola Orio, and Chiara Ponchia. "Promoting User Engagement with Digital Cultural Heritage Collections." *International Journal on Digital Libraries* 19, no. 4 (2018): 353–66. https://doi.org/10.1007/s00799-018-0245-y.

Bahde, Anne. "Taking the Show on the Road: Special Collections Instruction in the Campus Classroom." *RBM: A Journal of Rare Books, Manuscripts, and Cultural Heritage* 12, no. 2 (2011): 75–88. https://doi.org/10.5860/rbm.12.2.354.

Clement, Tanya, Wendy Hagenmaier, and Jennie Levine Knies. "Toward a Notion of the Archive of the Future: Impressions of Practice by Librarians, Archivists, and Digital Humanities Scholars." *The Library Quarterly* 83, no. 2 (2013): 112–30. https://doi.org/10.1086/669550.

Copes, Heith. "Caught Being Stupid." *Before the Abstract.* Podcast audio. March 1, 2017. https://beforetheabstract.com/2017/03/01/caught-being-stupid/.

Copes, Heith, and Jared Ragland. "Considering the Implicit Meanings in Photographs in Narrative Criminology." *Crime, Media, Culture: An International Journal* 12, no. 2 (2016): 271–71. https://doi.org/10.1177/1741659015623599.

Daniels, Morgan, and Elizabeth Yakel. "Uncovering Impact: The Influence of Archives on Student Learning." *The Journal of Academic Librarianship* 39, no. 5 (2013): 414–22. https://doi.org/10.1016/j.acalib.2013.03.017.

HathiTrust Digital Library. "Welcome to HathiTrust!" *HathiTrust Digital Library*. https://www.hathitrust.org/about.

HathiTrust Digital Library. "Our Research Center." *HathiTrust Digital Library.* https://www.hathitrust.org/htrc.

Louisiana Digital Library. "LDL as Data Fellowship." *Louisiana Digital Library.* https://louisianadigitallibrary.org/LDLasData/fellowship.

Presser, Lois. "The Narratives of Offenders." *Theoretical Criminology* 13, no. 2 (2009): 177–200. https://doi.org/10.1177/1362480609102878.

Quill, Theresa, Maureen E. Maryanski, Meg Meiman, Isabel Planton, Meggan Press, and Carrie Schwier. "Working Across Borders: Building Collaborations for Primary Source Instruction." *Journal of Map & Geography Libraries* 15, nos. 2–3 (2019): 152–72. https://doi.org/10.1080/15420353.2020.1719268.

Salo, Dorothea. "Innkeeper at the Roach Motel." *Library Trends* 57, no. 2 (2008): 98–123. https://doi.org/10.1353/lib.0.0031.

Sheffer, Jolie A., and Stefanie Dennis Hunker. "Digital Curation." *Pedagogy* 19, no. 1 (2019): 79–105. https://doi.org/10.1215/15314200-7173771.

Welch, Jennifer M., Susan D. Hoffius, and E. Brooke Fox. "Archives, Accessibility, and Advocacy: A Case Study of Strategies for Creating and Maintaining Relevance." *Journal of the Medical Library Association: JMLA* 99, no. 1 (2011): 57–60. https://doi.org/10.3163/1536-5050.99.1.010.

Yaco, Sonia, Caroline Brown, and Lee Konrad. "Linking Special Collections to Classrooms: A Curriculum-to-Collection Crosswalk." *The American Archivist* 79, no. 2 (2016): 417–37. https://doi.org/10.17723/0360-9081-79.2.417.

Ziegler, S. L. "Open Data in Cultural Heritage Institutions: Can We Be Better Than Data Brokers?" *Digital Humanities Quarterly* 14, no. 2 (2020). https://digitalcommons.lsu.edu/libraries_pubs/94.

Ziegler, S. L., and Cara Key. "More Than a Pretty Interface: The Louisiana Digital Library as a Data Hub." *Codex: the Journal of the Louisiana Chapter of the ACRL* 5, no. 2 (2019): 153–71.

II

FOCUS ON DATA
RESEARCH DATA SERVICES

8

If You Offer It, They Will Come

Turning Your Interests Into Action

Andrea Pritt

A CADEMIC LIBRARIANS COLLABORATE with faculty researchers and graduate students in various academic disciplines with a myriad of research needs. Often, these faculty members have deep expertise in their discipline but lack the required knowledge of research data management (RDM) skills to support and enhance their research efforts. Many faculty researchers recognize their lack of RDM skills and acknowledge the need to improve their skills, but they are constantly thwarted by other demands such as the rigorous research process, grant deadlines, and the pressure to publish at an increasing rate. Similarly, graduate students who join research labs or work on complex projects may also lack the tools they need to succeed in the research process. The need for fundamental RDM skills and knowledge of the scholarly publishing ecosystem frequently goes unrecognized by graduate students as they simply do not know what they do not know. Support from an academic librarian with experience and interest in RDM can make a significant impact.

At the Madlyn L. Hanes Library at Pennsylvania State University Harrisburg (hereafter Penn State Harrisburg), the STEM librarian offers workshops and presentations related to RDM as a new and evolving service. These outreach efforts are open to all faculty and graduate students on campus. This chapter outlines the ways that one academic librarian has worked to enhance the RDM skills on a research-intensive campus. The case study also offers both challenges and successes to RDM services offered by a non-data librarian.

Literature Review

In the last decade, much has been written about the increased need for RDM skills across academic disciplines and institutions. Whether the need stems from public- and private-funding agencies' requirements, publisher policies, or guidelines from local institutions, the need for data management skills has been well-documented in the literature. As research activities become increasingly interdisciplinary and grant offices require data management sharing policies, the need for sound research data management practices will only continue to grow.

Through several institutional RDM environmental scans and need assessments, the literature has shown that researchers of all types lack the necessary, and desired, skill sets and knowledge to practice proper RDM.[1] These studies have investigated the RDM awareness and practices of research scientists, faculty, and graduate students in varying academic disciplines and at different-sized institutions from around the globe. Additionally, the literature has shown that while researchers recognize their own need for RDM assistance, they do not seek out help because they do not know where to turn or whom to ask. Though their research data management needs often overlap, graduate students have indicated that they are aware of the importance of open data and data sharing practices, unlike some of their faculty counterparts. Graduate students want to implement these practices but often lack the standard disciplinary practices that faculty have acquired through years of experience.[2] Unsurprisingly, researchers often seek out other institutional departments, such as the information technology (IT) or research departments, for RDM assistance without realizing that the library is often the primary provider of RDM services to the campus research community.[3] In the last several years, librarians and information professionals have investigated how to better market their existing research data services as well as how to expand and improve services.

Recent research studies have been conducted on librarians' roles in supporting the RDM landscape within higher education institutions.[4] In fact, the literature has noted that the library is routinely the last place a researcher looks to receive information or training on RDM skills. These studies have indicated that there is confusion among researchers as to what a librarian, or the library in general, can offer related to research data services. One librarian stated that academic researchers would be surprised to find out that the library has a role in RDM.[5] Academic researchers who hold traditional views of what librarians can, and cannot do, miss out on opportunities to engage librarians in RDM support in a meaningful way. As research projects become

more interdisciplinary and larger in scope, the need for proper RDM practices has become more evident.

Similar to faculty perceptions, research has indicated that although librarians feel confident that they have the subject matter expertise to assist researchers, they lack direct experience in research data services.[6] In order for librarians and informational professionals to gain confidence in research data topics, the opportunity to upskill and/or reskill through professional development must be made available to them.[7] For librarians who are interested, an increasing number of opportunities are becoming available to gain new research data skills. Interested librarians and information professionals can participate in these opportunities in various ways as opportunities to learn include a mix of self-directed study resources and hands-on, in-person workshops. As more professional development opportunities arise and more librarians complete them, the academic library will become a place more equipped and better situated to offer a host of research data services. Librarians are skilled in collecting, cataloging, and preserving information, and liaison roles are changing to address the growing research data environment. Academic library environments have to evolve as the university researcher's needs change, and academic librarians and information professionals can be poised to meet the unmet needs of academic researchers.

RDM Services in Academic Libraries

Over the past decade, more academic libraries have been offering research data services than ever before.[8] The scale and scope of research data services offered vary by institution size and research community needs. These services often fall into one of two general categories: educational/informational and technical/hands-on.[9] Services that fall into the educational and/or informational category are aligned with more traditional library roles. These include assistance with data management planning, locating datasets, and consultations related to data storage and preservation. The technical and/or hands-on aspect of RDM needs depends upon the disciplinary nature of the research being conducted. These services may include how-to workshops on learning and using data analysis software tools such as R, SPSS, Tableau, and more.[10] To start, libraries may offer services that fall under only the educational/informational category, but most libraries aim to eventually expand services to best support their research environments. As librarians and informational professionals learn more about these practices, they feel more confident in reaching out to researchers to educate them about RDM, but they have "less confidence" in acting upon the technical skills. This may

be due to the fact that librarians typically have ample experience providing educational and instructional sessions to their patrons, but these services are often not as technical as researchers need. One common solution has been for a library or institution to offer both types of research data support through a departmental referral system which connects the researcher with a technical expert when needed.[11]

The body of literature around research data services offered in libraries and academic institutions is extensive and indicates there is a need for faculty and graduate student researchers to learn more about RDM practices, and when implemented in a sustainable way, academic librarians can effectively serve those needs. Complex research projects, grant deadlines, public data policies, and the constant pressure to publish have all led faculty researchers to push RDM skills and practices to the back burner. Graduate students joining these research labs and projects also often lack the disciplinary experience, mindset, and tools needed to succeed in this high-pressure environment. Academic researchers recognize their lack of RDM skills and acknowledge their need for more education and support, and this is where academic librarians and information professionals interested and experienced in RDM can make a significant positive impact.

Case Study: RDM Services at Penn State Harrisburg

To better understand the research data services offered at the Penn State Harrisburg Library, and why they are important, this case study describes the research environments at both the broader Pennsylvania State University and the individual Harrisburg campus, the existing services at those campuses, and, finally, details the experiences, reflections, and recommendations of the author in providing RDM services.

Pennsylvania State University and University Libraries

The Pennsylvania State University (hereafter Penn State), Pennsylvania's only land-grant university, is comprised of twenty-four campuses throughout the Commonwealth, and it is classified as an R1—Doctoral Universities, Very High Research Activity institution by the Carnegie Classification of Institutions of Higher Education.[12] Penn State's broad mission is to support and enhance the Commonwealth through innovative teaching, research, and public service. Collectively, the university system enrolls nearly 90,000 students in undergraduate, graduate, medical, and law programs across the state. Penn State acts as "one university, geographically dispersed," and dur-

ing the 2019–2020 fiscal year, the university saw its research expenditures exceed the $1 billion mark.[13] These research dollars support a diverse array of disciplinary research areas across the university. As the university's research expenditures continue to rise and more data-intensive research is done, it is imperative for researchers to have expanded access to research data services.

Like Penn State, the University Libraries acts as "one library, geographically dispersed." University Libraries' mission, broadly, is to inspire intellectual discovery and learning through its resources and collaborative services in both teaching and research. As an academic library serving a diverse research community, it is essential to provide the research data services that faculty and student researchers need. Through the University Libraries' Research Data Services department, the library offers a wide array of related services that include assistance with data management, data archiving and preservation, data analytics and visualization, and more. While the University Libraries has only two designated RDM librarians (one for STEM research, and one for social sciences research), there are several other library employees who have expertise in these areas who also offer services.

Penn State Harrisburg Campus and Madlyn L. Hanes Library

Penn State's twenty-four Commonwealth campuses offer diverse and unique research experiences for faculty and student researchers. Penn State Harrisburg is comprised of five academic schools, enrolls approximately 5,000 students, and supports associate, bachelor's, master's, and doctoral degree programs. Research expenditures at Penn State Harrisburg during the 2018–2019 fiscal year (the most recent year available) totaled just over four million dollars.[14] As one of the largest Commonwealth campuses, Penn State Harrisburg has seen both enrollment and research expenditures increase over the years, and as both continue to grow, the need for research data services at the local level has become more apparent and necessary.

At the Madlyn L. Hanes Library at Penn State Harrisburg, there are five librarians, but none are designated RDM librarians. However, since 2019, the library has been intentional about offering research data services to the campus community. These services were initially offered simply because the STEM librarian was interested in providing them as it became clear that existing services were lacking in this area. These services have continued as an increasing number of faculty and graduate student researchers have requested RDM assistance on various projects. While in graduate school, the author, who is the STEM librarian, was exposed to research data services generally, through the curriculum, and understood the importance of the academic library's role in supporting research efforts on campus. Through

personal and professional development initiatives, the STEM librarian has worked to better support the research needs of faculty and graduate student researchers at Penn State Harrisburg. The following sections describe the author's personal reflections and recommendations on offering RDM services as a non-data librarian.

Reflection: Turning Your Interests into Action

Planning, organizing, and deploying research data services that are practical and, most importantly, sustainable as a non-data librarian can be difficult and daunting. With a professional interest in RDM and wanting to excel in a new position, I would mention the importance of proper data management to faculty members at school and departmental meetings, in the hallways between class periods, and after library instruction—at first, it was to no avail. Faculty researchers seemed interested but never followed up to discuss further. During follow-up interactions, a few researchers would politely apologize for never reaching out for help though they knew they needed it (and claimed they still wanted it!). The semester progressed, and it became clear that although having a personal interest in RDM could be a good place to start, simply reminding researchers that help was available was not proactive enough. For overburdened researchers, practicing research data management in a meaningful way often gets pushed to the back burner, understandably. To increase researcher and campus buy-in, I first spent time developing and enhancing my own research data skills that could later be shared with researchers in a more practical and substantive way. *If you offer it, they will come*, became my mantra.

If You Offer It, They Will Come (Maybe)

At the Penn State Harrisburg campus, faculty researchers apply for federal funding grants from agencies such as the National Science Foundation (NSF) and the National Institutes of Health (NIH). Because both federal agencies require grant applications to include a clear and detailed data management plan (DMP) to be successful, this is where I started to build a program. From both the literature and personal experience, it was clear faculty, both new and experienced, did not always realize that the library could help with RDM, so the librarian must work on advertising and marketing these services. After several failed attempts of trying to connect with faculty researchers, I knew I could benefit from a collaborative partnership with the Office of Research and Outreach to increase researcher awareness.

The Office of Research and Outreach departmental staff had experience in grant-writing and pre- and post-award facilitation. At the campus level, the office works with faculty researchers from all disciplines to assist with grant applications from beginning to end. However, they lacked someone with expertise in creating a DMP. Recognizing that this would make a good connection but without knowing the department's situation, I reached out to offer a presentation on creating DMPs for interested faculty researchers, and the partnership was formed.

The Office of Research and Outreach agreed that this session could be both relevant and useful to faculty researchers and decided the session should be one hour in length, broken into two equal parts. The first part would be the grant writing and grant application process (run by the Office of Research and Outreach), and the second part would include how to create an effective DMP (run by the librarian). The joint presentation was primarily geared toward researchers who hoped to secure grants from agencies that require DMPs, but any researcher who was interested in learning about DMPs was welcome to attend. With high hopes for attendance and participation, the session was advertised via targeted emails and the campus-wide faculty listserv for two weeks prior to the live, virtual session. When presentation day came in Spring 2019, only one faculty researcher attended, and they did not even need a DMP right away.

Though the presentation garnered significantly fewer attendees than I had hoped, all was not lost. With only one researcher present, the session became more akin to a reference consultation where both presenters were able to answer direct and specific questions in real time. This led to a deeper connection with the faculty researcher as the conversation became more nuanced, and I learned more about at least one researcher's needs. After the session, the presenters briefly discussed ways to increase attendance. There were many possible reasons for the low turnout, but instead of dwelling on the disappointment, we moved forward with the original goal of connecting researchers to the research support they needed.

After the first DMP presentation, any time the research office worked with a faculty member on applying for NSF and NIH grants, they would put the faculty member in direct contact with me to make the connection more personal than an email blast to a listserv. As the success of the individual DMP consultations grew, the campus-wide presentation was offered again during the following fall semester, in September 2019, and though it only had six attendees, the word was spreading. Though it was a time commitment offering both individual and group DMP writing sessions throughout the year, the faculty response was overwhelmingly positive, and I have been able to not

only maintain this practice over the course of two years but also increase the library's suite of research data service offerings.

Expanding Research Data Service Offerings at Penn State Harrisburg

It became evident that outreach to faculty regarding their DMP and grant awards was the best way to get the library involved in the research process. Since a DMP was required, it made logical sense to begin the conversation there and see where it would lead. With this newfound momentum, I decided to increase the research data services offered. Research data management is a broad concept, and to appeal to more researchers, I decided to break the concept into smaller "bite-sized" parts to keep the presentations more succinct and structured. An added benefit of this à la carte system is that, later, researchers can select which topics are of most interest, and the presentations can be offered in any order, at any time.

These research data presentations are designed to appeal to all levels of researchers. Although some of the presentations may appeal more to one audience, it is important to make these services as inclusive as possible. The main goal is to provide a detailed introduction to research data services to increase researcher awareness of these areas. Each presentation/workshop is designed to last approximately sixty minutes and includes a mix of time discussing the research data topic and time for the researcher to complete short reflection activities that relate to their own research projects. By keeping these presentations flexible, there are opportunities to answer specific questions and engage in thoughtful dialogue. As of August 2021, a total of six individual research data workshops are offered by the library. These presentations cover the following: the broad concept of research data management; data management plans; data discovery and storage; data management and sharing; data visualization; and file naming and version control.[15] Outlined in Table 8.1 are the topics covered in each presentation along with associated learning outcomes.

These presentations can be tailored to suit general research environments as well as to individual disciplines. By adding additional slides that pertain to specific disciplines, they can easily be presented at departmental and/or laboratory meetings. Offering these presentations in-person may allow librarians a better opportunity to get to know individual researchers, but the activities can be altered slightly to accommodate a virtual audience, as was necessary during the COVID-19 pandemic. The pandemic caused Penn State to implement a remote-teaching and remote-learning environment, and during this time, RDM presentations were solely offered virtually. For example, during "Introduction to Research Data Management," attendees are asked to consider one research project and briefly draw and share their research workflow

TABLE 8.1

Overview of research data presentations and workshops offered by the campus library for the campus research community. Included in this table are the topics covered and learning outcomes created by the librarian.

Presentation Title	Topics Covered	Learning Outcomes
Introduction to Research Data Management	• What is RDM? • Research data lifecycle • Why it's important	(1) Understand the basics of RDM and why it is valuable (2) Knowledge of the research data lifecycle and how your research fits within it (3) Awareness of how and where to find research data assistance
So, You Need a Data Management Plan . . .	• What is a DMP and why is it required? • Individual sections of a DMP • DMP Tool	(1) Understand how to create an effective DMP (2) Recognize how a well-crafted DMP will enhance your research project (3) Knowledge of the DMP tool for funding agency DMP templates
Data Discovery and Storage	• Types of data repositories • Selecting a data repository • Data storage options	(1) Understand the different types of data repositories (1) Ability to select the best data repository for your data (1) Understand and implement appropriate data storage practices
Data Management and Sharing	• FAIR Data Principles • Data management workflows • Documentation, ethical use, and confidentiality of data	(1) Knowledge and use of FAIR Data Principles (2) Ability to recognize and implement proper data management system (3) Ability to document research data to match disciplinary standard(s)
Data Visualization	• Data visualization concepts • Types of data visualizations • Selecting appropriate data visualizations	(1) Knowledge of various data visualizations (2) Knowledge of software to assist with visualization creation (3) Ability to select and utilize appropriate visualizations for specific research data
File Naming and Version Control	• File naming frameworks • Version control basics	(1) Recognize importance of file naming and version control conventions (2) Ability to utilize proper file naming and version control structures

with fellow attendees. In a virtual setting, researchers can use technology such as Google Jamboard, a digital whiteboard, to draw and share their workflows. Should libraries and institutions need to pivot to a majority virtual environment again, these presentations will still be effective.

Creating materials and learning objects to accompany each presentation has been a considerable task, but once created, maintenance of them is straightforward. The more difficult piece of the equation, perhaps, is sustaining these practices. Individual librarians and information professionals need to seriously consider how often to offer these sessions throughout the academic year. Depending upon how many presenters are willing to assist, these presentations and services can be scaled accordingly to accommodate researcher needs. As the local research environment evolves, so too will the research data service. It is essential to be realistic when implementing any type of research data service for the first time. There will be obstacles and setbacks, as with any new service offered, but if there is a will in building up the capacity to provide research data services, there is a way to make it happen that will fit any library.

Challenges and Successes of Offering Research Data Services as a Non-Data Librarian

As a new STEM librarian with minimal RDS experience, the idea of developing and offering a new and innovative service to the campus research community was intimidating. My educational background in science and my interest in research data topics were two main reasons why I was interested in doing this work. In my new role, I sought opportunities to merge my education and interest in a way that could benefit my local campus research community. Yes, two graduate courses on the topic were helpful, but putting that knowledge into practice to support and enhance researchers' projects was something else entirely. Not only that, to be successful when offering new and unique services at the local level, and for the first time, I needed the support and encouragement from both colleagues and supervisors. Outlined in this section are the main challenges and successes I experienced while developing and offering research data services for one academic STEM librarian.

Challenges

First, as a non-data librarian with little previous knowledge, it was difficult to know how to begin tackling a project this large. Since I was new on campus, I did not have overall familiarity with faculty and graduate students' needs, let alone a familiarity with their research needs. Data services were also not

included in my job responsibilities when hired, which made this an extra task to take on. Juggling existing job responsibilities during busy semesters and dwindling budgets was complicated enough, and I worried that choosing to assign myself something new might not be the smartest decision. Professional interest alone was not going to sustain the practice; so supervisor support and researcher buy-in were imperative, and without direct expertise to show at the onset, it was an uphill struggle from the beginning. To be a "research data services department" of one and being the sole person responsible for the task felt isolating at the beginning.

Second, as indicated earlier in this chapter, it was a slow start. Although completing professional development opportunities led to more confidence, it was a struggle to find researchers who were both interested and willing. It took multiple semesters to find and build connections with even one or two campus researchers to learn about their individual research needs and to find ways to be a collaborative partner in their individual research projects. Once a connection was made with a faculty researcher, the researcher would want to know why increasing their own RDM skills was necessary and beneficial. Much of my time was spent carefully explaining how one researcher could benefit immediately from a more descriptive DMP or how another could benefit by establishing a better research data workflow. Researchers are over-whelmed enough, and practicing RDM in a thoughtful way is often pushed to the side, or ignored, until it's often too late.

Lastly, being a new librarian, not only to the campus but to the profession, meant there was much to learn beyond the RDM subject matter. Jobs within the library are often siloed, and there are not always clear avenues for networking at the local level. Implementing these services at a unique, research-intensive Commonwealth campus was challenging, and it took time to learn who to seek out for different information and help. As the campus is situated within a much larger and more varied research-intensive university with research departments and initiatives that don't always interact with the University Libraries, navigating all these siloed departments and services often felt insurmountable. After several discussions with colleagues, it became clear that no other Commonwealth campus librarians were working on similar projects, so I did not have anyone to reach out to for support. Additionally, the two designated Research Data Librarians with University Libraries were both new to their roles and were also attempting to make new connections with researchers across the university. Though the challenges of developing and implementing a new suite of evolving research data services ranged from minor to major, the successes far outweighed the challenges as I have made connections with academic colleagues that I would not have interacted with during my traditional library liaison role. Additionally, I have seen the ways

that my assistance has been useful and helpful to their research projects, and I know they are grateful for the support I provided.

Successes

The biggest successes of this project to date have been the connections and collaborations that have been made. Working in libraries is about connecting library services and resources to those who need them, and that is precisely what offering these presentations has done. Branching out and taking a chance, even when I was not entirely ready, paid off. I became more familiar with the scope of research being conducted at the campus and was able to seek out new campus researcher connections with new confidence. Finding an on-campus, non-library collaborator was the big game-changer. The research office's sole responsibility was to work with faculty researchers to support faculty's research processes, and being invited to collaborate with them on the data management plan presentations has been invaluable. In addition to the non-library partnership, I have begun to build strong connections with the designated RDM librarians across the Penn State system. The RDM librarians and the data professionals who work within the Research Data Services (RDS) department have been valuable colleagues who are willing to share their expertise and knowledge to improve library services at other campuses.

As attendance for the presentations and workshops has increased, so have the discipline-specific questions. Due to the previous connections made, it has been easier to connect campus researchers to other experts when necessary. Without a strong background in statistics, I can get a researcher started with data analysis and analytical software, but I lack the proficiency to move the research project further. When this happens, I introduce the faculty or graduate student researcher to the necessary colleague(s) in the RDS department who are skilled and can provide a more advanced service. This has helped both new and experienced campus researchers, as many of them did not yet know that University Libraries had an RDS department. Researchers have noted that all areas of the libraries working well together have limited their own stress and frustrations. Researchers feel confident they are getting the most appropriate assistance without spending unnecessary time trying to make their own connections.

Finally, one of the biggest successes that have originated from this project is that researcher feedback has led to new research data initiatives. The most impactful initiative is a university-wide research symposium that will be planned and coordinated by several research support departments in the future. Through informal feedback from campus researchers, there is a clearer

understanding of where people need research assistance. One goal of the research symposium will be to connect researchers from a variety of disciplines, and from multiple Penn State campuses, to the experts and resources that can best support their research projects. A university-wide initiative such as this will also connect researchers with one another, which may increase interdisciplinary research projects across the university.

Suggestions and Next Steps

The research data services landscape may look different for each library and institution, but there is no shame in starting small as it allows librarians to better weather setbacks as they arise. Creating, offering, and implementing new services should not feel like a chore but an opportunity for professional and personal growth (though it can sometimes be a chore, too!). RDM services are an opportunity for academic librarians to adopt new roles and responsibilities. If academic librarians marry their own personal interests with community needs, they can form a solid foundation for much-needed services. Tailoring initial research data services to immediate researcher needs is an effective way to begin. Collaborating with individual researchers helps solve immediate needs and also successfully integrates librarians and information professionals into the larger research being done on campus. Collaboration is key, and as researcher needs are met, new services can be created and new partnerships formed.

There are numerous ways for librarians and information professionals to develop their own research data skills through readings, workshops, and trainings. Although not an exhaustive list of resources, the following short list can be helpful for beginners to learn and engage with new and varied research data topics.

Interactive Programs and Workshops

- Association of College and Research Libraries (ACRL) Workshop on Research Data Management: from ACRL's Scholarly Communication Toolkit, a one-day workshop to assist with identifying existing skills and mindsets that can transfer to research data services. The free toolkit includes handouts, presentation slides, and other materials that can be adapted for use at the local level.[16]
- Data Management Plan (DMP) Tool: an online tool to facilitate the building of required DMPs from the University of California Curation Center of the California Digital Library.[17]

- Data Carpentry: a lesson program from The Carpentries that teaches workshops on basic computational skills needed for research data management and data analysis.[18]
- Making Data Bearable Workshop: a two-part workshop created by two librarians at Georgia Southern University that examines data management basics and data preservation techniques.[19]
- Research Data Management Librarian Academy (RDMLA): a free, online program for librarians and data professionals who work in research-intensive environments around the globe. The curriculum touches upon several aspects of research data services, including data analysis and visualization; data copyright and privacy; data curation; and more.[20]

Monographs

- *The Data Librarian's Handbook*[21]
- *Data Management for Researchers: Organize, Maintain and Share Your Data for Research Success*[22]
- *Engaging Researchers with Data Management: The Cookbook*[23]
- *Exploring Research Data Management*[24]

Notes

1. Carol Tenopir et al., "Changes in Data Sharing and Data Reuse Practices and Perceptions among Scientists Worldwide," *PLoS One* 10, no. 8 (2015): 17–20, https://doi.org/10.1371/journal.pone.0134826; Daen Adriaan Ben Smits, and Marta Teperek, "Research Data Management for Master's Students: From Awareness to Action," *Data Science Journal* 19, no. 30 (2020): 2–8, https://doi.org/10.5334/dsj-2020-030; Winner Dominic Chawinga and Sandy Zinn, "Research Data Management in Universities: A Comparative Study from the Perspectives of Librarians and Management," *International Information & Library Review* 53, no. 2 (2021): 99–106, https://doi.org/10.1080/10572317.2020.1793448; Judith E. Pasek and Jennifer Mayer, "Education Needs in Research Data Management for Science-Based Disciplines: Self-Assessment Surveys of Graduate Students and Faculty at Two Public Universities," *Issues in Science and Technology Librarianship*, no. 92 (Fall 2019): 2–15, https://doi.org/10.29173/istl12; Jane Radecki and Rebecca Springer, "Research Data Services in US Higher Education: A Web-Based Inventory," *Ithaka S+R Research Report* (2020): 4–26, https://doi.org/10.18665/sr.314397; Jeremy Kenyon et al., "Help-Seeking Behaviors in Research Data Management," *Issues in Science and Technology Librarianship*, no. 96 (Fall 2020): 5–9, https://doi.org/10.29173/istl2568; Katherine G. Akers and Jennifer Doty, "Disciplinary Differences in Faculty Research Data Management Practices and Perspectives," *International Journal of Digital Curation* 8, no. 2 (2013): 8–16, https://doi.org/10.2218/ijdc.v8i2.263.

2. Smits and Teperk, "Research Data Management for Master's Students," 2–8; Chawinga and Zinn, "Research Data Management in Universities," 99–106; Pasek and Mayer, "Education Needs," 2–15; Radecki and Springer, "Research Data Services," 4–26.

3. Kenyon et al., "Help-Seeking Behaviors," 5–9.

4. Chawinga and Zinn, "Research Data Management in Universities," 99–106; Abigail Goben and Tina Griffin, "In Aggregate: Trends, Needs, and Opportunities from Research Data Management Surveys," *College & Research Libraries* 80, no. 7 (2019): 904–12; Andrew M. Cox, Stephen Pinfield, and Jennifer Smith, "Moving a Brick Building: UK Libraries Coping with Research Data Management as a 'Wicked' Problem," *Journal of Librarianship and Information Science* 48, no. 1 (2016): 11, https://doi.org/10.1177/0961000614533717; Carol Tenopir et al., "Research Data Management Services in Academic Research Libraries and Perceptions of Librarians," *Library & Information Science Research* 36, (2014): 88–89, https://doi.org/10.1016/j.lisr.2013.11.003; Lauren Brochu and Jane Burns, "Librarians and Research Data Management—A Literature Review: Commentary from a Senior Professional and a New Professional Librarian," *New Review of Academic Librarianship* 25, no. 1 (2019): 49, 52, 56, https://doi.org/10.1080/13614533.2018.1501715.

5. Cox, Pinfield, and Smith, "Moving a Brick Building," 11

6. Tenopir et al., "Research Data Management Services," 88–89.

7. Goben and Griffin, "In Aggregate," 904–12; Brochu and Burns, "Librarians and Research Data Management," 49, 52, 56.

8. Radecki and Springer, "Research Data Services," 4–26; Clara Llebot and Hannah Gascho Rempel, "Why Won't They Just Adopt Good Research Data Management Practices? An Exploration of Research Teams and Librarians' Role in Facilitating RDM Adoption," *Journal of Librarianship and Scholarly Communication* 9, General Issue (2021): 20–22, https://doi.org/10.7710/2162-3309.2321; Elise Gowen and John J. Meier, "Research Data Management Services and Strategic Planning in Libraries Today: A Longitudinal Study," *Journal of Librarianship and Scholarly Communication* 8, General Issue (2020): 4, 10, https://doi.org/10.7710/2162-3309.2336; Jamie Wittenberg, Anna Sackmann, and Rick Jaffe, "Situating Expertise in Practice: Domain-Based Data Management Training for Liaison Librarians," *Journal of Academic Librarianship* 44, no. 3 (2018): 323–28, https://doi.org/10.1016/j.acalib.2018.04.004; Megan Sapp Nelson and Abigail Goben, "Engaging Liaison Librarians: Identifying Impact of a Research Data Management Educational Intervention," paper presented at *IFLA WLIC 2018,* Kuala Lumpur, Malaysia (2018): 1–15, http://ifla-test.eprints-hosting.org/id/eprint/2155.

9. Llebot and Rempel, "Why Won't," 20.

10. Gowen and Meier, "Research Data Management Services and Strategic," 4, 10; Wittenberg, Sackmann, and Jaffe, "Situating Expertise," 323–28; Nelson and Goben, "Engaging Liaison Librarians," 1–15.

11. Nelson and Goben, "Engaging Liaison Librarians," 1–15.

12. Carnegie Classification of Institutions of Higher Education, "Doctoral Universities: Very High Research Activity," accessed September 2, 2021, https://carnegieclassifications.iu.edu/.

13. "Penn State's Research Expenditures Top $1 Billion Mark," *Penn State News*, September 24, 2021, https://news.psu.edu/story/632349/2020/09/18/research/penn-states-research-expenditures-top-1-billion-mark.

14. Pennsylvania State Data Center, "Penn State Commonwealth Campuses: Research Activities. Harrisburg," accessed September 24, 2021, https://pasdc.hbg.psu.edu/Services/Penn-State-Harrisburg-Research-Activities.

15. Kristin Briney, Heather Coates, and Abigail Goben, "Foundational Practices of Research Data Management," *Research Ideas and Outcomes* 6 (2020): 1–17, https://doi.org/10.3897/rio.6.e56508.

16. Association of College and Research Libraries, "Scholarly Communication Toolkit: ACRL Workshop: Research Data Management," last updated October 10, 2020, https://acrl.libguides.com/scholcomm/toolkit/RDMWorkshop.

17. University of California Curation Center of the California Digital Library, https://dmptool.org/.

18. The Carpentries, "Data Carpentry," 2018, https://datacarpentry.org/.

19. Jeffrey M. Mortimore and Dawn N. Cannon-Rech, "Making Data Bearable Workshop, Parts 1 and 2," *Data Management Services Instructional Materials* 8 (2019), https://digitalcommons.georgiasouthern.edu/lib-promo-dms-instr/8.

20. Research Data Management Librarian Academy (RDMLA), last updated May 3, 2021, https://rdmla.github.io/.

21. Robin Rice, *The Data Librarian's Handbook* (London: Facet Publishing, 2016).

22. Kristin Briney, *Data Management for Researchers: Organize, Maintain and Share Your Data for Research Success* (Exeter, UK: Pelagic Publishing, 2015).

23. Connie Clare et al., *Engaging Researchers with Data Management: The Cookbook* (Cambridge, UK: Open Book Publishers, 2019).

24. Andrew Cox and Eddy Verbaan, *Exploring Research Data Management* (London: Facet Publishing, 2018).

Bibliography

Akers, Katherine G., and Jennifer Doty. "Disciplinary Differences in Faculty Research Data Management Practices and Perspectives." *International Journal of Digital Curation* 8, no. 2 (2013): 5–26. https://doi.org/10.2218/ijdc.v8i2.263.

Association of College and Research Libraries. "Scholarly Communication Toolkit: ACRL Workshop: Research Data Management." Last updated October 10, 2020. https://acrl.libguides.com/scholcomm/toolkit/RDMWorkshop.

Briney, Kristin. *Data Management for Researchers: Organize, Maintain and Share Your Data for Research Success.* Exeter, UK: Pelagic Publishing, 2015.

Briney, Kristin, Heather Coates, and Abigail Goben. "Foundational Practices of Research Data Management." *Research Ideas and Outcomes* 6 (2020): 1–17. https://doi.org/10.3897/rio.6.e56508.

Brochu, Lauren, and Jane Burns. "Librarians and Research Data Management—A Literature Review: Commentary from a Senior Professional and a New Professional

Librarian." *New Review of Academic Librarianship* 25, no. 1 (2019): 49–58. https://doi.org/10.1080/13614533.2018.1501715.

Carnegie Classification of Institutions of Higher Education. "Doctoral Universities: Very High Research Activity." Accessed September 2, 2021. https://carnegieclassifications.iu.edu/.

The Carpentries. "Data Carpentry." 2018. https://datacarpentry.org/.

Chawinga, Winner Dominic, and Sandy Zinn. "Research Data Management in Universities: A Comparative Study from the Perspectives of Librarians and Management." *International Information & Library Review* 53, no. 2 (2021): 97–111. https://doi.org/10.1080/10572317.2020.1793448.

Clare, Connie, Maria Cruz, Elli Papadopoulou, James Savage, Marta Teperek, Yan Wang, Iza Witkowska, and Joanne Yeomans. *Engaging Researchers with Data Management: The Cookbook*. Cambridge, UK: Open Book Publishers, 2019.

Cox, Andrew, and Eddy Verbaan. *Exploring Research Data* Management. London: Facet Publishing, 2018.

Cox, Andrew M., Stephen Pinfield, and Jennifer Smith. "Moving a Brick Building: UK Libraries Coping with Research Data Management as a 'Wicked' Problem." *Journal of Librarianship and Information Science 48*, no. 1 (2016): 3–17. https://doi.org/10.1177/0961000614533717.

Goben, Abigail, and Tina Griffin. "In Aggregate: Trends, Needs, and Opportunities from Research Data Management Surveys." *College & Research Libraries* 80, no. 7 (2019): 903–24.

Gowen, Elise, and John J. Meier. "Research Data Management Services and Strategic Planning in Libraries Today: A Longitudinal Study." *Journal of Librarianship and Scholarly Communication* 8, General Issue (2020): 1–19. https://doi.org/10.7710/2162-3309.2336.

Kenyon, Jeremy, Ramirose Attebury, Jylisa Doney, Bruce Godfrey, Jessica Martinez, and Marco Seiferle-Valencia. "Help-Seeking Behaviors in Research Data Management." *Issues in Science and Technology Librarianship*, no. 96 (Fall 2020): 1–16. https://doi.org/10.29173/istl2568.

Llebot, Clara, and Hannah Gascho Rempel. "Why Won't They Just Adopt Good Research Data Management Practices? An Exploration of Research Teams and Librarians' Role in Facilitating RDM Adoption." *Journal of Librarianship and Scholarly Communication* 9 (2021): 1–28. https://doi.org/10.7710/2162-3309.2321.

Mortimore, Jeffrey M., and Dawn N. Cannon-Rech. "Making Data Bearable Workshop, Parts 1 and 2." *Data Management Services Instructional Materials* 8 (2019). https://digitalcommons.georgiasouthern.edu/lib-promo-dms-instr/8.

Nelson, Megan Sapp, and Abigail Goben. "Engaging Liaison Librarians: Identifying Impact of a Research Data Management Educational Intervention." Paper presented at *IFLA WLIC 2018,* Kuala Lumpur, Malaysia (2018): 1–15. http://ifla-test.eprints-hosting.org/id/eprint/2155.

Pasek, Judith E., and Jennifer Mayer. "Education Needs in Research Data Management for Science-Based Disciplines: Self-Assessment Surveys of Graduate Students and Faculty at Two Public Universities." *Issues in Science and Technology Librarianship*, no. 92 (Fall 2019): 1–28. https://doi.org/10.29173/istl12.

"Penn State's Research Expenditures Top $1 Billion Mark." *Penn State News*, September 24, 2021. https://news.psu.edu/story/632349/2020/09/18/research/penn-states-research-expenditures-top-1-billion-mark.

Pennsylvania State Data Center. "Penn State Commonwealth Campuses: Research Activities. Harrisburg." Accessed September 24, 2021. https://pasdc.hbg.psu.edu/Services/Penn-State-Harrisburg-Research-Activities.

Radecki, Jane, and Rebecca Springer. "Research Data Services in US Higher Education: A Web-Based Inventory." *Ithaka S+R Research Report*. Last modified November 18, 2020. https://doi.org/10.18665/sr.314397.

Research Data Management Librarian Academy (RDMLA). Last updated May 3, 2021. https://rdmla.github.io/.

Rice, Robin. *The Data Librarian's Handbook*. London: Facet Publishing, 2016.

Smits, Daen Adriaan Ben, and Marta Teperek. "Research Data Management for Master's Students: From Awareness to Action." *Data Science Journal 19*, no. 30 (2020): 1–11. https://doi.org/10.5334/dsj-2020-030.

Tenopir, Carol, Elizabeth D. Dalton, Suzie Allard, Mike Frame, Ivanka Pjesivac, Ben Birch, Danielle Pollock, and Kristina Dorsett. "Changes in Data Sharing and Data Reuse Practices and Perceptions among Scientists Worldwide." *PLoS One* 10, no. 8 (2015): 1–24. https://doi.org/10.1371/journal.pone.0134826.

Tenopir, Carol, Robert J. Sandusky, Suzie Allard, and Ben Birch. "Research Data Management Services in Academic Research Libraries and Perceptions of Librarians." *Library & Information Science Research* 36 (2014): 84–90. https://doi.org/10.1016/j.lisr.2013.11.003.

Wittenberg, Jamie, Anna Sackmann, and Rick Jaffe. "Situating Expertise in Practice: Domain-Based Data Management Training for Liaison Librarians." *Journal of Academic Librarianship* 44, no. 3 (2018): 323–29. https://doi.org/10.1016/j.acalib.2018.04.004.

9

Library-IT Collaboration for Secure Data Collection and Management with REDCap

Meg Eastwood

A T THE UNIVERSITY OF DENVER (DU), the DU Libraries and the Information Technology department (IT@DU) collaboratively manage and support a REDCap instance to help campus researchers manage their research data. REDCap (Research Electronic Data Capture) is a secure, web-based application designed to support data capture for research studies.[1] REDCap is now used at over 5,600 institutions worldwide.[2] This chapter presents a case study of the DU REDCap instance, including details on the collaborative approach to REDCap support. DU is a mid-size institution with approximately 12,000 students evenly divided between undergraduate and graduate programs. While the DU Libraries are fortunate to have a small internal Library Technology Services department that includes two system developers, the demand for their skills far exceeds their supply of time. Collaborating with the central campus Information Technology (IT) at DU not only allows the Libraries to tackle more projects, but in this case, it also means a larger team is available to help guarantee the security of the REDCap server. The DU Libraries provide support for the users of the local REDCap instance, while IT@DU takes care of ongoing server maintenance, system upgrades, and account creation.

This case study details the collaborative effort to support campus research data management services and provides an example of how a collaborative project can persist and evolve after its original creators have left an institution. In addition to describing the basics of REDCap and how it supports better research data management, the case study also looks at workflows, successes, problems, and lessons learned.

Literature Review

Although the REDCap software is not supported by many academic libraries, the software is gaining in popularity with researchers due to its semi-open source nature, extensive survey capabilities, and HIPAA (Health Insurance Portability and Accountability Act) compliant features. This literature review details how some librarians are primarily using REDCap for their own research and then describes how a few libraries with established or expanding data management services are now providing REDCap user support or hosting their own REDCap instances.

Introduction to REDCap

REDCap is a semi-open source software developed at Vanderbilt University and now managed by the REDCap Consortium. Paul A. Harris et al. described how REDCap evolved from a software developed to fill a need at a single institution into a shared platform used by academic, nonprofit, and government institutions across the world.[3] Joining the REDCap Consortium allows members to install their own independent REDCap instance, with the understanding that members will provide their own hardware, system support, and user support; members also agree to not use the software for commercial purposes. While partner institutions cannot contact the REDCap Consortium directly for support and advice, the consortium does maintain the REDCap Community Site, where REDCap administrators from different institutions can ask and answer each other's questions.[4] Researchers who use REDCap are also asked to cite the original paper describing REDCap from 2009,[5] monitoring the citations of this paper allows the REDCap Consortium to track the variety of fields and projects in which REDCap is used.

REDCap was originally created to support medical research and is designed to comply with the HIPAA Privacy Rule.[6] One aspect of HIPAA compliance is the presence of audit trails—each REDCap user has a unique login, and every action of every user on the server is recorded so that there is continual documentation of who viewed each page and who made each change. During project design, users are encouraged to mark variables as identifiers if the field will contain protected health information (PHI), and then at the end of the project, REDCap can export a de-identified data set where fields marked as identifiers are excluded. Marjorie Bowman and Rose Maxwell have outlined further strategies that REDCap users can use to protect PHI.[7]

REDCap users are also attracted to the robust survey functionality. Sina Kianersi et al. have described how to leverage REDCap's features when conducting a randomized controlled trial.[8] REDCap's longitudinal feature is es-

pecially helpful for longer studies that involve multiple data collection events with each participant. One longitudinal study estimated that switching from paper forms to REDCap allowed them to collect 59.7 percent more variables/ data points from participants in a three-hour time period.[9] Another longitudinal study that traditionally phoned participants to administer follow-up surveys found that sending follow-up surveys via REDCap saved both time and money. REDCap was particularly effective for reaching younger audiences who were less likely to respond to a phone call.[10]

Data management tools built into REDCap, such as field validation, help ensure better quality data. Users can specify that data entered in a field must be formatted as an email address, phone number, integer, or other standard data types, and numeric fields can be set to only accept values from within a specified range. REDCap will also generate a human-readable codebook that can be shared with the dataset.

Librarians' Experiences with REDCap

Although library support for REDCap is not common, there are examples of libraries that host their own REDCap instances; libraries that offer REDCap user support in conjunction with an IT-focused organization; and librarians who use REDCap for their own research. This section is not intended to be an exhaustive listing of all library uses of REDCap, but instead, it provides a variety of examples of how the software has been used and supported in library environments.

The Biomedical Library at the University of South Alabama has administered their two REDCap instances since 2015,[11] and their librarian, Andrea Wright, introduced REDCap to the library community in an eTechnology column published in 2016.[12] The Philadelphia College of Osteopathic Medicine (PCOM) Library launched a REDCap instance in 2018, and although several of their early users described REDCap as being "slightly overwhelming," users were generally positive about the system, particularly if they used it to manage longitudinal studies.[13] Further, the Berkeley Library is currently hosting a service trial of REDCap,[14] and the University of Maryland Libraries host a REDCap instance that has not accepted new projects since July 2019.[15]

The University of Washington's Health Sciences Library (UWHSL) has offered REDCap user support since 2016[16] as part of a large collaborative REDCap instance that hosts projects from across the Network of the National Library of Medicine (NNLM) Region 5. When Seattle became one of the first COVID-19 hotspots in the United States, their REDCap instance became a hub for supporting COVID research in their region, and they experienced an almost 70 percent increase in REDCap support tickets (more

than 18,000 tickets in one year).[17] UWHSL librarians and their IT collaborators received the American Medical Colleges' Group on Information Resources (AAMC GIR) Excellence Award for their support of REDCap during the first harrowing year of the COVID-19 pandemic.

Librarians at the New York University Health Sciences Library (NYUHSL) began using REDCap as part of a National Library of Medicine Informationist project, where they helped design and build a large project in the REDCap instance hosted by their medical center's IT department.[18] Once they became familiar with REDCap as end users, NYUHSL librarians began collaborating with their REDCap administrator in IT to offer REDCap training and consultations as part of the library's larger data management support program. NYUHSL also offered a pilot training program to six academic libraries interested in launching data management services, including REDCap. After the training program concluded, three of the six libraries expressed interest in collaborating with their campus IT department to support REDCap.[19] Web searches indicate that at least one of these institutions, the Syracuse University Libraries, is now offering REDCap support.[20]

Librarians are also becoming familiar with REDCap as end users. Emily Partridge conducted an informal survey in 2017 by querying librarians on the MEDLIB-L discussion list about their use of REDCap, and respondents discussed using REDCap to collect data for research studies and/or quality improvement studies; to collect feedback on library instruction sessions; and to collect library-use statistics.[21] Jill Barr-Walker et al. used REDCap to survey health sciences librarians about imposter syndrome,[22] and Susan Steelman and Sheila Thomas used REDCap to explore how health science librarians contribute to Institutional Animal Care and Use Committees.[23] Librarians at the University of Florida Health Science Center Libraries (UFHSCL) started using their institution's REDCap instance in 2010 to track the many complex literature searches they do for patrons—they track which individual/department requested the search; what search strategies and keywords were used; and how many hours it took to complete the search.[24] UFHSCL found REDCap to be intuitive and helpful enough that they expanded use to capturing reference statistics and were considering expanding use to collect instruction statistics as well.[25] At Providence St. Joseph Health, hospital librarians use REDCap both to track library service statistics[26] and to track nursing research projects conducted at their institutions.[27] Finally, using REDCap to track reference statistics inspired the librarians at Children's Healthcare of Atlanta to learn more about REDCap in hopes of being able to partner with their IT department in the future to offer REDCap user support.[28]

The REDCap software promotes good data management practices starting at the beginning of each project and protects the personal information of research

participants. While library support for REDCap is not common yet, these examples of librarians using REDCap and supporting REDCap show the potential for REDCap to become part of a library's research and data support services.

Case Study: REDCap at the University of Denver

REDCap may have been originally created to support medical research, but REDCap users at the University of Denver (DU) come from a wide variety of fields, including psychology, social work, education, engineering, international studies, and more. Users are a mix of faculty, staff, and students; graduate students both host their own research projects and work on their principal investigator's (PI) research projects, while undergraduate students usually only work under a main PI's research project.

DU REDCap users are studying a variety of topics: refugee quality of life, substance abuse prevention, wage equality, educational advocacy, restorative justice techniques, concussions in student athletes, the neural mechanisms of motivation, the impact of childhood stress on adolescent cardiovascular health, the experiences of college students with cystic fibrosis, and more. These project topics have been shared with the permission of each PI, and this section presents a few more details of these DU projects to help illustrate how REDCap facilitates research.

In the Institute for Human-Animal Connection, Dr. Kevin Morris leads a team studying how pet ownership impacts quality of life. Project members use the REDCap Mobile App, which allows for off-line data collection, to collect data during their door-to-door surveys about pet ownership in underserved communities.[29] The Traumatic Brain Injury Screening project is headed by Dr. Kim Gorgens in partnership with leaders from Jail Based Behavioral Health Services. Dr. Gorgens oversees graduate students who use REDCap to "screen justice-involved individuals for brain injury history and collect cognitive and psychosocial data. The students then create clinical and personalized recommendations based on this data to assist the participant in advocating for and receiving the care they need in an effective way."[30] Dr. Kimberly Bender and her team from the Graduate School of Social Work also described how they used REDCap:

> To conduct a longitudinal randomized clinical trial of a mindfulness-based cognitive intervention with young people residing at a youth emergency shelter . . . REDCap helped us track participants over six months, store their contact information, and communicate notes about interviews across our research team members. Tracking a highly-transient group of young people who are often shifting their contact info and location over many months is challenging. REDCap allowed us to track this information consistently and securely.[31]

Dr. Angela Narayan and the PROTECT Lab in the Department of Psychology also detailed how they have used REDCap:

> In our prospective longitudinal study of 270 low-income, diverse pregnant women and expectant fathers. We administer a battery of instruments at three different time periods (pregnancy, early postpartum, late postpartum), and enter data for both mothers and fathers at each time period. We also use RED-Cap to generate scores for standardized instruments, track retention and attrition of study participants, and upload de-identified participant data, as well as to export data for analyses, presentations and publications.[32]

DU REDCap users offer an example of the many fields beyond medical research that have found REDCap to be a useful tool in data management and research support.

History of REDCap at the University of Denver

DU's REDCap instance was originally set up by the former Library Digital Infrastructure and Technology Coordinator from the DU Libraries and Ben Fotovich, the former Senior Research Support Specialist from IT@DU. They signed a REDCap license agreement with the REDCap Consortium in 2013, ran a proof-of-concept pilot in November 2014, and implemented the production instance in April 2015. The IT Research Support Specialist served as the official administrator of the REDCap instance and also handled account creation, server upgrades, and maintenance. The Library Technology Coordinator and Chris Brown, Reference Technology Integration Librarian, handled user support, particularly training new users. The University of Colorado Anschutz Medical School REDCap administrators were instrumental in the success of DU's implementation and offered a training session to help the new DU REDCap team become familiar with the system. The Library Technology Coordinator left DU in March 2017, and Fotovich and Brown provided interim support for a short period. As the new Science and Engineering Librarian, hired in the summer of 2017, I (Meg Eastwood, the author of this chapter) expressed an interest in data management and was introduced to Fotovich to begin full REDCap program development.

Running REDCap as a Science Librarian: A Reflection on Process and Workflows

As REDCap use on campus grew, I needed to scale up our support. Due to her technical background, I recruited Jenelys Cox, our Institutional Repository Manager, to help with REDCap user support along with Brown. Initially,

most users heard about REDCap through word of mouth and emailed the two administrators directly. Our IT partner helped recruit many initial users, both through his position as the research support specialist in IT, where he spent considerable time talking to researchers about their computing and data needs, and as a member of the DU Institutional Review Board, where he could recommend REDCap to projects collecting sensitive data.

REDCap users are prompted to contact a REDCap administrator for email help via links on the DU REDCap homepage and within the REDCap project menu. Initially, these emails went to our IT collaborator's university email address, since he was the official REDCap administrator and the system sends issues requiring administrator approval to this same email address. In Summer 2017, our team created an Outlook365 group email address so all members of the four-person support group could see all incoming REDCap requests. Our IT collaborator handled REDCap administrator tasks, the granting of new user accounts, and server maintenance and upgrades, and the three library employees handled user support questions. As the number of requests grew, we realized that we needed a ticketing system to track user questions and interactions, both to make sure that no questions were missed and also to track support statistics. This led to the question of deciding which ticketing system to use. IT@DU uses the ServiceNow ticketing system,[33] while the Libraries use the LibAnswers ticketing system from Springshare.[34] We spent the 2018–2019 academic year tracking requests in the IT@DU ServiceNow ticketing system and discovered that most email questions were routed to librarians rather than to IT personnel. Librarians preferred using the LibAnswers ticketing system both for financial reasons (ServiceNow charges per user, while LibAnswers charges per queue) and for ease of use—DU Libraries staff are already familiar with the LibAnswers system for reference, making it easy to enter transactions and see statistics. Therefore, in Summer 2019, we set up a tiered support queue where REDCap questions arrive first in a REDCap-specific queue in LibAnswers, and questions that need IT support are then forwarded to an address that creates a ticket in ServiceNow.

Our initial IT collaborator left DU for a new job in early March 2020, just before the arrival of the global COVID-19 pandemic led to hiring freezes and slowdowns. Since then, the position of Research Support Specialist has been absorbed into the overall IT support structure, which has led to some creative rearrangement of REDCap workflows. I have taken over as the official REDCap administrator; requests for new REDCap accounts are routed to a team in the IT Help Center; and server upgrades and maintenance are handled by a member of the IT Systems Engineering team. In addition to the changes in our partnership with IT, I've slowly taken over most of the REDCap support

here at DU over the past three years, as the rest of our Libraries' REDCap team has become busy with other projects.

Evolving REDCap Support Workflows

This section describes my reflections on my processes and workflows for operating effectively as the main REDCap support for the campus. When a new user wants to start using REDCap, I invite them to an initial meeting where we discuss REDCap's capabilities and limitations. IRB approval or exemption is required to begin collecting data in a REDCap project, but new users can experiment with the system and build their projects while waiting for IRB approval. The only potential REDCap users I turn away are users who are looking for a secure place to store image and video files since there are more appropriate systems on campus for securely storing large files. I also use this meeting to help manage user expectations. Since we have limited staff time to devote to REDCap support, I tell users to expect a response to questions within twenty-four to forty-eight hours during weekdays. We also discuss that as a semi-open source software, REDCap requires a lot of self-guided learning. I assist users to the best of my ability and can consult with other REDCap administrators at other institutions for advice, but there is no official REDCap software support line users can call if they need help. I like to point out that REDCap, like any open source software, is the equivalent of a free puppy—once you adopt it, you need to dedicate a lot of time to its care, feeding, and training. Finally, I use this initial meeting to offer basic REDCap training where I demonstrate the basic features of REDCap and highlight the workflows users will need based on their descriptions of their projects.

Once a REDCap project is up and running, I offer basic REDCap training by appointment as they add new researchers to their projects. For more advanced REDCap training, I refer users to a series of REDCap videos from CU Denver,[35] which are widely used and admired by the REDCap community as a whole. As our REDCap user base grows, I increasingly see the need to move away from personalized training sessions to implementing a web-based training such as the one at CU Denver, which would allow me to train more users than I have time to meet with individually.

When I first began supporting REDCap, our IT collaborator Ben Fotovich served as the official REDCap administrator for our instance. This meant that he handled a variety of duties, from monitoring REDCap releases and installing new versions as needed, to approving new projects and changes to existing projects. Ben made me a second official REDCap administrator in Summer 2018 so that I could also approve new projects and project changes

in his absence, and I've handled all such requests since his departure from DU. When I first became a REDCap administrator, the "REDCap U" training for new administrators was taught via in-person workshops either at Vanderbilt University or during the annual REDCapCon, a conference for REDCap administrators and user support specialists.[36] Starting with REDCap version 10.0.0, released on May 29, 2020, a link to "REDCap Administrator Videos" has been added to the administrator's control center within REDCap.[37] The recorded versions of the "REDCap U" trainings make it easier for new REDCap administrators to learn the system at their own pace without needing to travel. The administrator control center also includes links to the REDCap Training Materials repository, where administrators can share training guides they've created for REDCap users.[38] Many institutions that host a REDCap instance also maintain online REDCap help guides, giving new REDCap learners and new REDCap administrators many places to look for help when feeling stuck.

When new versions of REDCap are released, administrators can choose between the Standard Release version, which includes the newest features, or the LTS (Long Term Support) version, which runs a few versions behind the Standard Release version but requires fewer bug fix updates since the new features have been tested more thoroughly by the user base. As a small REDCap support team, DU exclusively uses the LTS version. Our theory is that the larger REDCap instances with full-time support personnel seem better equipped to handle the troubleshooting that comes with adopting the newest Standard Release version. Our IT partner used to monitor the LTS releases and install them as needed. I now spend two to three hours a month reading through the REDCap version change log to decide when we need to install bug fixes or upgrade to a new LTS version, and a member of our IT Systems Engineering team installs these patches and upgrades for me upon request.

As the REDCap administrator, I also approve new projects that are ready to move from Development to Production mode. In Development mode, users can build projects and make as many changes as they want while testing the project and entering test data. To move to Production mode, IRB approval or exemption is required. Once in Production mode, administrator approval is required for changes that might modify or delete data. REDCap is a relational database—data are stored in tables where each row in the table contains a unique identifier,[39] which in REDCap is known as the RecordID. The biggest problem a user can cause while making changes to a project is moving or changing this RecordID field so that it is no longer the first field in the project. Early in my work with REDCap, I encountered one project that, while collecting data in Development mode, accidentally moved this RecordID field

out of this first position, which broke all of the relationships between fields in their project and therefore deleted all of their data. As a novice provider of REDCap user support, it took me several hours to fix the problem. I was able to restore their data by putting the RecordID field back into the first position, but the user in question experienced a great deal of panic during those several hours. This anecdote provides a good example of why projects should only collect data in Production mode. Since then, two projects in Production mode have attempted to move or change the RecordID field, and the system flagged the change for administrator review, so I was able to step in before the data were deleted rather than recover the data after the fact.

Once projects are in Production mode, the REDCap system evaluates potential changes to projects and requires administrator approval for changes that might modify or delete data. Most changes requiring administrator approval stem from users not understanding how REDCap stores data. The two most common issues are 1) changing a variable name and 2) changing the codes associated with an answer choice (see Figure 9.1).

REDCap stores all data for a variable underneath the variable name, so changing or deleting a variable name will delete any data already collected for that variable. This is not intuitive to most users, especially if they make only minor changes to the variable name. For example, in Figure 9.1, if a user decides for stylistic reasons to make the variable name plural, the seemingly minor change from training_pref to training_prefs will delete the existing training_pref variable (and any associated data) and create a new variable named training_prefs. Similarly, for multiple-choice questions, REDCap stores the data for each answer choice under a numeric code. In the Figure 9.1 example, the code "1" represents the answer choice of "In-person meeting." If a user wants to add a new answer choice to the top of this list, the natural
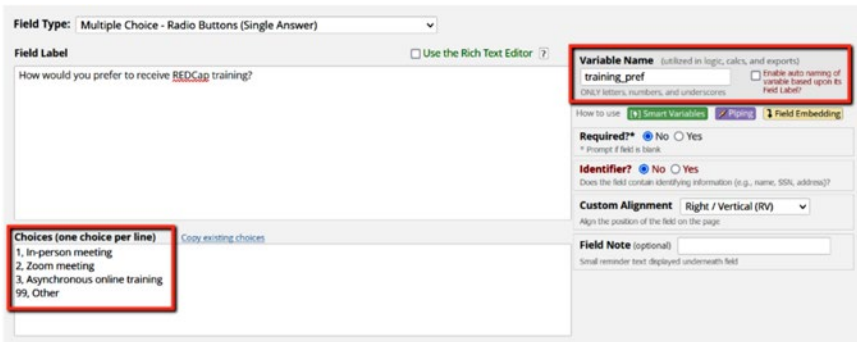
FIGURE 9.1
Understanding How REDCap Stores and Codes Data

inclination seems to be to code this new choice as "1," which pushes the "In-person meeting" answer choice down the list to be coded as "2." However, this changes the meaning of all answers previously recorded as code "2"—the user selected "Zoom meeting," but the data are now labeled as "In-person meeting." This error, also known as a "label mismatch" error, also happens when a user wants to add a new answer choice near the bottom of the list but above the "Other" option. Therefore, it's a best practice to code your "Other" answer choice as "99," which leaves open the possibility of adding many new appropriately coded answer choices.

We also answer many questions about specific features and functions of REDCap. When we were first learning to use and support REDCap, Cox and I would make a test copy of a user's project and work together to find the best solution or work-around to complicated problems. Having another local REDCap user to bounce ideas off can be incredibly helpful when first learning REDCap. While I now troubleshoot problems on my own with occasional reference to other administrators in the REDCap Community Site, the strategy of first copying the project (to ensure that my testing doesn't endanger any data) and then experimenting with multiple potential solutions still serves me well. REDCap has many help pages and video tutorials built into the system, and web searches often reveal answers from REDCap support pages at other institutions. I also use REDCap every time I need to create a survey for any reason, just to gain a bit more experience in the system. As Kevin Read and Fred Willie Zametkin LaPolla suggested, building projects in REDCap is one of the best ways to learn REDCap.[40] I have both a personal account in our REDCap system and an administrator's account because my personal account makes it easy to create and troubleshoot test projects. Newer versions of REDCap make it possible for an administrator to view a project as a particular user, but I still find my personal account to be a helpful tool in my user support toolkit.

When new features with a substantial learning curve are rolled out, such as integrating the Twilio texting service with REDCap so that users can receive survey links via text rather than by email,[41] I test the new feature with one or two projects first before publicizing the new feature to our larger REDCap user group.

Lessons Learned the Hard Way

Occasionally, the learning-as-we go approach can backfire. A user's RED-Cap access is automatically revoked when they leave DU. In addition to this safeguard, our IT collaborator used to delete the REDCap accounts of users

who had left DU, which is a fairly standard practice in the IT world. After I became our REDCap administrator, I began suspending user accounts because it seemed safer than deleting anything as a novice administrator. I later discovered that the REDCap community considers it best practice to suspend user accounts rather than delete them. When a user's account is deleted, their associated projects aren't deleted, but you can no longer search for associated projects by their username. Their projects do still exist on the REDCap server—an administrator can search for them via keyword searches of project names. If, like me, one encounters a situation where a principal investigator needs a project of uncertain name from a staff member's deleted REDCap account, then one must spend hours searching through several million lines of the REDCap activity log to find the missing project. Similarly, if the deleted user left comments on particular data points, those comments will now only exist in the REDCap log and will require systematic searching to recover.

Our new collaboration with IT has generally worked well, and the Libraries' REDCap team is assisted by two separate IT teams, and REDCap upgrades are installed upon request. There is one particular category of question where I miss having a dedicated REDCap expert in IT, though. When users report that their REDCap project is running slowly, the problem can either be caused by the server set-up or the project set-up. IT can monitor the server load, and I can investigate potential project size issues (in particular, projects with over 10,000 fields tend to slow down the user's browser), but I miss having an IT collaborator who has time to troubleshoot these issues together.

REDCap Configuration and Support Statistics

IT@DU runs the university's REDCap instance on two front-end Apache web servers and one MariaDB SQL server that are round-robin load balanced and secured behind two firewalls. As of December 2021, the team is currently running RedHat Enterprise Linux version 7.4 and REDCap version 10.6.26. They use an external authentication method to create REDCap accounts via Microsoft Active Directory. While IT@DU prefers to manage REDCap access centrally as part of a user's overall DU account to allow single sign-on, the REDCap software does allow for the creation of local table-based users.

DU's total number of REDCap users and projects has grown steadily since the REDCap instance launched in 2015; Figure 9.2 shows the increase in users and projects per year. As of December 9, 2021, DU's REDCap server currently hosts 299 total projects (excluding practice projects), of which 189 are in active Production mode. There are currently 535 total REDCap users, of which 235 have been logged in during the past twelve months.
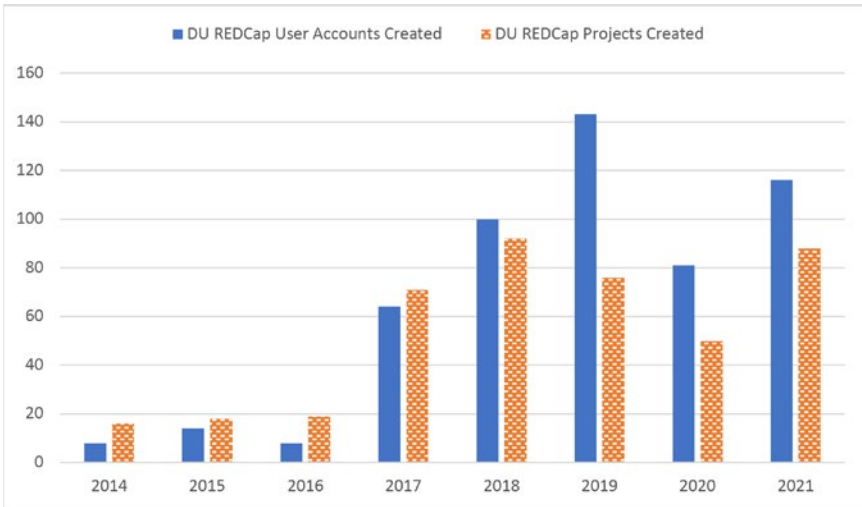
FIGURE 9.2
New DU REDCap Accounts and Projects by Year

Table 9.1 shows recent REDCap support statistics for questions asked via the email ticketing system. In addition to answering questions via email, the Libraries' REDCap support team also offers Zoom or in-person consultation sessions, both to train new REDCap users and for troubleshooting complex REDCap problems that benefit from having the patron and a support person looking at REDCap together. In AY 2019–2020, there were fifteen REDCap consultations, and in AY 2020–2021, there were thirty-seven REDCap consultations (which were all virtual, due to the COVID-19 pandemic). REDCap consultations may be increasing for two reasons. First, users who once conferred with the Research Support Specialist in IT now schedule consultations with the Libraries' team instead. Second, researchers with existing REDCap projects transitioned more of their data collection from an in-person format to an electronic survey format to limit in-person contact during the pandemic.

TABLE 9.1
REDCap Tickets Answered by Each Collaborating Department

	2019–2020 *Academic Year*	*2020–2021* *Academic Year*
Total REDCap tickets answered	238	280
Tickets answered by Library	163 (68%)	219 (78%)
Tickets answered by IT	75 (32%)	61 (22%)

Conclusions

This case study describes how a university library has successfully collaborated with the university's central IT department to provide REDCap access to the university community. Recent successes include a growing number of users from not only the lab sciences, for which REDCap was originally developed, but also from users in the fields of education, child development, and restorative justice. Challenges have included the loss of IT support positions requiring the Libraries to expand from collaborating with one main individual in IT to two unique IT teams. The Libraries' REDCap support team is learning how to scale up from a small user base, where every user received individual in-person training, to accommodate a growing number of users through virtual support and tutorials. By utilizing freely available online training for administrators and building test projects to solve novel REDCap issues encountered by users, DU Libraries faculty and staff have gone from being REDCap novices to REDCap administrators and/or user support specialists, who feel confident they can handle most REDCap questions. None of the current DU REDCap user support team members had REDCap experience before they were recruited to join the support team, but all were able to learn REDCap via self-study and brainstorming with team members. While REDCap support is not yet a common service offered by libraries, collaborating with IT has been the key to allowing library employees to take on REDCap support without needing to learn about web server maintenance, database installations, or MySQL queries. Any library faculty or staff member who feels comfortable exploring new software can become part of REDCap user support, broadening the library's ability to offer data-related services and helping the library stay at the forefront of research support in our increasingly data-driven world.

Notes

1. Paul A. Harris et al., "Research Electronic Data Capture (REDCap)—A Metadata-Driven Methodology and Workflow Process for Providing Translational Research Informatics Support," *Journal of Biomedical Informatics* 42, no. 2 (April 2009): 379, https://doi.org/10.1016/j.jbi.2008.08.010.

2. "Partners," REDCap Consortium, accessed December 5, 2021, https://project redcap.org/ partners/.

3. Paul A. Harris et al., "The REDCap Consortium: Building an International Community of Software Platform Partners," *Journal of Biomedical Informatics* 95 (July 1, 2019): 3, https://doi.org/10.1016/j.jbi.2019.103208.

4. "REDCap Community Site," REDCap Consortium, accessed December 5, 2021, https://projectredcap.org/resources/community/.

5. Harris et al., "Research Electronic Data Capture," 377–81.

6. Office for Civil Rights, "Summary of the HIPAA Privacy Rule," HHS.gov, U.S. Department of Health & Human Services, last modified July 26, 2013, https://www.hhs.gov/hipaa/for-professionals/privacy/laws-regulations/index.html.

7. Marjorie A. Bowman and Rose A. Maxwell, "A Beginner's Guide to Avoiding Protected Health Information (PHI) Issues in Clinical Research – With How-to's in REDCap Data Management Software," *Journal of Biomedical Informatics* 85 (September 1, 2018): 54–55, https://doi.org/10.1016/j.jbi.2018.07.008.

8. Sina Kianersi et al., "Use of Research Electronic Data Capture (REDCap) in a COVID-19 Randomized Controlled Trial: A Practical Example," *BMC Medical Research Methodology* 21, no. 1 (August 21, 2021): 1–9, https://doi.org/10.1186/s12874-021-01362-2.

9. Cauane Blumenberg and Aluisio J. D. Barros, "Electronic Data Collection in Epidemiological Research: The Use of REDCap in the Pelotas Birth Cohorts," *Applied Clinical Informatics* 7, no. 3 (2016): 676–77, https://doi.org/10.4338/ACI-2016-02-RA-0028.

10. Namratha R. Kandula et al., "Mediators of Atherosclerosis in South Asians Living in America: Use of Web-Based Methods for Follow-Up and Collection of Patient-Reported Outcome Measures," *JMIR Research Protocols* 5, no. 2 (June 2016): 4–6, https://doi.org/10.2196/resprot.5448.

11. "REDCap@USA Appropriate Use Guidelines," LibGuides at University of South Alabama Library, accessed September 25, 2021, https://libguides.southalabama.edu/redcap.

12. Andrea Wright, "REDCap: A Tool for the Electronic Capture of Research Data," *Journal of Electronic Resources in Medical Libraries* 13, no. 4 (October 1, 2016): 197–201, https://doi.org/10.1080/15424065.2016.1259026.

13. Jackie Werner et al., "A Feather in Our Research Cap: Implementing REDCap in the Library," Poster presentation, Medical Library Association Annual Meeting, Chicago, IL, May 3–8, 2019, https://works.bepress.com/meghan_dirito/2/.

14. "REDCap at Berkeley: Get Started," LibGuides at Berkeley Library, last modified August 31, 2021, https://guides.lib.berkeley.edu/REDCap/GetStarted.

15. "REDCap for Secure Data Collection," LibGuides at University of Maryland University Libraries, last modified October 11, 2021, https://www.lib.umd.edu/data/management/redcap.

16. Emily F. Partridge and Tania P. Bardyn, "Research Electronic Data Capture (REDCap)," *Journal of the Medical Library Association* 106, no. 1 (January 2018): 143, https://doi.org/10.5195/jmla.2018.319.

17. "HSL, ITHS Awarded AAMC GIR Excellence Award for REDCap Support during COVID-19," University of Washington Health Sciences Library, accessed September 24, 2021, https://hsl.uw.edu/hsl-iths-awarded-aamc-gir-excellence-award-for-redcap-support-during-covid-19/.

18. Kevin Read and Fred Willie Zametkin LaPolla, "A New Hat for Librarians: Providing REDCap Support to Establish the Library as a Central Data Hub," *Jour-*

nal of the Medical Library Association 106, no. 1 (January 2018): 121, https://doi.org/10.5195/jmla.2018.327.

19. Kevin B. Read et al., "A Model for Initiating Research Data Management Services at Academic Libraries," *Journal of the Medical Library Association* 107, no. 3 (July 2019): 439, http://dx.doi.org.du.idm.oclc.org/10.5195/jmla.2019.545.

20. "Research Data Services Introduces REDCap Data Collection Platform," Syracuse University Libraries, November 26, 2018, https://libnews.syr.edu/research-data-services-introduces-redcap-data-collection-platform/.

21. Partridge and Bardyn, "Research Electronic Data Capture (REDCap)," 143.

22. Jill Barr-Walker et al., "Measuring Impostor Phenomenon among Health Sciences Librarians," *Journal of the Medical Library Association* 107, no. 3 (July 2019): 325, http://doi.org/10.5195/jmla.2019.644.

23. Susan C. Steelman and Sheila L. Thomas, "Academic Health Sciences Librarians' Contributions to Institutional Animal Care and Use Committees," *Journal of the Medical Library Association* 102, no. 3 (July 2014): 216, http://doi.org/10.3163/1536-5050.102.3.014.

24. Jennifer A. Lyon et al., "The Use of Research Electronic Data Capture (REDCap) Software to Create a Database of Librarian-Mediated Literature Searches," *Medical Reference Services Quarterly* 33, no. 3 (2014): 242, http://doi.org/10.1080/02763869.2014.925379.

25. Ibid., 250.

26. Carrie Grinstead and Amanda Schwartz, "Multisite Collaboration Using REDCap to Capture Library Data," *Journal of the Medical Library Association* 107, no. 4 (October 2019): 601, http://doi.org/10.5195/jmla.2019.768.

27. Carrie Grinstead et al., "ProjectShare: Partnering with Nursing Professionals to Track Local Research," *Journal of Hospital Librarianship* 18, no. 3 (July 2018): 254–58, https://doi.org/10.1080/15323269.2018.1471919.

28. Kate Daniels and Emily Lawson, "Enhancing Clinical Librarian Work Processes and Communicating Service Impact with REDCap and Data Visualization," *Medical Reference Services Quarterly* 38, no. 2 (April 3, 2019): 195, https://doi.org/10.1080/02763869.2019.1588051.

29. Dr. Kevin Morris, email message to author, September 27, 2021.

30. Hollis Lyman (project staff member), email message to author, September 28, 2021.

31. Dr. Kim Bender, email message to author, September 27, 2001.

32. Dr. Angela Narayan, email message to author, September 28, 2021.

33. "ServiceNow Homepage," ServiceNow, accessed December 9, 2021, https://www.servicenow.com/.

34. "LibAnswers," SpringShare, accessed December 9, 2021, https://springshare.com/libanswers/.

35. "REDCap Videos," UC Denver REDCap Info, last updated August 11, 2021, https://redcapinfo.ucdenver.edu/11-redcap/redcap.html.

36. "RedCapCon," REDCap Consortium, accessed December 9, 2021, https://projectredcap.org/about/redcapcon/.

37. The REDCap software version change log lives on the admin-only REDCap Community Site at "ChangeLog: Standard Release," REDCap Community Site, accessed November 28, 2021, https://community.projectredcap.org/articles/13/change log-standard-release.html.

38. "REDCap Training Materials Repository," REDCap Consortium, accessed December 9, 2021, https://redcap.vanderbilt.edu/plugins/redcap_consortium/train ing_materials.php.

39. While there are many descriptions of relational databases available, this freely available article from Oracle, a leading provider of relational databases for commercial use, provides a nice summary: "What Is a Relational Database (RDBMS)?" Oracle, accessed September 4, 2021, https://www.oracle.com/database/what-is-a-relational -database/.

40. Read and LaPolla, "A New Hat for Librarians," 125.

41. "Twilio Customer Engagement Platform," Twilio, accessed December 9, 2021, https://www.twilio.com/.

Bibliography

Barr-Walker, Jill, Michelle B. Bass, Debra A. Werner, and Liz Kellermeyer. "Measuring Impostor Phenomenon among Health Sciences Librarians." *Journal of the Medical Library Association* 107, no. 3 (July 2019): 323–32. http://dx.doi.org .du.idm.oclc.org/10.5195/jmla.2019.644.

Blumenberg, Cauane, and Aluisio J. D. Barros. "Electronic Data Collection in Epidemiological Research: The Use of REDCap in the Pelotas Birth Cohorts." *Applied Clinical Informatics* 7, no. 3 (2016): 672–81. https://doi.org/10.4338/ACI-2016 -02-RA-0028.

Bowman, Marjorie A., and Rose A. Maxwell. "A Beginner's Guide to Avoiding Protected Health Information (PHI) Issues in Clinical Research—With How-to's in REDCap Data Management Software." *Journal of Biomedical Informatics* 85 (September 1, 2018): 49–55. https://doi.org/10.1016/j.jbi.2018.07.008.

Daniels, Kate, and Emily Lawson. "Enhancing Clinical Librarian Work Processes and Communicating Service Impact with REDCap and Data Visualization." *Medical Reference Services Quarterly* 38, no. 2 (April 3, 2019): 187–96. https://doi.org/10.10 80/02763869.2019.1588051.

Grinstead, Carrie, Sherri Mendelson, Sarah Sumner, Laranda Yarijanian, Holly Matheny, Reese Dillon, Julius Shakari, Julie Russell, and Randy Sanoff. "ProjectShare: Partnering with Nursing Professionals to Track Local Research." *Journal of Hospital Librarianship* 18, no. 3 (July 2018): 254–58. https://doi.org/10.1080/15323269 .2018.1471919.

Grinstead, Carrie, and Amanda Schwartz. "Multisite Collaboration Using REDCap to Capture Library Data." *Journal of the Medical Library Association* 107, no. 4 (October 2019): 601–2. http://dx.doi.org.du.idm.oclc.org/10.5195/jmla.2019.768.

Harris, Paul A., Robert Taylor, Brenda L. Minor, Veida Elliott, Michelle Fernandez, Lindsay O'Neal, Laura McLeod, et al. "The REDCap Consortium: Building an

International Community of Software Platform Partners." *Journal of Biomedical Informatics* 95 (July 2019): 1–10. https://doi.org/10.1016/j.jbi.2019.103208.

Harris, Paul A., Robert Taylor, Robert Thielke, Jonathon Payne, Nathaniel Gonzalez, and Jose G. Conde. "Research Electronic Data Capture (REDCap)—A Metadata-Driven Methodology and Workflow Process for Providing Translational Research Informatics Support." *Journal of Biomedical Informatics* 42, no. 2 (April 1, 2009): 377–81. https://doi.org/10.1016/j.jbi.2008.08.010.

Kandula, Namratha R., Ankita Puri-Taneja, David E. Victorson, Swapna S. Dave, Alka M. Kanaya, and Mark D. Huffman. "Mediators of Atherosclerosis in South Asians Living in America: Use of Web-Based Methods for Follow-Up and Collection of Patient-Reported Outcome Measures." *JMIR Research Protocols* 5, no. 2 (June 2016): 1–8. https://doi.org/10.2196/resprot.5448.

Kianersi, Sina, Maya Luetke, Christina Ludema, Alexander Valenzuela, and Molly Rosenberg. "Use of Research Electronic Data Capture (REDCap) in a COVID-19 Randomized Controlled Trial: A Practical Example." *BMC Medical Research Methodology* 21, no. 1 (August 21, 2021): 1–9. https://doi.org/10.1186/s12874-021-01362-2.

Lyon, Jennifer A., Rolando Garcia-Milian, Hannah F. Norton, and Michele R. Tennant. "The Use of Research Electronic Data Capture (REDCap) Software to Create a Database of Librarian-Mediated Literature Searches." *Medical Reference Services Quarterly* 33, no. 3 (July 1, 2014): 241–52. https://doi.org/10.1080/02763869.2014.925379.

Office for Civil Rights. "Summary of the HIPAA Privacy Rule." HHS.gov. U.S. Department of Health & Human Services. Last modified July 26, 2013. https://www.hhs.gov/hipaa/for-professionals/privacy/laws-regulations/index.html.

Oracle. "What Is a Relational Database (RDBMS)?" Accessed September 4, 2021. https://www.oracle.com/database/what-is-a-relational-database/.

Partridge, Emily F., and Tania P. Bardyn. "Research Electronic Data Capture (REDCap)." *Journal of the Medical Library Association* 106, no. 1 (January 2018): 142–44. https://doi.org/10.5195/jmla.2018.319.

Read, Kevin B., Jessica Koos, Rebekah S. Miller, Cathryn F. Miller, Gesina A. Phillips, Laurel Scheinfeld, and Alisa Surkis. "A Model for Initiating Research Data Management Services at Academic Libraries." *Journal of the Medical Library Association* 107, no. 3 (July 2019): 432–41. http://dx.doi.org.du.idm.oclc.org/10.5195/jmla.2019.545.

Read, Kevin, and Fred Willie Zametkin LaPolla. "A New Hat for Librarians: Providing REDCap Support to Establish the Library as a Central Data Hub." *Journal of the Medical Library Association* 106, no. 1 (January 2018): 120–26. https://doi.org/10.5195/jmla.2018.327.

REDCap Consortium. "REDCap Community Site." Accessed December 5, 2021. https://projectredcap.org/resources/community/.

REDCap Consortium. "Partners." Accessed December 5, 2021. https://projectredcap.org/ partners/.

REDCap Consortium. "REDCap Training Materials Repository." Accessed December 9, 2021. https://redcap.vanderbilt.edu/plugins/redcap_consortium/training_materials.php.

Steelman, Susan C., and Sheila L. Thomas. "Academic Health Sciences Librarians' Contributions to Institutional Animal Care and Use Committees." *Journal of the Medical Library Association* 102, no. 3 (July 2014): 215–19. http://dx.doi.org.du.idm.oclc.org/10.3163/1536-5050.102.3.014.

Syracuse University Libraries. "Research Data Services Introduces REDCap Data Collection Platform." November 26, 2018. https://libnews.syr.edu/research-data-services-introduces-redcap-data-collection-platform/.

University of California Berkeley Library. "REDCap at Berkeley: Get Started." LibGuides at Berkeley Library. Last modified August 31, 2021. https://guides.lib.berkeley.edu/REDCap/GetStarted.

University of Colorado Denver. "REDCap Videos." UC Denver REDCap Info. Last modified August 11, 2021. https://redcapinfo.ucdenver.edu/11-redcap/redcap.html.

University of Maryland Libraries."REDCap for Secure Data Collection." LibGuides at University of Maryland University Libraries. Last modified October 11, 2021. https://www.lib.umd.edu/data/management/redcap.

University of South Alabama Libraries. "REDCap@USA Appropriate Use Guidelines." LibGuides at University of South Alabama. Accessed September 25, 2021. https://libguides.southalabama.edu/redcap.

University of Washington Health Sciences Library. "HSL, ITHS Awarded AAMC GIR Excellence Award for REDCap Support during COVID-19." University of Washington Health Sciences Library. Accessed September 24, 2021. https://hsl.uw.edu/hsl-iths-awarded-aamc-gir-excellence-award-for-redcap-support-during-covid-19/.

Werner, Jackie, Meghan DiRito, P. J. Grier, and Skye Bickett. "A Feather in Our Research Cap: Implementing REDCap in the Library." Poster presented at the Medical Library Association Annual Meeting, Chicago, IL, May 3-8, 2019. https://works.bepress.com/meghan_dirito/2/.

Wright, Andrea. "REDCap: A Tool for the Electronic Capture of Research Data." *Journal of Electronic Resources in Medical Libraries* 13, no. 4 (October 1, 2016): 197–201. https://doi.org/10.1080/15424065.2016.1259026.

III

LIBRARY AS PUBLISHER

OPEN ACCESS SERVICES AND SCHOLARLY PUBLISHING

10

A Consortium Approach to Library Publishing Via Open Journal Systems and the Texas Digital Library

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A CADEMIC PUBLISHING METHODS have shifted dramatically over the last several decades. From print to online access to publication subscription models to open access models for dissemination, a plethora of new publishing options have emerged. With these changes in the publication landscape, academic libraries have begun playing a greater role in advocating for open access and for equitable and sustainable scholarly publishing models. As Robert Engeszer and Cathy Sarli stated, "The fundamental mission of any library is to connect people with information and the goals of [open access] make librarians a natural advocate for promoting greater access to scholarly works."[1] Growing efforts by academic libraries to support open access publishing have brought new challenges, though. Open access initiatives in libraries have costs involved in the development and maintenance of the technical infrastructure, the time and labor of librarians, and the need for staff to develop new areas of expertise for managing these systems. Libraries have addressed these challenges by developing successful open access initiatives through the formation of collaborations and consortia.[2]

The Texas Digital Library (TDL) is a collaborative consortium of libraries that builds capacity among its membership for ensuring equitable access to and preservation of digital content of value to research, instruction, cultural heritage, and institutional memory. The Texas Digital Library Open Journal System (TDL OJS) User Group has become a way for librarians and library staff to empower and support one another in their individual campuses' publishing efforts. The TDL provides support to member institutions for refereed, open access scholarly journals through shared hosting of the Open Journal

System (OJS), a publication software management system produced by the Public Knowledge Project. The TDL OJS User Group was formed in 2019, composed of library liaisons and staff who serve as intermediaries between their institutions' TDL-hosted OJS journals and journal managers.

This chapter provides a case study of approaching open access publishing as a consortium and discusses the function of the TDL OJS User Group, as well as the costs and outcomes associated with a consortium approach to library publishing through the OJS system. The authors also discuss how the user group acts as information intermediaries, not only on individual member campuses but also as a network for libraries to crowdsource knowledge and share expertise among various institutions.

Literature Review

Open access publishing grew and developed in part as a response to the serials crisis. The term "serials crisis" refers to the chronic subscription cost increases of many serial publications, in particular scholarly publications.[3] As subscription prices have grown and libraries can no longer meet the cost of paying for access to scholarly materials, open access publishing has been presented as one possible solution. Rather than asking libraries and other readers to pay for access to a scholarly work, open access provides a model in which the authors or institutions pay to publish works, and the article processing charges (APCs) provide the necessary funding to sustain a publication. There are several models to open access publishing, including academic libraries acting as publishers. Scholarly literature has provided examples of academic libraries acting as publishers, as well as the need for and success of library consortia to meet a range of complex needs involved in publishing. In an article about how library publishing is an answer to the serials crisis, Dave Ghamandi argued that because the scientific journal publishing industry is dominated by a powerful oligopoly, "new ways of organizing are needed to fulfill the public's rightful claim to a democratic form of open access that treats knowledge as a common good."[4] Ghamandi continued his argument that publishing cooperatives situated in academic libraries offer the "best hope of fulfilling the promise of democratic open access" because libraries are "one of the few democratic and multidisciplinary environments still remaining in higher education."[5] Publishing units within libraries are not only an answer to this financial issue—that of the serials crisis—but offer intellectual freedom, as well.

In terms of library consortia, both Lorcan Dempsey and Karla Strieb offered insight on the overall need for consortia as well as the specific elements required for a consortium to be successful.[6] Dempsey explained that consortia

are necessary for a library to meet institutional needs, but libraries need to approach consortia strategically: "It is useful to think about library collaboration as about right-scaling—that is, finding the best level at which to carry out a particular activity."[7]

Not every effort by an academic library merits the need for a consortium, but libraries should consider which efforts would benefit from a collaborative approach across institutions. Strieb explained that while collaborations vary in size, diversity of effort, scope, and even success, one key element of success has been in shared governance and management.[8] Apart from the need for consortia and the elements for successful collaborations, additional literature exists from scholarly societies and other publishers' perspectives on library consortia, but these perspectives are outside of the scope of this chapter.[9]

Given all the pressures on scholarly publishing, academic libraries are moving beyond their role as warehouses and distributors of information to serve as hubs for the entire scholarly communication lifecycle through their repository and publishing services. Consortia of libraries are experimenting with program models that incorporate shared IT resources, the diverse expertise of teams, and a distributed workload to meet their needs for sustainable scholarly communications services.[10] Recent presentations at the Library Publishing Forum have highlighted the use of consortia to meet the challenges associated with library-based publishing initiatives. The Library Publishing Forum is organized by the Library Publishing Coalition (LPC), a community organized in 2014 by the Educopia Institute and over sixty academic libraries as a "community dedicated to advancing the field of library publishing."[11] At the June 2021 Library Publishing Forum, two primary themes emerged concerning the role of consortium in providing library as publisher solutions. First, several presentations outlined the challenges of an individual university library to develop and sustain a publishing platform. Second, there were examples of consortia providing technical infrastructure and information technology systems as a shared resource.

One example at the 2021 Library Publishing Forum was a presentation from LIBSENSE (Libraries Support for Embedding National Research and Education Network [NREN] Services and e-Infrastructure), a library publishing service developed out of the University of Cape Town (UCT) to support NRENs (Research and Education Networks). UCT provides centralized IT support for publishing programs. Since the project launched in 2016, UCT's IT team has developed a tenant model for other members of the consortium, which is currently now supported by WACREN (West and Central African Research and Education Network). The tenant model means that the IT skills necessary to maintain the platform are currently centralized at UCT to make it easier for member institutions to take part while allowing for customization

by member institutions to retain individual branding and editorial control. The role of LIBSENSE is to support consortium members as they envision and develop their publishing programs to populate the platform with content. There are several early adopters and optimism among the other consortium members to grow the open access platform hosted by WACREN.[12]

Another example presented at the 2021 Library Publishing Forum was the Scholars Portal, hosted by the Ontario Council of University Libraries. This consortium provides open access publishing software for twelve academic libraries in Ontario and supports over 150 journals. The Scholars Portal uses the Open Journal Systems (OJS) and Open Monograph Press (OMP) to support publishing by consortium members. Unlike other consortia service models, Scholars Portal provides some publishing services, including preservation of digital objects and assigning Digital Object Identifiers (DOIs). As digital preservation and minting DOIs have costs typically external to the hosting software platform, these services for most consortia are often the responsibility of the individual publishing agent and/or their member institution. Scholars Portal provides technical staff time for infrastructure support and any additional efforts to upgrade and automate processes. Scholars Portal also limits customization of its systems to ensure streamlined system upgrades and to avoid technical debt.[13]

Case Study: The Texas Digital Library Consortium

The Texas Digital Library (TDL) formed in 2005 as a partnership among the state's Association of Research Libraries (ARL) and soon expanded to become a collaborative regional membership consortium dedicated to building a shared socio-technical infrastructure for open access to digital materials of value to research, instruction, and cultural heritage. As of March 2022, twenty-eight member institutions fund the work of the TDL and govern its direction through the TDL Member Board and Governing Board. The TDL provides support to member institutions for refereed, open access scholarly journals through shared hosting of the Open Journal System[14] (OJS), a publication software management system produced by the Public Knowledge Project. TDL's shared infrastructure includes hosted institutional repositories, a research data repository, thesis and dissertation workflow tools, digital preservation storage, and, most importantly, for the purposes of this case study—open access academic journals.

Although the TDL service suite has evolved over the course of the organization's history, support for open access library publishing programs was core to the original vision for the organization, as articulated in the business plan drafted by TDL's founders in 2005. Acknowledging that higher education
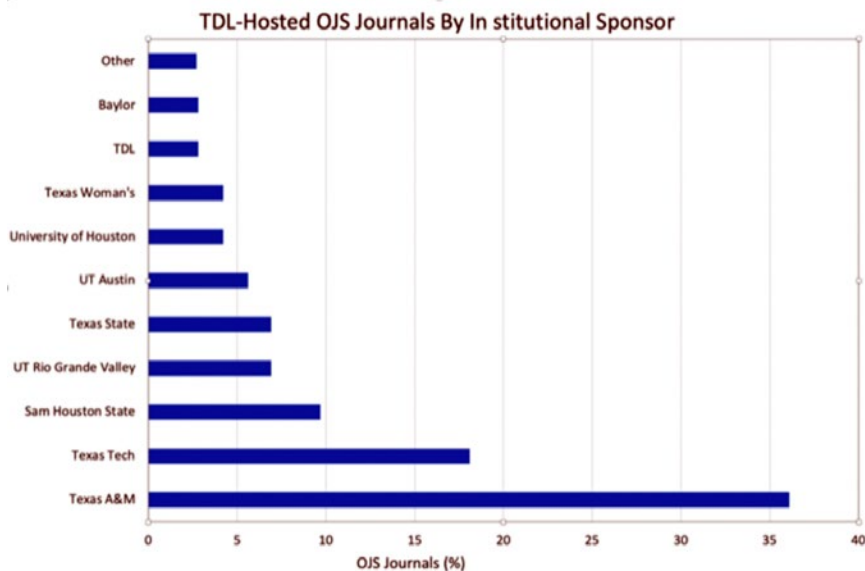
FIGURE 10.1
The percentage of TDL-hosted journals supported by the journal's institutional sponsor as of August 2021.

institutions were "creating open access journals . . . to publish the intellectual products of their faculty, reduce costs, and easily disseminate the results of research and scholarship, (ii)" the founding members envisioned "[a]n open access, peer-reviewed, archival journal service [that would] provide workflow models and secure storage to host scholarly community journals (5)."[15]

Indeed, journal hosting services were among the first offered by the fledgling consortium, with its first hosted journal, the *Journal of Digital Information*, coming to TDL systems in 2007. The consortium hosts more than seventy journals sponsored by twelve different institutions, as seen in Figure 10.1.

TDL's Consortium Publishing Model

The current goal of TDL journal publishing services is to enable affordable and flexible publishing services that produce high-quality open access journals without maintaining a large, centralized publishing staff. To accomplish this, the consortium has evolved a two-fold strategy:

1. Enable member libraries to offer library publishing programs tailored to their institutional capacity and needs through a shared technology infrastructure.
2. Facilitate collaboration across library institutions to support these programs and the open access publishing movement.

As a member-governed consortium, TDL values and relies on collaborative work to reduce the burden of labor for any one institution or individual and to promote collegiality and the sharing of resources. Collaboration is the animating force of the TDL journal hosting service and all services offered through the consortium—a model which uses resources well and efficiently and allows the community to collectively support the service in a more robust way than each institution would be able to on their own.

The TDL's journal publishing program is a collaborative effort of three distributed stakeholder groups that enable any published journal on the platform to function successfully. The groups include TDL staff, library personnel at the member institution acting as a journal service liaison (Member Institution) and the individual journal's editorial and management team (Journal Team). Within this model, TDL provides hosting and technical support for each journal. This includes providing help desk support directly to users of each journal site. Member institutions fund this service through their membership fees, and no hosting costs are passed on to individual journal teams. TDL also provides financial support to PKP, the open-source software home of the Open Journal Systems software, and coordinates the collaborative multi-institutional work of the membership. Additionally, TDL offers optional discounted access to Datacite DOIs through a Datacite group membership that it maintains. As previously noted, digital preservation and minting DOIs have costs typically external to the hosting software platform; these services for most consortia are often the responsibility of the individual publishing agent and/or their member institution. Because TDL offers discounted access to creating DOIs, this assists libraries in cost-saving measures.

The shared resources and infrastructure provided by TDL allow member institutions to develop their own institution-specific library publishing programs. Member institutions designate a library staff or faculty member to serve as an institutional liaison between the TDL and the Journal Teams for journals they sponsor, and they can develop additional publishing services depending on the needs of their stakeholders and their staff capacity. Each member institution uses TDL's journal hosting services differently, and the consortium provides an array of service models attesting to the flexibility of this approach. At one institution, for example, the Member Institution liaison acts as a de facto managing editor for each journal it sponsors, providing hands-on support for journal setup and day-to-day management. In another case, the library has offered retrospective digitization services for select journals with legacy content and support for bulk ingest of the digitized contents. At yet other institutions, the library provides "value-added" services, such as access to DOI minting or member-level ORCID integrations.

The third stakeholder group essential to the operation of any journal is, of course, the journal's editorial and management team. In the TDL model, this team represents the group managing day-to-day tasks of the journal, from setup to editorial workflows and policy development. In the TDL model, this group receives variable levels of support from their library institution for various publishing tasks and capabilities dependent on the library's capacity.

Under the TDL service model for library publishing, all three stakeholder groups must collaborate to support the success of any given journal. Over time, the TDL and its community of members and users have evolved mechanisms for collaboration and mutual support that provide not just the technology infrastructure but also the social infrastructure for helping journals thrive within the library publishing context. To enhance the capabilities of TDL member libraries to support their institutional OA journals, TDL established the Texas Digital Library OJS User Group in 2019.

Formation of the TDL OJS User Group

The TDL OJS User Group was formed to bring together institutional liaisons managing the TDL-hosted OJS service on their individual campuses to address policies and best practices and to formalize a community around shared strategies and improvements. Through monthly meetings, sub-groups, and a listserv that includes TDL staff, journal editors, and others involved in OJS journal publishing, the TDL OJS User Group has become an essential hub for shared knowledge and distributed expertise.

Upon the formation of the TDL OJS User Group, the members worked together to create a charter[16] to outline the mission, organizational structure, and establish guidelines for services, initiatives, and goals. Members identified two primary goals for the user group: (1) utilize monthly meetings to develop knowledge around the OJS platform; and (2) develop and maintain a TDL OJS Guidebook for existing and potential journal managers and editors. The monthly meetings have underscored the diverse expertise of librarians and library staff and have fostered an informal professional development opportunity for everyone to learn about new tools and features in OJS, as well as to share tips and tricks for how to approach policies, outreach, and common questions. The TDL OJS User Group has evolved into a community of practice building on individual expertise and fostering opportunities for working together to provide better service at our individual campuses.

Monthly TDL OJS User Group meetings have developed into forums for shared expertise. In addition to general user group updates and sub-committee work, monthly meeting topics will often be structured discussion

that falls into two categories: (1) hands-on sessions on a particular topic; or (2) broad discussions that may include guest speakers. The 2019–2021 meetings have included hands-on topics such as the following: copyright and licensing; ORCID plug-in; minting DOIs at the journal issue and individual article levels; statistics and reporting; and theming and branding in OJS. Broader topic discussions have included building an editorial team, marketing and outreach, and policy development. Each month, a user group member serves as a discussion lead to either share their own experience on a topic, demonstrate a particular tool, or facilitate bringing in an external speaker. Invited speakers over the last year have included a wide range of expertise from a representative from ORCID for an in-depth demonstration of the OJS plug-in to journal managers responsible for the theming and branding of a successful TDL-hosted OJS journal on their approach to facilitating peer review and submissions. One of the invited guest speakers who discussed journal management sparked a new idea for the consortium, a TDL OJS User Group listserv specifically for journal editors, managers, and others involved in the publication process. The guest speaker stated that as a journal editor and manager, they were often looking at other journals as competitors and, instead, they would find it helpful to have a network of journal managers to reach out to and draw on others' expertise. The TDL OJS Journal Managers listserv now serves as an extension of the consortium model framework, facilitating communication across institutions to all the individuals involved in open access publishing with the TDL-hosted OJS service. TDL member liaisons in the OJS User Group, as well as journal editors, managers, and other staff, now have an additional opportunity to grow the community of shared knowledge and build a network of expertise.

While the work of the TDL OJS User Group is ongoing and evolving, one concrete outcome has been the development of the *Texas Digital Library Guidebook: Setting Up an Open Access Journal.*[17] Originally envisioned as separate guides targeting certain topical areas, such as considerations for prospective journal managers, a how-to manual for starting a new open access journal, and tips and tricks for successfully managing a publication, the TDL OJS User Group instead decided to create one inclusive, but not exhaustive, guidebook that combines all of the concepts. The goal for the *Texas Digital Library Guidebook* version 1 released in Fall 2021 was to offer a starting point for new journal managers and to serve as a reference that can be built upon and improved over time with updates on open access publishing and emerging trends in the field. The next sections provide examples of open access publishing best practices from two member libraries: Texas A&M and Sam Houston State University.

Texas A&M University Libraries

As detailed in Figure 10.1 earlier in the chapter, out of the seventy-five OJS journals supported by TDL, twenty-seven are affiliated with Texas A&M (TAMU). For general OJS questions, only two TAMU librarians, from the Office of Scholarly Communication, contribute minimal time responding to the initial maintenance inquiries from all of the journals, so the list of services provided is not extensive. Still, thanks to the technical support from the consortium, much is accomplished with very little staffing. In addition to this general support, there is also an ongoing prototyping of an open access incubator model tied to professional organization periodicals, including conversion from legacy print volumes performed by Preservation's scanning operation, as well as metadata creation (down to the article level) by the Metadata Management unit. In addition, some web customization has been possible with the help of a cataloging staff member interested in gaining those skills. Two completed projects to date include:

- The Bovine Practitioner: https://journals.tdl.org/bovine/index.php/bovine/
- Proceedings of the Annual Conference (American Association of Bovine Practitioners): https://journals.tdl.org/bovine/index.php/AABP/

The secret to TAMU's OJS success has been to be clear that open access journal publishing services are largely self-service, and the editors must shoulder the bulk of the work. After all, an editor-to-be, in taking on the responsibilities of making a credible academic journal happen, with substantive volumes and issues on a regular basis, must be realistic about the expectations involved in shepherding a journal to advance the scholarship in a field of study. Similarly, a library, in starting down a path for OJS support, also wants that service to succeed, not just for local faculty to benefit but also for the greater good of open access and also must be realistic about expectations.

With over two dozen journals affiliated with Texas A&M that are administered via the TDL OJS platform, the librarians have ample opportunity to both seek and share advice from our librarian colleagues in a shared interest group. The library has journals that have just started and some that have been terminated and archived. Some successful journals use the full available workflow in OJS, from submissions and editing to openly accessible publications. Another successful journal only uses the editorial workflow, with content presentation outside of OJS. For some journals, as mentioned earlier, the library team has digitized issues from the print legacy beginnings continuing to the present with current born-digital issues. While other journals have editors who are models of cooperation, others are completely unresponsive.

Simply put, each journal is different, but for each, the library team must be realistic about the roles that the librarians and journal editors play. At Texas A&M, it is the responsibility of editors and their teams to invest time in learning how to operate the software using the excellent OJS training materials from PKP. Librarians supporting OJS in the Texas A&M Libraries limit their contribution to technical concerns, getting the journals up and running, and maintaining service. To invest too much time and resources would set the journal editors up for failure and overcommit the library's small service team.

Sam Houston State University Libraries

The support for OJS journals is part of the Digital Initiatives area in the Technical Services Department at Sam Houston State University. The library supports six journals with the support of TDL and approximately 25 percent of the time of one librarian. These journals range from student works to well-established journals that decided to go online only and needed help setting up and running the journal.

The TDL OJS user group benefits Sam Houston State University Libraries through the ability to see how other members support their journals. These differences were eye-opening for Sam Houston State University because the program is still relatively young. The library initially believed that extensive contact and support were required and was overly encouraging and involved with journal support. The library was often involved in setup, policy development, training, and answering all types of questions for multiple journals. The library team would send out emails offering to help when an issue had not come out in a while and got overly involved in the success of the journals. While this may not be wrong, library personnel were concerned about maintaining a high level of involvement as the number of journals increased.

Learning that other libraries did not offer this level of support was reassuring. The library team could use a different support model and still help journal editors succeed. While the library still helps with setup and training, it has slowed down its outreach and offers less help to journal editors. Setting boundaries about what the library can offer has helped set expectations for the journal editors. For example, they are responsible for keeping up with their publishing schedule. Although some journal editors still email the library for support and technical questions, others now only contact the library when there is an access problem. Not all journal managers have noticed the support changes, and the librarian has appreciated having a more reasonable workload.

Recommendations

Over the last few years, academic libraries striving to support open access publishing have started adopting programs that provide software support.[18] Although an individual institution can develop local policy structures with financial backing and staff with expertise, it is not a feasible or sustainable model for many academic libraries with limited financial resources or staff. Only providing the software publishing tools is not a sustainable model for libraries either, as it fails to address the overall complexities of managing journals.[19]

Many online publishing systems, such as the Open Journal System, are open-source platforms, and although an option for any academic library or institution to launch a journal, there are numerous considerations to sustaining a successful journal that publishes academic research. Open-source systems, with their numerous benefits and advantages, do not equate to a "free of cost" model. The open-source software needs to be maintained, updated, and improved by the wider community. In this sense, it is equally important for any open access journal, regardless of platform, to be sustained and supported by a larger community involved in its success. It takes a village.

The consortium model presented through the TDL OJS User Group represents both a shared infrastructure through a hosted platform for open access journal publishing and a shared community of support. The model represents a balance between library publishing models of "library as platform" and "library as publisher" as it tries to strike a balance between community needs and available library resources and expertise. This model allows the consortium to reduce costs through shared infrastructure, expand distributed expertise through collaboration, and reduce library staff effort through a distributed workload.

There are, of course, limitations to the model. Early in the collaborations, the consortium members recognized the need for additional policy structure and institutional support to make individual journals successful. A review of all TDL-hosted OA journals clearly showed that journals run by editorial teams that had limited interactions with their library staff or TDL tended to fail. Likewise, those editorial teams that failed to take significant responsibility for the management of the OJS system also had journals that tended to fail. Since TDL has established clear policies and guidelines on the roles and responsibilities of the TDL staff, library staff, and journal teams and has identified the critical services that journal teams require, the consortium has been much more successful at establishing and sustaining TDL-hosted OA journals.

Notes

1. Robert J. Engeszer and Cathy C. Sarli, "Libraries and Open Access Support: New Roles in the Digital Publishing Era," *Missouri Medicine* 111, no. 5 (2014): 404–7.

2. Lorcan Dempsey, "What Collaboration Means to Me: Library Collaboration Is Hard; Effective Collaboration Is Harder," *Collaborative Librarianship* 10, no. 4 (2019): 9; Frederick Nesta, "Consortia from Past to Future," *Library Management* 40, no. 1/2 (2019): 12–22, http://dx.doi.org/10.1108/LM-02-2018-0006; Rosivalda Pereira and Mário Franco, "Library as a Consortium Perspective: A Systematic Literature Review," *Journal of Librarianship and Information Science* 52, no. 4 (2020): 1126–36, https://doi.org/10.1177/0961000620904754.

3. Judith M. Panitch and Sarah Michalak, *The Serials Crisis: A White Paper for the UNC-Chapel Hill Scholarly Communications Convocation*, January 2005, https://ils.unc.edu/courses/2019_fall/inls700_001/Readings/Panitch2005-SerialsCrisis.htm.

4. Dave S. Ghamandi, "Liberation through Cooperation: How Library Publishing Can Save Scholarly Journals from Neoliberalism," *Journal of Librarianship and Scholarly Communication* 6, no. 2 (August 31, 2018), https://doi.org/10.7710/2162-3309.2223.

5. Ibid.

6. Dempsey, "What Collaboration Means to Me"; Karla L. Strieb, "Collaboration: The Master Key to Unlocking Twenty-First-Century Library Collections," in *Shared Collections: Collaborative Stewardship*, ed. Dawn Hale (Chicago, IL: ALA Editions, 2016), https://kb.osu.edu/handle/1811/68031.

7. Dempsey, "What Collaboration Means to Me."

8. Strieb, "Collaboration."

9. Suzanne Cady Stapleton, "A Team Approach: Library Publishing Partnerships with Scholarly Societies," *Journal of Librarianship and Scholarly Communication* 7, no. 1 (November 2019), https://doi.org10.7710/2162-3309.2326.

10. Sarah Kalikman Lippincott, *Library as Publisher: New Models of Scholarly Communication for a New Era* (United States of America: ATG LLC Media, 2017), http://hdl.handle.net/2027/spo.mpub9944345; Pereira and Franco, "Library as a Consortium Perspective."

11. "About Us," Library Publishing Coalition, accessed September 29, 2021, https://librarypublishing.org/about/.

12. Library Publishing Forum, "Interweaving the Golden Threads into a Publishing Service," accessed September 29, 2021, https://perma.cc/K8HB-YCTN.

13. Ibid.

14. "Open Journal Systems," Public Knowledge Project, accessed September 29, 2021, https://pkp.sfu.ca/ojs/.

15. John Leggett, Mark McFarland, and Drew Racine, "The Texas Digital Library: Business Case," July 12, 2006, https://hdl.handle.net/2249.1/156538.

16. "TDL OJS User Group Charter," Open Access Journals Documentation, Texas Digital Library, accessed September 30, 2021, https://texasdigitallibrary.atlassian.net/wiki/spaces/OAJ/pages/2888531969/TDL+OJS+User+Group+Charter.

17. Claire Dolan et al., *Texas Digital Library Guidebook: Setting Up an Open Access Journal Using Open Journal Systems*, September 2021, https://tdl-ir.tdl.org/handle/2249.1/156658.

18. Lippincott, "Library as Publisher."

19. Katherine Skinner et al., "Library-as-Publisher: Capacity Building for the Library Publishing Subfield," *The Journal of Electronic Publishing* 17, no. 2 (2014): 65, https://doi.org/10.3998/3336451.0017.207.

Bibliography

Dempsey, Lorcan. "What Collaboration Means to Me: Library Collaboration Is Hard; Effective Collaboration is Harder." *Collaborative Librarianship* 10, no. 4 (2019).

Dolan, Claire, Susan Elkins, Bruce Herbert, Alexa Hight, David Lowe, Kristi Park, Denyse Rodgers, Laura Waugh, and Justin White. *Texas Digital Library Guidebook: Setting Up an Open Access Journal Using Open Journal Systems*. September 2021. https://tdl-ir.tdl.org/handle/2249.1/156658.

Engeszer, Robert J., and Cathy C. Sarli. "Libraries and Open Access Support: New Roles in the Digital Publishing Era." *Missouri Medicine* 111 (2014):404–7.

Ghamandi, Dave S. 2018. "Liberation through Cooperation: How Library Publishing Can Save Scholarly Journals from Neoliberalism." *Journal of Librarianship and Scholarly Communication* 6, no. 2 (2018). https://doi.org/10.7710/2162-3309.2223.

Leggett, John, Mark McFarland, and Drew Racine. "The Texas Digital Library: Business Case." July 12, 2006. https://hdl.handle.net/2249.1/156538.

Library Publishing Coalition. "About Us." Accessed September 30, 2021. https://librarypublishing.org/about/.

Library Publishing Forum. "Interweaving the Golden Threads into a Publishing Service." Accessed September 29, 2021. https://perma.cc/K8HB-YCTN.

Lippincott, Sarah K. *Library as Publisher: New Models of Scholarly Communication for a New Era*. United States of America: ATG LLC Media, 2017. http://dx.doi.org/10.3998/mpub.9944345.

Nesta, Frederick. "Consortia from Past to Future." *Library Management* 40, no. 1/2 (2019):12–22. https://doi.org/10.1108/LM-02-2018-0006.

Panitch, Judith M., and Sarah Michalak. *The Serials Crisis*: *A White Paper for the UNC-Chapel Hill Scholarly Communications Convocation*. January 2005. https://ils.unc.edu/courses/2019_fall/inls700_001/Readings/Panitch2005-SerialsCrisis.htm.

Pereira, Rosivalda, and Mário Franco. "Library as a Consortium Perspective: A Systematic Literature Review." *Journal of Librarianship and Information Science* 52 (2020):1126–36.

Public Knowledge Project. "Open Journal Systems." Accessed September 29, 2021. https://pkp.sfu.ca/ojs/.

Skinner, Katherine, Sarah Lippincott, Julie Griffin, and Tyler Walters. "Library-as-Publisher: Capacity Building for the Library Publishing Subfield." *Journal of Electronic Publishing* 17, no. 2 (2014). http://dx.doi.org/10.3998/3336451.0017.207.

Stapleton, Suzanne C. "A Team Approach: Library Publishing Partnerships with Scholarly Societies." *Journal of Librarianship and Scholarly Communication* 7 (2019). https://doi.org/10.7710/2162-3309.2326.

Strieb, Karla L. "Collaboration: The Master Key to Unlocking Twenty-First Century Library Collections." In *Shared Collections: Collaborative Stewardship*, edited by D. Hale, 1–10. Chicago, IL: ALA Editions, 2016.

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Publications Oversight Board for Open Access Journals at the University of Memphis

A Case Study

Caitlin Harrington and Kenneth Haggerty

AS TECHNOLOGICAL ADVANCES and financial pressures have changed the landscape of scholarly research and publishing, the library is uniquely positioned to play a new role in scholarly communication: the open access publisher. In Spring 2021, the University of Memphis's (UofM) University Libraries (UL) embarked on a collaborative endeavor to transform their Digital Commons digital repository into a platform to host open access (OA) journals and to develop a Publications Oversight Board (hereafter Board), composed of UL personnel and campus stakeholders, for managing OA journals. As a public institution with a limited resource budget, the UL has been unable to financially support OA publishing on campus by funding article processing charges (APCs) for faculty, negotiating transformative read-and-publish licenses with publishers, or supporting crowdsourced OA efforts. Therefore, when the UL migrated their digital repository to a platform with OA journal-hosting capabilities, there was finally a sustainable opportunity to support OA publishing by hosting OA journals in the UofM Digital Commons.

This chapter presents a case study of how the UL at the UofM collaborated with internal and external stakeholders to develop the Board for OA journals. This project has brought together interested campus colleagues who possess expertise in various areas of scholarly communications, including metadata and licensing, journal editing, OA publishing, and supporting digital repositories in order to expand the UL's mission of facilitating OA scholarly publishing. The authors discuss the primary purpose of the Board and its role in reviewing OA journal proposals to ensure that each submission meets standards set for the platform. The Board's principal concerns

have been the creation of a useable Memorandum of Understanding and other applicable policies, marketing the newly created publishing platform, determining reasonable barriers for entry that encourage participation, and maintaining a high-quality standard.

Literature Review

Open access publishing is a movement that has gained momentum over the last two decades, and as the expected providers of information in academic settings, libraries have become more involved in providing OA resources to students, faculty, and staff. This includes open educational resources (OER), in which many libraries have launched initiatives to promote OER for instructional use.[1] According to Mihoko Hosoi, the Associate Dean for Collection, Research, and Scholarly Communications at Penn State University, the COVID-19 pandemic has "resulted in an increased interest in open access publishing."[2] Academic libraries may demonstrate support of OA publishing through a variety of ways, including efforts that require funding, such as APCs for faculty and crowdsourced OA efforts, and those that support OA through discoverability and metadata, such as activating OA collections in the knowledgebase or discovery layer, or including OA content in LibGuides.[3]

Options for OA Publishing

OA publishing is commonly divided into two models: green and gold. Green OA involves self-archiving, usually in an online subject or institutional repository. Due to the restrictions of publishing agreements, it is common for only pre-printed versions of the text to be archived. Gold OA is characterized by the publishers making the content freely available online without any embargo or subscription requirements. Both green and gold OA publishing models incur additional costs for the author or the author's funding source. Green OA requires that an author have access to a repository, preferably one with sufficient metadata and indexing results on the web.[4] Subject and institutional repositories may be maintained by a professional society or an academic or research institution. While green OA has grown in popularity, access to an institutional repository is far from ubiquitous to researchers at colleges and universities in the United States. The global Directory of Open Access Repositories, OpenDOAR, reports 795 institutional repositories in the United States,[5] while the National Center for Education Statistics reports that there were 2,679 four-year, degree-granting institutions during the 2019–2020 academic year.[6] This comparison of figures indicates that less than

one-third of degree-granting, four-year institutions in the United States offer an institutional repository.

Publishers have developed alternative fundings models to support gold OA publications, most notably APCs and transformative licensing agreements. APCs are a publication charge assigned to an author who desires, or is required by a funding agency, to publish their research OA. Gali Halevi and Samantha Walsh's recent study found that 50 percent of respondents at Icahn School of Medicine at Mount Sinai include the cost of APCs in funding applications, while 16 percent of respondents will pay APCs personally.[7] The transformative license agreement model, also known as a read-and-publish or publish-and-read agreement, is another mechanism by which gold OA publishing is funded. These agreements vary significantly between publishers and subscribing institutions, but their common purpose is for an institution to fund both subscription access to published content (read) and OA publishing costs (publish). Critics of transformative licensing agreements point out that instead of lowering barriers for OA publishing, they simply move the institutional paywall from access to publishing.[8]

Role of the Library in OA Publishing

The library has long served as a resource to access published scholarly content. However, with the technological developments of institutional repositories and open journal publishing platforms, this role has expanded beyond subscriber and into publisher. Presently, libraries are engaging in a variety of OA publishing activities, some of which are outside the traditional journal and monograph publishing methods. Hosting digital content online has provided opportunities for libraries to digitize and publish their own collections and archival documents, along with OER, datasets, digital humanities projects, and more as scholarly communications continue to evolve.[9]

While there is a spectrum of publishing services that a library may offer, online hosting is a common core service. Expanded options to improve discoverability include assigning a digital object identifier (DOI) to all hosted content or registering an international standard serial number (ISSN) for published journal titles.[10] Library publishing services may take a more hands-off approach to publishing than the traditional university press. For librarians and information experts, metadata and discoverability have a richer and more well-developed history in libraries than editorial considerations and workflows.

Challenges with OA Publishing

With the increased interest in OA, libraries face many challenges in meeting the new demand for OA resources. A study by Katie Wilson, Cameron Neylon,

Lucy Montgomery, and Chun-Kai Huang found that although library websites provide information on access policies, these policies need to be extended to include OA resources because outdated policies can result in differences between an institution's OA policies and the library's policies.[11] Rachel Scott, Caitlin Harrington, and Ana Dubnjakovic's 2019 study found that, overwhelmingly, academic libraries are not incorporating OA into library policies at the department level, including collection development and cataloging.[12]

Lack of sufficient indexing and metadata also impacts the discoverability of OA journals. In order to reach the widest possible readership, scholarly journals need to be indexed by leading databases in the journal's field. This can present challenges for library-published OA journals because their non-traditional publishing practices may subject them to bias. Charlotte Roh and Vanessa Gabler highlight this bias in their difficulty with getting the peer-reviewed journal *Central Asian Journal of Global Partners*, published OA by the University of Pittsburgh, indexed in Scopus.[13]

Other challenges documented include library technologies that are not able to "cater [to] the complexities of OA, particularly hybrid OA where title-level metadata about OA status do not necessarily match article-level metadata."[14] Daniel Tracy's study explored the challenge of readers' experiences and preferences in library publishing and found that much of the data about readers' user experience and behaviors goes unused.[15] This is further complicated by the limited control libraries have over third-party publishing software, which prioritizes convenience over customization. Other obstacles noted in the literature include creating a successful library publishing program, which introduces the need to develop intellectual property policies and, in many cases, a business model. Many of these complications were outlined in Lauren Collister, Timothy Deliyannides, and Sharon Dyas-Correia's article on the library as publisher, which details a half-day preconference on the benefits of library publishing programs.[16] Tina Neville and Camielle Crampsie also described other barriers, such as developing a system for OA journal selection.[17]

Need for Policy Development

Because OA publishing is still a new venture for many libraries, the development of policies can go a long way to creating a sustainable and successful publication. Jenny Hoops and Sarah Hare shared library publishing resources that early adopters created to aid those just getting into publishing.[18] These examples include editorial checklists for library personnel that are new to the inner workings of scholarly publishing, along with clearly defined responsibilities so that the publishing efforts may continue after the creators

have moved on. In fact, although many libraries have experienced success in OA journal publishing, institutions lack the robust policy development and promotion needed to appropriately address concerns with OA. For example, Christine Fruin and Shan Sutton found that "librarians must be able to succinctly articulate the policy's benefits, confidently address any questions raised by faculty, and engage in nuanced discussion about the policy and its ramifications."[19] This need to develop policies that recognize and address the potential challenges and opportunities of OA led the UL at the UofM to create the Publications Oversight Board before beginning the process of OA journal publishing using Digital Commons.

Case Study: University of Memphis

The UofM is a public university, with an R1 Carnegie Classification of high research activity, located in the mid-sized city of Memphis, Tenessee. The UofM reports a Fall 2021 faculty of 1,027 and enrollment of 21,622 students. The UL at the UofM is comprised of the main campus library, Ned R. Mc-Wherter Library, and three branch libraries. The UL has approximately sixty-eight employees and an annual resource budget of three million dollars. As of December 2021, the Digital Commons is managed by one full-time faculty member, with input and support from the Publications Oversight Board.

Although the UL at the UofM has played a significant role in identifying and promoting OER both before and during the pandemic, the library has historically been unable to financially support more robust OA publishing efforts. There have been occasional funds contributed to crowdsourcing efforts, but otherwise, a flat resource budget has made it impossible to provide ongoing financial support toward OA publishing. The UL also provides research guides and other access to existing OA journals and content but has run into technical issues incorporating OA resources into the library catalog. For example, OA collections that are managed by a third-party vendor, such as EBSCO, may not be maintained with the same diligence as subscription content and are frequently reported for inaccuracy and access errors.

The Digital Commons at the UofM was created in early 2021 as a platform to host the UL's digital archives and the electronic theses and dissertations of UofM graduates, to publish OA journals, and, eventually, to function as an institutional repository for faculty scholarship. As of November 2021, the UofM offers no options for green OA publishing because there is not an institutional repository where faculty and researchers can deposit their scholarly work. Although there are plans for the Digital Commons to host UofM's institutional repository, thereby providing an option for green OA publishing,

the functionality and infrastructure have yet to be developed. Although the UL previously had a digital repository for over a decade, its scope was limited to hosting digitized materials from the UL's Special Collections and other local archival partners.

The UL began experimenting with institutional OA publishing in 2019 when approached by a faculty member in the Music department who was seeking to revive an OA journal they were involved with called the *Journal of Arts Entrepreneurship Education*. After an evaluation of journal management systems, the UL initially contracted with PKP Publishing Services to host this journal. Because the existing digital repository was no longer meeting the growing needs of the UL, and the labor of maintaining the digital repository and journal hosting platform separately was inconvenient, the UL eventually sought a new platform for both hosting the digital archive and publishing faculty OA journals. After searching for a suitable replacement, the UL decided to partner with bepress, an "institutional repository software [that] features professional-grade publishing and faculty profiles tools [to] openly publish, manage and showcase the full spectrum of your institution's research, scholarship and expertise."[20] The functionality of bepress has allowed the UL to develop a new digital repository that is not just a platform for digitized special collections but is an expanded Digital Commons with publishing capabilities.

Publications Oversight Board

The Board was created by the UL's Executive Director and the Digital Initiatives Coordinator in Spring 2021. As the sole person responsible for the administration and maintenance of the Digital Commons, the Digital Initiatives Coordinator chairs the Board, with the UL Executive Director serving in an ongoing advising capacity. To create a diverse Board, the Digital Initiatives Coordinator and Executive Director sought to balance the representation of UL personnel with interested and knowledgeable campus colleagues.

In its current formation, the Board is composed of eight individuals: six UL personnel, one faculty member in the Music department, and the Executive Director of the Benjamin L. Hooks Institute, an interdisciplinary center promoting civil rights and social change at the UofM.[21] The members were selected based on previous experiences and knowledge of OA publishing. For example, many members either serve as an editor-in-chief or are on the editorial board for an OA journal. Also, the Digital Initiatives Coordinator and UL Executive Director sought to ensure that a variety of departments from the UL had representation on the Board. Thus, the Music Library, Health Sciences Library, Information Access Services, Special Collections,

Administration Department, and Research & Instructional Services are all represented on the Board. As outlined by the UL Executive Director, the Board's purpose is the following:

> to review and approve/reject the applications of potential editors of scholarly publications to ensure that the proposal addresses appropriate managerial and administrative considerations, identifies an editorial panel to ensure peer review, demonstrates the likelihood of author and reader support, reveals the presence of a management team to assure continuity, identifies commitment from administrative leadership, and makes the case for professional sustainability, among other factors.[22]

Within the purview of UL but outside of the Board's responsibility are any functions related to UL's archival or Special Collections' content or electronic theses and dissertations. Once a journal is selected for inclusion, the editorial team of the individual journal is solely responsible for journal content.

Purpose Statement and Criteria

As the first task, the Board needed to create documentation to define an official purpose statement and to construct criteria governing acceptance for OA journals published in Digital Commons. After the initial draft was created by the UL Executive Director, the board individually reviewed the documentation during the summer of 2021. In August 2021, the Board reconvened to discuss potential changes, additions, and clarifications that needed to be made to the draft. Suggested changes were to remove the requirement for journals to be peer-reviewed to be accepted into the Digital Commons. Leading to the decision was the inclination to support a variety of journals, including potential student organization publications and conference proceedings. Furthermore, even journals that publish peer review typically include a mix of editor-reviewed content as well. Journal applicants are encouraged to discuss peer review and/or any alternative practices they would employ for quality control. While peer review remains the standard for the UofM Digital Commons, exceptions will be made as appropriate.

The Board also suggested adding more details on what the UL and the bepress platform would provide in terms of logistical and technical support. In addition, they requested clarification on the minimum acceptable role of UofM faculty in terms of the role they served within the journal itself and their title with the UofM. For example, could adjunct professors apply for a journal to be included in the Digital Commons? Also, could faculty members who served on a journal board but were not an editor of the journal apply on

behalf of the journal? After much debate, the Board decided to review each journal on a case-by-case basis but give preference to full-time faculty members and faculty who serve in an editorial leadership position for the proposed journal. To support analyzing each journal on a case-by-case basis, a journal proposal form was created so the Board could examine each journal's criteria.

The journal proposal form includes the following information: the contact information of the UofM faculty, staff, or student submitting the form; journal information such as the title; the current owner of the journal; the journal editors and board members; and several questions to help the Board determine if the journal is suitable for the Digital Commons. For example, what is the purpose of the journal, and how would the Digital Commons help fulfill the journals objectives? Also, what types of content will be published in the proposed journal (e.g., research, essays, reviews, etc.)? Additional information requested includes whether the journal is a new or existing journal, if the journal uses Creative Commons licenses, and the history of the journal, such as how it was created and the format/amount/availability of back content. After each journal proposal form is submitted, the Board reviews the proposal and accepts or rejects it based on the journal producing "academically grounded, discipline-focused, relevant, and contemporaneous scholarship" that represents "prevailing standards of research and writing relevant to the discipline."

Memorandum of Understanding

Once accepted to be included in the Digital Commons, the journal representative is required to complete a Memorandum of Understanding (MOU). The US Department of Homeland Security defines an MOU as a "legal document describing a bilateral or multilateral agreement between/among parties. It constitutes a legally binding contract when properly executed (i.e., signed) by all the parties."[23] Using sample text and examples provided by bepress and the draft of the purpose statement and criteria, the Digital Initiatives Coordinator created a draft MOU to be shared with the UofM legal counsel. The MOU is composed of four sections: prologue, grant of rights, duties, and miscellaneous.

In Section 1 (prologue), the purpose of the document and associated parties were identified. Section 1 contains the following elements:

- Purpose statement of why the University Libraries, University of Memphis is making web hosting services available to journals associated with the University of Memphis community.

- Identification of the Digital Commons as the platform for Open Access Journal Publishing
- Statement identifying the purpose of the POB
- Identification of Publisher and Journal

While drafting Section 1 was straightforward, complications and questions arose when drafting Sections 2 through 4. In Section 2, the sponsor or publisher must declare who holds or will hold copyright over the journal. Initially, the MOU provided three options for the sponsor or publisher to declare copyright. However, after a discussion among Board members, it was decided to simplify the process and eliminate the third option, which was granting the UL ownership of the e-journal. Thus, the final version of the MOU provides two options:

- The publisher retains ownership with "full authority to enter into" the agreement but agrees to assign the University of Memphis a non-exclusive right "to distribute and publicly display the contents of this publication on the University of Memphis Digital Commons."
- The University of Memphis will hold copyright over the e-journal including, but not limited to, "title, digital files, and all rights, if any, to content or articles granted by authors." This option would be selected if the journal does not have any existing owner or publisher.

The expectation is most journals will already have a publisher and decide to retain copyright but allow the UofM the right to distribute and display the journal in the Digital Commons (Option 1). However, in the rare instance that the journal does not have an existing owner, publisher, or sponsor, Option 2 allows the journal editor to designate the UofM as the owner.

In Section 3, the duties of the UL, the Board, and the Sponsor/Publisher are outlined. The responsibilities of the UL include:

- Making journal content available through the Digital Commons free of charge,
- Providing editors 24/7 Digital Commons access to manage journal content, and
- Advising editors on improving and maximizing the visibility of the journal.

It was decided that the UL would primarily serve as a software technical support provider only since the libraries will not play a role in making content

decisions pertaining to the individual journals themselves. The same is true for the Board after journals are approved for publication. The responsibilities of the Board include:

- Reviewing and approving journals for publication and advising journal editors on the applicable standards and procedures,
- Communicating publication recommendations to the Provost, and
- Notifying the publisher of a written notice if hosting services are discontinued.

After journals are approved to be included in the Digital Commons, most of the work then falls on the publisher of the journal to create and maintain the journal. These responsibilities include:

- Determining the content of the journal, obtaining peer reviews when appropriate, appointing editorial boards, and formulating policies for the journal;
- Obtaining author agreements;
- Participating fully in designing the journal interface, creating a style guide, and training editors how to use the Digital Commons; and
- Providing the Board with a written notice six months prior to discontinuing the agreement with the understanding that the Digital Commons may continue to host journal content during the time period of the agreement.

Originally, the final section of the MOU was solely for the authorized signatures of the publisher representative, the procurement representation, and the UL, after which each party has ninety days to provide written notice of its intent to terminate. However, after creating the initial MOU, the draft was sent to the UofM legal counsel for review and final approval. As expected, legal counsel's primary suggestions revolved around protecting the University from any potential claims, damages, penalties, and fees that might arise from the agreement. Legal counsel suggested adding a section to outline miscellaneous items along with authorized signatures, which included force majeure, no agency, insurance claims, non-exclusivity, and compliance with laws. Force majeure states that the obligations can be voided "in the event of an occurrence beyond the parties' control that could not be avoided by the exercise of due care, including, but not limited to, acts of God, riots, wars, epidemics or pandemics, declaration of a federal, state or local state of emergency, or any other similar occurrence or cause." The insurance and claims sub-section states that the "State of Tennessee is self-insured and does not carry or maintain commercial general liability insurance." The no-agency

and non-exclusivity sub-sections were about clarifying that the agreement is in no way to be interpreted as creating an agency or an exclusive relationship between the parties. Legal counsel also recommended that statements be included that declare that each party "shall comply with applicable laws."

The creation of the MOU has demonstrated that OA journal publishing needs to be a collaborative effort to successfully produce documentation to protect all involved parties. By including librarians, potential journal publishers/sponsors, and the UofM Legal Counsel in the process of creating an MOU, the interests of each party were represented.

Digital Commons Journal Setup Form

After acceptance of the proposal and signing the MOU, the final document the editor or sponsor must complete is the Digital Commons Journal Setup form.[24] This form helps bepress create the proper formatting, workflow, and page design specific for each journal. Journal editors have the option of choosing a design that matches the Digital Commons, a design that is more unique with a customized banner, or a design that is completely independent from the look and feel of the Digital Commons. Journal editors/sponsors are also able to include a logo, images, and cover art specific to the journal. After journals are approved by the Board, the initial setup of the journals requires back-end configuration by the bepress technical support. However, after the initial setup of design and formatting is set, responsibility of the journal falls primarily on the editorial board and reviewers of the journals themselves.

Moving Forward with OA Publishing

In Fall 2021, before the UL's OA journal publishing platform had formally launched and begun advertising its services, the Board had five titles under consideration. The *Journal of Arts Entrepreneurship Education* will become the flagship title of the Digital Commons, which the UL began hosting on the PKP Publishing Services platform in 2019. Additional titles under consideration by the Board have come from UofM faculty that serve in a management or editorial capacity for an OA journal that has been stagnant, has lost its hosting platform, is newly formed, or is under new leadership. Two of the potential journals are newly created by professors at the UofM and are in the early stages of development and publication: *Findings in Sport, Hospitality, Entertainment, and Event Management* and an unnamed/unhosted journal that will focus on "technology-integration lesson plans for teacher educators." Other potential journals are standing titles looking for a change/upgrade in hosting platform: the *West Tennessee Historical Society Publications* and the *Benjamin Hooks Policy Papers*.

Marketing and Outreach

The current roster of OA journals under the Board's consideration was all the result of individual inquiries by interested faculty members. The ongoing success of the Digital Common's OA journal publishing will require regular title additions to the platform. Marketing efforts by the Board were postponed until the MOU was approved, but in the meantime, the Board was considering targeted marketing efforts. Mass campus communication is limited, which prohibits the Board from contacting all UofM faculty and staff via a general email, so marketing of the Digital Commons OA journals publishing will require collaboration with various campus entities. The UofM publishes a weekly marketing newsletter, "This Week," which is distributed to all students, faculty, and staff, where the Board plans to introduce the Digital Commons. The authors anticipate that UofM's Division of Research & Innovation will be interested collaborators due to their extensive involvement in campus research and scholarship.

Ongoing Maintenance

Ongoing maintenance is a matter of significant consideration for the long-term success of the Digital Commons OA Journal Publishing. With approval of the MOU secured, the Board will reconvene to create reasonable requirements that OA journal editorial boards must meet for the UofM's Digital Commons to continue publishing their journal. Current considerations for sustaining a journal include:

- Regularity of the publishing schedule;
- Editorial affiliation with UofM; and
- Continuity of editorial management.

As the only Board member with essential job duties related to the Digital Commons, the Digital Initiatives Coordinator will serve as the primary individual responsible for the ongoing maintenance of the Digital Commons' OA journals publishing. Other members of the Board will have the opportunity to rotate off the Board at a regular interval of two years.

Faculty Attitudes Toward OA Publishing

As the first effort by the UL and the UofM to publish OA journals, the success of this project in the future will depend on the interest and participation from UofM faculty. The attitude of UofM faculty toward OA publishing will

be explored by the authors and other members of the Board moving forward. For scholars, OA publishing comes with the association of high cost, usually due to APCs. Those UofM faculty working in editorial or management capacities of OA journals already possess a supportive or approving attitude toward OA publishing, and are therefore a good group to work with for starting collaborative projects. As the profile of the Digital Commons expands to include an IR, the UL must develop its approach to encourage archiving practices among faculty. At this time, the UofM does not have an endorsement or requirement around archiving faculty scholarship, and any steps toward such a measure will require widespread buy-in from UofM faculty and administration.

Conclusion

Still in its early stages of development, the UofM OA journal publishing platform's success will depend on ongoing collaboration with campus stakeholders. The ability to borrow existing language from a local software provider for the MOU, along with effective communication with the University's legal services, were crucial for the MOU's timely approval. The authors recommend that libraries seeking to develop their own OA journal publishing workflow recruit faculty and campus stakeholders that are known supporters of OA publishing.

Like many academic libraries, the UL faces a flat budget and staff shortages, so the creation of the Board will be essential for the long-term sustainability of publishing OA journals. With only one person responsible for managing the Digital Commons, it would be impossible to maintain high-quality OA journal titles while also tending to the other components of the Digital Commons. To ensure a sustainable OA publishing program, the authors suggest that responsibilities be well defined for both the dedicated library faculty or staff, along with the roles for the oversight board, such as the Board at the UofM.

As libraries continue to develop their own publishing practices, they may depart drastically from the traditional scholarly models that have dominated the field. The expansion of OA library publishing has the potential to address information inequities and perhaps mitigate some publishing practices that have become increasingly unsustainable for library budgets. Library publishing ties the researcher more closely to the library for the entire lifecycle of their project—from early research stages to the published work. For library publishing to affect permanent disruption to the traditional publishing model, libraries will need to publish sustainable and high-quality OA for the researchers they serve and beyond.

Notes

1. Julia I. Hess, Alejandra J. Nann, and Kelly E. Riddle, "Navigating OER: The Library's Role in Bringing OER to Campus," *The Serials Librarian* 70, nos. 1–4 (June 2016): 128–34, https://doi.org/10.1080/0361526X.2016.1153326.

2. Mihoko Hosoi, "Negotiating Open Access Journal Agreements: An Academic Library Case Study," *Pennsylvania Libraries: Research & Practice* 9, no. 1 (Spring 2021): 49–61, https://doi.org/10.5195/palrap.2021.252.

3. Adelia Grabowsky, "The Impact of Open Access on Collection Management," *Virginia Libraries* 61, no. 1 (May 2015): 17–22, http://doi.org/10.21061/valib.v61i1.1325.

4. Clifford A. Lynch, "Institutional Repositories: Essential Infrastructure for Scholarship in the Digital Age," *portal: Libraries and the Academy* 3, no. 2 (2003): 327–36, https://doi.org/10.1353/pla.2003.0039.

5. "Directory," OpenDOAR, accessed December 14, 2021, https://v2.sherpa.ac.uk/opendoar/.

6. "Digest of Education Statistics," National Center for Education Statistics, accessed December 14, 2021, https://nces.ed.gov/programs/digest/d20/tables/dt20_317.10.asp.

7. Gali Halevi and Samantha Walsh, "Faculty Attitudes Towards Article Processing Charges for Open Access Articles," *Publishing Research Quarterly* 37 (September 2021): 384–98, https://doi.org/10.1007/s12109-021-09820-x.

8. Ashley Farley, Allison Langham-Putrow, Elisabeth Shook, Leila Sterman, and Megan Wacha, "Transformative Agreements: Six Myths, Busted: Lessons Learned," *College & Research Libraries News* 82, no. 7 (July 2021): 298–301, https://crln.acrl.org/index.php/crlnews/article/view/25032/32927.

9. David Gwynn, Tiffany Henry, and Anna R. Craft, "Collection Creation as Collection Management: Libraries as Publishers and Implications for Collection Development," *Collection Management* 44, nos. 2–4 (2019): 206–20, https://doi.org/10.1080/01462679.2019.1579012.

10. Melanie Schlosser, "Building Capacity for Academy-Owned Publishing through the Library Publishing Coalition," *Library Trends* 67, no. 2 (Fall 2018): 359–75, https://doi.org/10.1353/lib.2018.0041.

11. Katie Wilson, Cameron Neylon, Lucy Montgomery, and Chun-Kai (Karl) Huang, "Access to Academic Libraries: An Indicator of Openness?" *Information Research* 24, no. 1 (March 2019): http://www.informationr.net/ir/24-1/paper809.html.

12. Rachel Elizabeth Scott, Caitlin Harrington, and Ana Dubnjakovic, "Exploring Open Access Practices, Attitudes, and Policies in Academic Libraries," *portal: Libraries and the Academy* 21, no. 2 (2021): 365–88, https://doi.org/10.1353/pla.2021.0020.

13. Charlotte Roh and Vanessa Gabler, "Systemic Barriers and Allyship in Library Publishing: A Case Study Reminder That No One Is Safe from Racism," *College & Research Libraries News* 81, no. 3 (March 2020): 141–44, https://crln.acrl.org/index.php/crlnews/article/view/24321/32136.

14. Elizabeth Finlay, "Library Provision of Intellectual Access to Open Access Journal Articles," *Serials Librarian* 77, nos. 1–2 (2019): 6–14, https://doi.org/10.1080 /0361526X.2019.1628161.

15. Daniel G. Tracy, "Libraries as Content Producers: How Library Publishing Services Address the Reading Experience," *College & Research Libraries* 78, no. 2 (February 2017): 219–40, https://doi.org/10.5860/crl.78.2.219.

16. Lauren B. Collister, Timothy S. Deliyannides, and Sharon Dyas-Correia, "The Library as Publisher," *Serials Librarian* 66, nos. 1–4 (2014): 20–29, https://doi.org/10 .1080/0361526X.2014.879524.

17. Tina Neville and Camielle Crampsie, "From Journal Selection to Open Access: Practices Among Academic Librarian Scholars," *portal: Libraries and the Academy* 19, no. 4 (October 2019): 591–613, https://doi.org/10.1353/pla.2019.0037.

18. Jenny Hoops and Sarah Hare, "Library Publisher Resources: Making Publishing Approachable, Sustainable, and Values-Driven," *College & Research Libraries News* 80, no. 2 (February 2019): 74–77, https://crln.acrl.org/index.php/crlnews/ar ticle/view/17580/19402.

19. Christine Fruin and Shan Sutton, "Strategies for Success: Open Access Policies at North American Educational Institutions," *College and Research Libraries* 77, no. 4 (July 2016): 469–99, https://doi.org/10.5860/crl.77.4.469.

20. "Home," bepress, accessed October 1, 2021, https://bepress.com/.

21. "About the Benjamin L. Hooks Institute," The Benjamin L. Hooks Institute for Social Change, accessed October 1, 2021, https://www.memphis.edu/benhooks /about/index.php.

22. John Evans, email message to author, April 18, 2021.

23. "What is the memorandum of understanding (MOU)?" E-Verify.gov, last modified February 26, 2018, https://www.e-verify.gov/faq/what-is-the-memorandum -of-understanding-mou.

24. "Digital Commons Journal Setup Form," bepress, accessed December 15, 2021, https://bepress.com/wp-content/uploads/2016/12/DC-Journal-Setup-Form.pdf.

Bibliography

Benjamin L. Hooks Institute for Social Change. "About the Benjamin L. Hooks Institute." Accessed October 1, 2021. https://www.memphis.edu/benhooks/about /index.php.

bepress. "Home." Accessed October 1, 2021. https://bepress.com/.

Collister, Lauren B., Timothy S. Deliyannides, and Sharon Dyas-Correia. "The Library as Publisher." *Serials Librarian* 66, nos. 1–4 (2014): 20–29. https://doi.org/10 .1080/0361526X.2014.879524.

E-Verify.gov. "What is the Memorandum of Understanding (MOU)?" Last modified February 26, 2018. https://www.e-verify.gov/faq/what-is-the-memorandum-of -understanding-mou.

Farley, Ashley, Allison Langham-Putrow, Elisabeth Shook, Leila Sterman, and Megan Wacha. "Transformative Agreements: Six Myths, Busted: Lessons Learned." *College & Research Libraries News* 82, no. 7 (July 2021): 298–301. https://crln.acrl.org/index.php/crlnews/article/view/25032/32927.

Finlay, Elizabeth. "Library Provision of Intellectual Access to Open Access Journal Articles." *Serials Librarian* 77, nos. 1–2 (2019): 6–14. https://doi.org/10.1080/0361526X.2019.1628161.

Fruin, Christine, and Shan Sutton. "Strategies for Success: Open Access Policies at North American Educational Institutions." *College and Research Libraries* 77, no. 4 (July 2016): 469–99. https://doi.org/10.5860/crl.77.4.469.

Grabowsky, Adelia. "The Impact of Open Access on Collection Management." *Virginia Libraries* 61, no. 1 (May 2015): 17–22. http://doi.org/10.21061/valib.v61i1.1325.

Gwynn, David, Tiffany Henry, and Anna R. Craft. "Collection Creation as Collection Management: Libraries as Publishers and Implications for Collection Development." *Collection Management* 44, nos. 2–4 (2019): 206–20. https://doi.org/10.1080/01462679.2019.1579012.

Halevi, Gali, and Samantha Walsh. "Faculty Attitudes Towards Article Processing Charges for Open Access Articles." *Publishing Research Quarterly* 37 (September 2021): 384–98. https://doi.org/10.1007/s12109-021-09820-x.

Hess, Julia I., Alejandra J. Nann, and Kelly E. Riddle. "Navigating OER: The Library's Role in Bringing OER to Campus." *The Serials Librarian* 70, nos. 1–4 (June 2016): 128–34. https://doi.org/10.1080/0361526X.2016.1153326.

Hoops, Jenny, and Sarah Hare. "Library Publisher Resources: Making Publishing Approachable, Sustainable, and Values-Driven." *College & Research Libraries News* 80, no. 2 (February 2019): 74–77. https://crln.acrl.org/index.php/crlnews/article/view/17580/19402.

Hosoi, Mihoko. "Negotiating Open Access Journal Agreements: An Academic Library Case Study." *Pennsylvania Libraries: Research & Practice* 9, no. 1 (Spring 2021): 49–61. https://doi.org/10.5195/palrap.2021.252.

Lynch, Clifford A. "Institutional Repositories: Essential Infrastructure for Scholarship in the Digital Age." *portal: Libraries and the Academy* 3, no. 2 (2003): 327–36. https://doi.org/10.1353/pla.2003.0039.

National Center for Education Statistics. "Digest of Education Statistics." Accessed December 14, 2021. https://nces.ed.gov/programs/digest/d20/tables/dt20_317.10.asp.

Neville, Tina, and Camielle Crampsie. "From Journal Selection to Open Access: Practices Among Academic Librarian Scholars." *portal: Libraries and the Academy* 19, no. 4 (October 2019): 591–613. https://doi.org/10.1353/pla.2019.0037.

OpenDOAR. "Directory." Accessed December 14, 2021. https://v2.sherpa.ac.uk/opendoar/.

Roh, Charlotte, and Vanessa Gabler. "Systemic Barriers and Allyship in Library Publishing: A Case Study Reminder That No One Is Safe from Racism." *College & Research Libraries News* 81, no. 3 (March 2020): 141–44. https://crln.acrl.org/index.php/crlnews/article/view/24321/32136.

Schlosser, Melanie. "Building Capacity for Academy-Owned Publishing through the Library Publishing Coalition." *Library Trends* 67, no. 2 (Fall 2018): 359–75. https://doi.org/10.1353/lib.2018.0041.

Scott, Rachel Elizabeth, Caitlin Harrington, and Ana Dubnjakovic. "Exploring Open Access Practices, Attitudes, and Policies in Academic Libraries." *portal: Libraries and the Academy* 21, no. 2 (2021): 365–88. https://doi.org/10.1353/pla.2021.0020.

Tracy, Daniel G. "Libraries as Content Producers: How Library Publishing Services Address the Reading Experience." *College & Research Libraries* 78, no. 2 (February 2017): 219–40. https://doi.org/10.5860/crl.78.2.219.

Wilson, Katie, Cameron Neylon, Lucy Montgomery, and Chun-Kai (Karl) Huang. "Access to Academic Libraries: An Indicator of Openness?" *Information Research* 24, no. 1 (March 2019). http://www.informationr.net/ir/24-1/paper809.html.

IV

PROFESSIONAL DEVELOPMENT

DEVELOPING SKILLS FOR A CHANGING PROFESSION

12

Leveraging Research Information Management to Center the Library as Campus Leader

Clarke Iakovakis, Megan Macken, and Matt Upson

B<small>Y ADMINISTERING THE NEW</small> university-wide Research Information Management (RIM) system, a software platform providing a single source of data on faculty biographical information, scholarship, teaching, grants, and service activities, the Oklahoma State University (OSU) Libraries have positioned themselves as a campus leader. Through the process of recommending, selecting, promoting, implementing, and supporting the RIM system, the library has developed new partnerships, established itself as a campus expert on scholarly communication, and shifted from a service provider to a valued collaborator.

Developing connections across the university, as well as within the library, has been vital to the successful adoption of this new area of research support. The library's representation among the Associate Deans for Research and existing network of connections with faculty has served as a strong foundation for building trust with additional administrative units, such as information technology, human resources, and the offices of research communications, the registrar and grants, as well as new faculty contacts across campus.

Administering RIM systems requires a diverse and unique set of technical and professional competencies, many of which librarians have already developed, including a broad experience ethically managing research information, working with vendors, and building and cultivating relationships. While traditional academic librarian skills—such as training faculty, collecting citations, and working with metadata—may be utilized, more peripheral skills—such as mining and modeling data, working with application programming interfaces (APIs), and database development—may also be brought together

to help faculty manage and promote their research output. Furthermore, managing the system has opened up excellent opportunities to lead discussions pertaining to privacy, responsible interpretation and use of bibliometric indicators, open access, and other campus priorities, such as community engagement and the United Nations Sustainable Development Goals. Because of its expertise in research information, the library has become instrumental, not as a service provider but as a partner in many university processes for the first time. This case study describes OSU Libraries experience implementing a RIM system, with a specific focus on adapting existing library roles and cultivating technical skills to position librarians as research information management experts on campus.

Literature Review

A RIM system provides comprehensive data on faculty biographical information, scholarship, teaching, grants, and service activities from a single platform. European universities began developing RIM systems in the 1990s, predominantly to help them meet government reporting requirements.[1] A number of open source and proprietary RIM systems have since been developed, and many universities across the globe have either adopted one of these tools or created their own.[2] In March 2021, OCLC Research convened a team to explore "Research Information Management Practices in the United States," citing the "characteristically decentralized" course that RIM practices at US universities have taken, involving "a complex variety of stakeholders" and "similarly complex mix of use cases."[3] A 2017 position paper by the same organization sought to define the library's role in RIM, asserting that librarian specialization in multiple facets of "research lifecycle support" makes them "critical partners" in institutional research information management.[4]

A growing body of literature reflects the fact that research information management has become a central area of professional concentration for some academic librarians.[5] Specifically, librarians are well-positioned to provide thoughtful leadership in collecting and modeling data structures for capturing institutional data in RIM systems. This may include, for instance, developing crosswalks to integrate data across multiple existing systems, harvesting author identifiers and bibliographic metadata from publications databases, and configuring the RIM system to deposit to and extract scholarship from institutional repositories (IRs). Libraries have long supported instruction and outreach to authors in the usage of research identity tools to ensure their work is accurately attributed to them, and this expertise can be channeled into aggregating these identifiers and the metadata associated with

them for use in the campus RIM system.[6] However, although the competencies required for research information management may have some overlap with those required for data curation, research on the subject of RIM-specific skills is in the early stages. Besiki Stvilia, Dong Joon Lee, and Na-eun Han provide an excellent starting point for understanding the scope and effectiveness of research information services, including how libraries can learn more about obstacles and approaches to RIM system adoption.[7]

Librarian Roles and Perspectives on Research Information

Libraries collect books written by affiliated researchers in their stacks and archives and the articles, presentations, and the research data of faculty and students in their institutional repositories. The associated author data and information about publications, when curated specifically for campus authors, may be collectively identified as research information. Libraries manage this information in library systems, and librarians catalog books and contribute to name authorities. Additionally, they provide training on managing citations in Zotero or EndNote and developing researcher profiles in ORCID.

Along with author and publication data, RIM systems may incorporate other aspects of the public life of the university typically recorded on a curriculum vitae and less frequently collected by the library. This may include grants, student advising, courses taught, and editorial and service activities, as well as other types of "publications" such as artworks, musical performances, and digital projects. An annual appraisal and development or tenure review process may be tied into the system as well. While these activities are less familiar data points for libraries, librarians on the tenure track are quite familiar with tenure review processes, and instruction and subject librarians may be well acquainted with the professional, teaching, and service activities of instructors and researchers on campus.

A research information management system, as a catalog of sorts, is not immune from the shortcomings of other library information systems, including those impacting the Dewey Decimal and Library of Congress Classification Systems. The infrastructure of information retrieval reflects its cultural context and requires frequent reshaping to maintain relevance and to correct for biases.[8] Since a variety of other systems—such as those for human resources and grants—may be rolled into RIM systems to expose existing data for discovery, there is an opportunity either for flawed information models to be perpetuated or for librarians to enhance these systems by sharing their unique perspectives on systemic biases impacting research information. In RIM systems specifically, human resources data and sensitive research raise privacy concerns. The inequity between faculty on the tenure track and

temporary instructors becomes apparent as faculty HR classifications include or exclude particular scholars automatically from the system. Other systems may only present primary investigators or lead instructors, continuing to obscure the hidden labor of the many contributors to these projects. An emphasis on quantifiable, monetizable research over less lucrative, more qualitative scholarship in the humanities may be reinforced; likewise, an undue weight may be placed on citation metrics. While a university's strategic goals may address these concerns, their reporting systems, including the research information management system, may not adequately measure alternative forms of scholarship, particularly in the arts, community engagement, and the support networks that contribute to the university's success. While librarians may not single-handedly change these things, their unique experience with the ethical implications of information systems allows them to positively impact university information infrastructure and reporting by asking probing questions that illuminate these issues.

Case Study: Oklahoma State University Libraries

In the fall of 2018, representatives from the Oklahoma State University (OSU) Libraries became aware of an informal request from the president of the university regarding more comprehensive and frequent (possibly quarterly) updates on research publications by OSU faculty. This request was not made of the library, nor had the library been involved in the previous reporting of publications. At the time, reporting had been completed in a decentralized fashion, with department heads and colleges relaying data up to the Vice President for Research (VPR). By virtue of representation in the Associate Deans for Research (ADR) group, the library was privy to conversations about the state and nature of the reporting process and was able to intervene with suggestions regarding the possible implementation of a RIM system.

Representatives from the library felt it would be appropriate to exercise leadership in this scenario, as it is a central entity and a relatively neutral or disinterested party that recognizes the importance of local data ownership, has experience working with vendors, and could contextualize and offer guidance on research metrics. Like many libraries, OSU's library has historically been viewed as service-oriented and filling a support role. While the library's role continues to shift to one of collaboration, this history—combined with its positioning at the literal and figurative center of campus and array of broad interests, expertise, and skills—has contributed to its status as a trusted mediator. Having a seat at the table with the ADRs and the VPR office positioned the library to easily make the case that they were capable and interested in

managing this project and that it made sense in terms of their expertise in managing scholarly publications and bibliometric data, a point that Rebecca Bryant et al. have emphasized.[9] The timing of the request coincided with the hiring of the library's first scholarly communications librarian, collections strategist, and digital scholarship librarian. These roles have allowed the library to better position itself to not only more significantly contribute to but also to drive the conversations the campus has had on research metrics and assessment, scholarly publishing, open access, and more.

That being said, even with some newfound expertise and a clear opportunity for involvement, the library had never truly managed something of this scale, which spanned the breadth of campus and which would require significant levels of buy-in and support from administrators, faculty, researchers, and staff. There were pockets of significant hesitation in the library due to the size of the project and possible "mission creep." It became apparent early on that some boundaries and limitations on what is expected of the library would be necessary. Upon reflection and some internal conversation, the library team determined that much of the hesitation was due to a desire to manage expectations, which is arguably difficult for librarians, who are often positioned as service providers asked to perform certain tasks for, rather than with, faculty. In the authors' personal experiences, librarians have often sought to say "yes" to requests to feel more relevant and involved, often at the expense of their own well-being and the ability to provide meaningful and consistent services. This project initially threatened to be a "yes" on a grand scale, with the risk of a limited team becoming inundated and overwhelmed not only by a daunting implementation process but also by the long-term management, maintenance, and promotion of the system. Indeed, Stvilia et al. found a "tension among motivations that shaped the object of a RIM activity" and a perceived "danger of not being able to complete a RIM service or project promised to a user"; therefore, "when determining the scope of a RIM project, RIM managers could be affected by the conflicting motivations of being helpful to researchers and safeguarding the reputation of their department or library from the potential failure of a project."[10] Additionally, though it may be clear, it should be noted that this project constituted only portions of team members' individual primary assignments. No one individual has more than roughly 15 to 20 percent of their position formally dedicated to this project. All the more reason to work to manage the effort with efficiency and good communication.

Therefore, this effort became an exercise in relationship building and expectation management. Key to this approach was the goal of positioning the library as a mediating agent. Again, the library has a demonstrated history of relationship building and trust on campus. Any effort that deals with percep-

tions of faculty productivity, seems to position units against one another in a competitive stance, or has the appearance of administrative surveillance will naturally and rightfully be contested. A RIM system is a powerful tool by which an enormous amount of previously disparate and dispersed data can be collected and used, including what Christine Borgman has termed "grey data," or the "data collected by universities about members of its community, including students, faculty, staff, visitors, patients, and other stakeholders."[11] This puts the library in a position of power that should not be taken lightly, and privacy concerns have remained at the top of a list of priorities.[12]

One of the library team's constant refrains, as a way to both build on the existing trust in the library and educate the campus, has been that the library is here to help faculty take ownership of the process and work with them to articulate how they want to use the system for their own purposes. The library does not want faculty to see this as something that is being foisted upon them. In fact, it is often noted that the library is attempting to play this mediating role by which administrators are made aware of the concerns of the faculty regarding metrics and how this data is used. The project team has presented to the campus faculty council on multiple occasions, keeping them apprised of activity, reaffirming the library's role, and reassuring faculty. This messaging occurs in training sessions, as well. Again, there has been an intentional effort to position the library as an intermediary between faculty and administrators, promoting the benefits of the system that can be derived by the individual faculty member and the department rather than focusing on high-level reporting. It has been about recognizing that there are numerous stakeholders in this endeavor and tailoring the messaging to obtain significant buy-in from all parties. Up to this point in the process, the team believes they have been able to solidify the library's reputation as a trusted entity who will both listen to faculty concerns and feedback and speak up when necessary.

As noted previously, one of the values and concerns the library brought to the table was the need to support a broad understanding of research metrics and help reassure some departments, which, traditionally, may not be as prolific in terms of producing the type of content that shows up in the automated feeds for the system. The library has consistently communicated to faculty their intent to help an individual faculty member or department tell the story they want to tell about their scholarship. As representatives from Texas A&M University Libraries have stated regarding their own RIM efforts, a goal of the project should be to "support the ability of faculty/colleges to craft rich narratives of the significance and impact of their work."[13] As an example, the library has emphasized, from day one, a willingness and intent to work with those in arts and humanities to ensure that their work is accurately and fully represented within the system. As one of the project managers and authors

of this paper is the library's Digital Scholarship Librarian, who has already gained the trust of these faculty through her work in supporting their scholarship, the authors feel that faculty recognize a commitment to ensuring that their work is appropriately considered. Additionally, the library has found an increasing number of opportunities to discuss the value and limitations of various research metrics with faculty and administrators. When the library is viewed as central to the management of this data, there will be naturally occurring opportunities for exerting influence on how that information should be used. To *remain* a trusted manager of this type of project, libraries should not only share and refer to documents such as the Leiden Manifesto and the San Francisco Declaration on Research Assessment (DORA) but also incorporate their tenets into the practice and processes by which this data is collected and used.[14]

Charting a Path Forward for Library Leadership in Research Information Management

Although some libraries do have a dedicated RIM system manager, the day-to-day work of the RIM system encompasses a skillset typically found across several positions in a library. At OSU, a small team comprising the Associate Dean for Research and Learning Services, the scholarly communications librarian, and digital scholarship librarian led the implementation, with additional support from digital services and metadata librarians for specific tasks. Many functions overlap with metadata and liaison areas. Other relevant positions may be found in digital archives, repository services, digital scholarship, digital asset management, digital curation, visual resources, electronic resources management, and other digital services positions. While many libraries are not large enough to support individual positions for each of these roles, and the responsibilities of these positions themselves vary widely, specific skills and experiences are the most useful for research information management: cultivating relationships, communication, and working with data.

Recommendations for Cultivating Relationships Relevant to RIM Systems

Though its name may suggest otherwise, a research information management system is centered on researchers. To create a useful RIM system, librarians need to know their researchers, just as they do to develop relevant collections and services. There are many effective ways of developing relationships, from "embedding" a librarian in a department, to getting coffee with a colleague, serving on committees, filling book orders, or even sheer

persistence. Connecting with patrons has traditionally been the role of liaison librarians, and RIM systems both profit from that experience and enhance the liaison relationship. The authors' experiences confirm the findings of Shuheng Wu, Besiki Stvilia, and Dong Joon Lee: librarians can truly help improve processes that consume a lot of time and energy for researchers— harvesting publications, making publications openly available, finding and generating citations for CVs, keeping track of service activities, and creating public profiles (through ORCID or a RIM system).[15] It's essential to know enough about how various community members—the university administrator, the adjunct instructor, the research officer, the tenured faculty member, the post-doctoral researcher, the department head, the extension agent, or the graduate student who might interact with the system—to craft accurate user stories that increase both usability and usage of the RIM system.[16] This could be a subject liaison who helps faculty with the RIM system and/or the subject liaison who works in tandem with RIM system specialists to develop avenues for communication. At OSU, both approaches have been effective. Although the scholarly services librarian conducted the initial RIM system trainings, liaisons were included as a familiar contact point for follow-up questions in addition to the RIM system implementation team.

RIM system management also allows the library to develop mutually beneficial relationships with offices and individuals across campus with whom they may not typically work closely but who may need RIM system data for various purposes. For example, at OSU, the library collaborated with the Director of University Accreditation to design and launch a survey to collect the highest degree each faculty member held. While this data was required for university accreditation, it was also used to populate faculty profiles in the RIM system. Data from the Global Research Identifier Database (GRID) was integrated into the survey, which allowed normalization by institution name as well as geographical information, such as state, country, and even latitude/longitude coordinates (of potential interest for downstream analysis). Faculty were given the option to provide data on other degrees they held, which would likewise be added to the system on their behalf. As a result, degrees for over 1,000 faculty members were added, which can be used for accreditation reporting, and faculty can display the data on their public profiles if they wish.

The ability to use a RIM system to quickly label and identify research on a given topic has already provided multiple opportunities for the library to handle queries from various units and plan for future approaches to highlighting publications and activities for a variety of purposes. For example, in the spring of 2021, the VPR requested that ADRs provide a list of published or in-progress work on COVID-19. Even midway through the campus implementation process, the system was invaluable for providing a

solid basis for the creation of a report for campus stakeholders and provided further incentive to encourage faculty curation of their profiles. Another promising opportunity for relationship building has been with the School of Global Studies and Partnerships, which manages the campus reporting efforts on activities related to the United Nations Sustainable Development Goals (SDG). The ability to add custom label schemes for works and activities provides an easy mechanism by which researchers can indicate where their work engages with a particular goal, enabling the library to facilitate more complete and effective reporting.

Communication (Training, Listening, and Translating)

In a RIM system, researchers truly are the experts on their own research profile—they know exactly what type of data capture or support model works for them and what doesn't, what is important for establishing their reputations and what they are indifferent about, and what is simply confusing and needs to change. User training sessions for RIM systems are similar to other types of technical trainings led by librarians, such as workshops on using instructional technologies or digital scholarship tools. These trainings can serve a dual purpose as opportunities for feedback, not simply conveying information about where to click. As researchers learn the system, they may share aspects that are difficult or nonsensical and reveal where their research does not fit into the data structure. Sometimes an improvement can be made—especially for annual processes like performance reviews or names of categories—and sometimes not, such as when the change suits one researcher but not the thousands of others on campus or would impact data fidelity. In either case, listening carefully to researchers can improve the user experience and further improve the relationship between the library and researchers.

Another aspect of developing training is documentation or a library guide for using the RIM system. Clearly documenting the system is another verification check that the system is usable. If it's difficult to write simple instructions or create brief, coherent training videos, then there may be room for improvement. OSU developed a "What Goes Where?" Table, adapted from the University of Georgia, for the RIM system support site to help researchers consistently enter information in its designated category.[17]

The implementation of a RIM system requires the support of IT professionals or a vendor who provides similar services to bring data from many sources into a single system. Librarians, who are familiar with these processes and professionals, are essential for interpreting complex technical information between stakeholders. Data managers on campus may specialize in a single data source or system and be unfamiliar with the concept of mapping data

from one system or schema to another that metadata librarians frequently
encounter. The vendor, an expert on their system and experienced with many
others, is a stranger to the particular customizations of university databases,
especially homegrown ones. Faculty or administrators, who understand the
final product—research information that appears in profiles or reports—may
have difficulty with the terminology of IT professionals and vendors. At OSU,
university administrators perceived librarians as professionals with the IT
skills they lacked, but IT professionals saw librarians as having other skills,
particularly content knowledge. Librarians can help interpret the meaning of
the data for IT and the implications of data retrieval for faculty and adminis-
trators, in order to build a useful data structure for the RIM system that meets
needs across colleges, departments, and disciplines.

Working with Data in the Research Lifecycle

Over the last several years, academic librarians have branched into a wid-
ening range of research support services at multiple points in the research
lifecycle, bridging public and digital services. These include education and
outreach on researcher identity systems, conducting text and data mining in
bibliographic databases, collecting and interpreting bibliometric data, devel-
oping and teaching data and computational analysis skills, and stewarding
digital institutional information. The competencies associated with services
in these areas map well to those required for successful RIM system imple-
mentation and administration. Assuming leadership in supporting RIM sys-
tems provides further opportunities for deepening these skills and extending
them into new areas.

Metadata and digital collections librarians already work with data in many
of the ways needed to manage research information: developing crosswalks
for data sharing across existing systems; applying or developing content stan-
dards, sometimes called a data dictionary; adopting or creating taxonomies or
controlled vocabularies for tagging and pick lists; or building a data model for
meaningful data capture. In practice, OSU purchased a RIM system designed
for Tier One research institutions, whose main output are research articles
and books. But those are not the only form of research and scholarship at
OSU, a land-grant institution focused on outreach and community engage-
ment. The university's extension program offers everything from television
programming to fire service training and research-based publications, called
fact sheets, on topics ranging from agriculture and economic development to
family and consumer sciences. This publication type did not fit neatly into the
existing categories in the RIM system, so, in dialogue with the extension spe-
cialists, the RIM implementation team created a place for faculty to enter that

data. Veterinary Clinical Sciences, one of the OSU RIM system pilot departments, is another good example. These veterinarians, who work long hours in the teaching hospital, extensively document the impact of their teaching and service work. In close collaboration with faculty and the department head, the RIM implementation team built out custom fields in the system, not just for public profiles but also for the annual appraisal and development process, where faculty could record their hours of emergency service in the hospital treating animals and training future veterinarians.

Harvesting Metadata from External Sources

As discussed previously, one of the key functions of RIM systems is to serve as a source for metadata relating to articles, books, chapters, and other scholarly work authored by researchers at the institution. Information about these publications may exist in multiple locations, such as the author's own CV or reference management software, on department or lab websites, or in external databases such as ORCID, Google Scholar, Scopus, or ResearchGate. The experience at OSU again supports the conclusions of Stvilia, Lee, and Han that it is challenging for researchers to maintain multiple profiles and they may be reluctant to add yet another one.[18] The library's role here has been to link this external metadata (author identifiers and the publications metadata associated with them) to the faculty in the RIM system.

Librarians' knowledge of the landscape, affordances, and limitations of bibliographic databases and research identity tools can be particularly valuable in this regard. For instance, some databases, such as Scopus and Web of Science, have integrated sophisticated author disambiguation algorithms that analyze metadata (such as author names, affiliations, publication venues, and topics) to identify and link publications to specific individuals.[19] The system then assigns each individual a unique identifier (e.g., Scopus Author ID or Web of Science ResearcherID). Although these identifiers can be helpful for gathering institutional publications, if an individual has published with different name variants or at different institutions, that person may have been mistakenly assigned multiple identifiers. Librarians can identify researchers who have this issue, initiate conversations with them to elicit their participation in consolidating their profiles, or potentially do so on their behalf. Furthermore, librarians have a broad understanding of the types of scholarly work, disciplines, and fields that may be excluded from these databases and can offer solutions for systematically gathering metadata from other sources or by other means that can be imported directly into the RIM system.[20]

The work of harvesting institutional scholarly metadata can be strengthened and automated with the use of application programming interfaces

(APIs). Some external databases provide APIs that enable programs, such as those integrated in RIM systems, to systematically query and extract data.[21] Specifically, authors can "claim" their external author identifiers in the RIM system, triggering an automated query to the API and harvesting publications metadata associated with those identifiers. The librarians at Oklahoma State developed a process to query the Scopus and ORCID APIs to obtain identifiers for people affiliated with OSU and used fuzzy name merging to link them to researchers in the RIM system database, thereby "claiming" the identifiers on their behalf.[22] While this was an intensive process that faced the expected complexities associated with fuzzy name merging (such as handling people with the same or similar names), it resulted in thousands of institutional publications being added to the system from the outset.

This work can reduce the time it takes authors to curate their profiles and potentially enhance the quality and completeness of data in the system, but it can also be time- and resource-intensive, particularly as data integrity is a high priority. At OSU, the library's objective has been to efficiently establish a baseline of institutional publications metadata that could then be enhanced through manual curation by faculty themselves. An optimal "RIM workflow" must be developed that balances these areas of librarian expertise with the "motivations, priorities, and skills" of researchers and the unique knowledge of their contributions that only they can make, as well as the support of administrative staff within the colleges and departments who may be able to add and modify data on researchers' behalf.[23]

Developing and Cultivating Technical Skills
for RIM System Administration

In addition to the technical skills already discussed, the OSU team has developed several additional skills that have enabled them to take ownership over essential RIM functions. For example, the team has used R, SQL, and POSTMAN for harvesting, wrangling, verifying, and writing data to the system; Microsoft SQL Server Data Tools for creating custom reports; and a multiplicity of data formats (CSVs, JSON, XML, RIS, and BibTeX). That the team has not depended on programmers outside the library can be attributed to dedicated professional development in the areas of coding and data wrangling. Again, though some of these competencies were initially developed for other primary purposes—such as supporting Carpentries instruction, research data curation, and conducting collection analysis—they have been extended in new directions as part of the implementation and administration of the RIM system.

Conclusion

In their analysis of the skills necessary for administering RIM systems, Stvilia, Lee, and Han conclude that "libraries may be better prepared to serve as the focal points of such efforts than any other units on university campuses."[24] The experience of Oklahoma State Libraries in leading the procurement, configuration, implementation, and management of the institutional RIM system validates the complementarity of librarian competencies with research information management. The library is positioned as a mediating agent, working closely with individual faculty to ensure the system supports their needs, while also configuring it to fulfill the reporting demands of administrators in the departments, colleges, and the university as a whole.

This positioning has given the library a measure of influence over what data is collected, presented, and reported. Indeed, how the data is structured has long-term ramifications for activity reporting and may affect the perceived performance of faculty and departments. This influence has translated into the advancement of specific concerns of importance; for instance, ensuring alternative forms of scholarship in the arts are represented, promoting the university's goals for collaboration across colleges, and addressing inequities in representation and recognition of labor. The library has also used this influence to further internal strategic goals, such as enhancing open access to faculty publications. As of March 2022, the library is working to integrate a pipeline between the RIM system and ShareOK, the university's institutional repository (IR). This will harvest existing scholarship from the IR into the RIM system and also enable faculty to deposit their work directly to the IR from within the RIM system interface. Librarians are well-trained to support this configuration, as it involves developing crosswalks between different metadata schemas. Further, as the IR manager, the library is well acquainted with its schema and content. This functionality is expected to provide further opportunities for the library to educate and advocate for open access. It is anticipated that the repository integration will lead to an increase in authors exercising their rights to make their manuscripts openly available and to authors choosing to share a wider range of scholarship (such as datasets, conference papers, slides, posters, and so on) with the public. The library's role in university research information, which touches on many key aspects of university life, from annual reviews to university accreditation, has not only established the library as a university leader but also furthered the land grant mission of the university to share its expertise with communities across the globe.

Notes

1. Rebecca Bryant et al., *Practices and Patterns in Research Information Management: Findings from a Global Survey* (Dublin, OH: OCLC Research, 2018), https://doi.org/10.25333/BGFG-D241.

2. David Scherer, Kate Byrne, Mark Hahnel, and Daniel Valen, "Collaborative Approaches to Integrate Repositories within the Research Information Ecosystem: Creating Bridges for Common Goals," *The Serials Librarian* 78, nos. 1–4 (June 1, 2020): 181–90, https://doi.org/10.1080/0361526X.2020.1728169.

3. Rebecca Bryant, "Research Information Management Practices in the United States: A New OCLC Research Project," *Hanging Together* (blog), March 9, 2021, https://hangingtogether.org/?p=8940.

4. Rebecca Bryant et al., *Research Information Management: Defining RIM and the Library's Role* (Dublin, OH: OCLC, 2017), https://doi.org/10.25333/C3NK88, 12.

5. Annette Day, "Research Information Management: How the Library Can Contribute to the Campus Conversation," *New Review of Academic Librarianship* (2018), https://doi.org/10.1080/13614533.2017.1333014; Marlee Givens, Lisa A. Macklin, and Paolo Mangiafico, "Faculty Profile Systems: New Services and Roles for Libraries," *portal: Libraries and the Academy* 17, no. 2 (2017): 235–55, https://doi.org/10.1353/pla.2017.0014; Shuheng Wu, "Exploring Chinese Researchers' Research Information Management Practices: Implications for Academic Libraries," *The Journal of Academic Librarianship* 47, no. 3 (2021): 102348, https://doi.org/10.1016/j.acalib.2021.102348.

6. Anna R. Craft, "Electronic Resources Forum—Managing Researcher Identity: Tools for Researchers and Librarians," *Serials Review* 46, no. 1 (January 2, 2020): 44–49, https://doi.org/10.1080/00987913.2020.1720897; Judit Ward, William Bejarano, and Anikó Dudás, "Scholarly Social Media Profiles and Libraries: A Review," *LIBER Quarterly: The Journal of the Association of European Research Libraries* 24, no. 4 (2015): 174–204, https://doi.org/10.18352/lq.9958.

7. Besiki Stvilia, Dong Joon Lee, and Na-eun Han, "'Striking Out on Your Own'— A Study of Research Information Management Problems on University Campuses," *Journal of the Association for Information Science and Technology* 72, no. 8 (2021): 965, https://doi.org/10.1002/asi.24464.

8. The University of Oklahoma. "Library of Congress Accepts OU Libraries' Proposal to Change Subject Heading to 'Tulsa Race Massacre,'" March 22, 2021, http://www.ou.edu/web/news_events/articles/news_2021/library-of-congress-accepts-ou-libraries-proposal-to-change-subject-heading-to-tulsa-race-massacre.html; Melissa Adler, "Classification Along the Color Line: Excavating Racism in the Stacks," *Journal of Critical Library and Information Studies* 1, no. 1 (January 29, 2017), https://doi.org/10.24242/jclis.v1i1.17.

9. Bryant et al., *Research Information*.

10. Stvilia, Lee, and Han, "Striking Out on Your Own," 970.

11. Christine L. Borgman, "Open Data, Grey Data, and Stewardship: Universities at the Privacy Frontier," *Berkeley Technology Law Journal* 33, no. 2 (April 2018): 380, https://doi.org/10.15779/Z38B56D489.

12. Megan Macken and Clarke Iakovakis, "Privacy and Research Information Management Systems," *The Serials Librarian* 8, no. 1 (2021): 88–98, https://doi.org/10.1080/0361526X.2021.1875959.

13. Bruce Herbert et al., "Using Campus Needs Involving Tenure & Promotion, Interdisciplinary Collaborations, and Institutional Research to Drive the Evolution of VIVO at Texas A&M University," VIVO 2019 Conference presentation, Podgorica, Montenegro, September 4–6, 2019, slide 26, https://hdl.handle.net/1969.1/177789.

14. Diana Hicks et al., "Bibliometrics: The Leiden Manifesto for Research Metrics," *Nature* 520, no. 7548 (April 23, 2015): 429–31, https://doi.org/10.1038/520429a; "Read the Declaration," *DORA*, accessed October 1, 2021, https://sfdora.org/read/.

15. Wu, Shuheng, Besiki Stvilia, and Dong Joon Lee, "Readers, Personal Record Managers, and Community Members: An Exploratory Study of Researchers' Participation in Online Research Information Management Systems," *Journal of Library Metadata* 17, no. 2 (April 3, 2017): 57–90, https://doi.org/10.1080/19386389.2017.1348783.

16. Besiki Stvilia, Shuheng Wu, and Dong Joon Lee, "Researchers' Uses of and Disincentives for Sharing Their Research Identity Information in Research Information Management Systems," *Journal of the Association for Information Science and Technology* 69, no. 8 (2018): 1035–45, https://doi.org/10.1002/asi.24019.

17. Oklahoma State University Libraries, "What Goes Where?," *Experts Directory Support*, Oklahoma State University Libraries, accessed September 2021, https://info.library.okstate.edu/expert-researcher/what-goes-where.

18. Stvilia, Lee, and Han, "Striking Out on Your Own," 969; Besiki Stvilia, Shuheng Wu, and Dong Joon Lee, "Researchers' Participation in and Motivations for Engaging with Research Information Management Systems," *PLOS ONE* (2018), https://doi.org/10.1371/journal.pone.0193459.

19. There is an extensive literature in information and computer science and bibliometrics on author name disambiguation. For an earlier but still relevant review, see Neil R. Smalheiser and Vetle I. Torvik, "Author Name Disambiguation," *Annual Review of Information Science and Technology* 43, no. 1 (2009): 1–43, https://doi.org/10.1002/aris.2009.1440430113.

20. A number of methods and tools have been developed for parsing citation text and generating structured metadata, some of which are used in RIM systems. For instance, the Crossref API supports a GET/works query that handles free-form queries such as full citations: https://api.crossref.org/swagger-ui/index.html#/Works/get_works. The AnyStyle tool created by Sylvester Keil at https://anystyle.io/ uses machine learning heuristics to parse free-form citation text into structured JSON, BibTeX, or XML. See also Jung-ran Park and Andrew Brenza, "Evaluation of Semi-Automatic Metadata Generation Tools: A Survey of the Current State of the Art," *Information Technology and Libraries* 34, no. 3 (September 21, 2015): 22–42, https://doi.org/10.6017/ital.v34i3.5889.

21. Elsevier, "Elsevier Scopus APIs," *Elsevier Developer Portal*, accessed September 2021, https://dev.elsevier.com/sc_apis.html; Clarivate, "Web of Science API Expanded," *Web of Science Developer Portal*, accessed September 2021, https://developer.clarivate.com/apis/wos; ORCID, "Public API," *ORCID*, accessed September 2021, https://info.orcid.org/documentation/features/public-api/.

22. The rorcid and rscopus packages in R are useful for this purpose. See Scott Chamberlain and rOpenSci, "rorcid: Interface to the Orcid.Org API," *R package* (2021), https://CRAN.R-project.org/package=rorcid; John Muschelli, "rscopus: Scopus Database API Interface," *R package* (2021), https://CRAN.R-project.org/package=rscopus. For technical walkthroughs of some of these processes, see John Muschelli and Clarke Iakovakis, "Gathering Multiple Subject Queries with Large Numbers of Authors," *rscopus*, 2019, accessed September 2021, http://johnmuschelli.com/rscopus/articles /multi_author.html; and Clarke Iakovakis, "rorcid walkthrough," *FSCI 2021*, 2021, accessed September 2021, https://ciakovx.github.io/rorcid.html.

23. Stvilia, Lee, and Han, "Striking Out on Your Own," 970.

24. Ibid., 976.

Bibliography

Adler, Melissa. "Classification Along the Color Line: Excavating Racism in the Stacks." *Journal of Critical Library and Information Studies* 1, no. 1 (January 29, 2017). https://doi.org/10.24242/jclis.v1i1.17.

Borgman, Christine L. "Open Data, Grey Data, and Stewardship: Universities at the Privacy Frontier." *Berkeley Technology Law Journal* 33, no. 2 (April 2018): 365–412. https://doi.org/10.15779/Z38B56D489.

Bryant, Rebecca, Anna Clements, Carol Feltes, David Groenewegen, Simon Huggard, Holly Mercer, Roxanne Missingham, Maliaca Oxnam, Anne Rauh, and John Wright. *Research Information Management: Defining RIM and the Library's Role.* Dublin, OH: OCLC Research, 2017. https://doi.org/10.25333/C3NK88.

Bryant, Rebecca, Anna Clements, Pablo de Castro, Joanne Cantrell, Annette Dortmund, Jan Fransen, Peggy Gallagher, and Michele Mennielli. *Practices and Patterns in Research Information Management: Findings from a Global Survey.* Dublin, OH: OCLC Research, 2018. https://doi.org/10.25333/BGFG-D241.

Craft, Anna R. "Electronic Resources Forum—Managing Researcher Identity: Tools for Researchers and Librarians." *Serials Review* 46, no. 1 (January 2, 2020): 44–49. https://doi.org/10.1080/00987913.2020.1720897.

Day, Annette. "Research Information Management: How the Library Can Contribute to the Campus Conversation." *New Review of Academic Librarianship* 24, no. 1 (2018): 23–34. https://doi.org/10.1080/13614533.2017.1333014.

Givens, Marlee, Lisa A. Macklin, and Paolo Mangiafico. "Faculty Profile Systems: New Services and Roles for Libraries." *portal: Libraries and the Academy* 17, no. 2 (2017): 235–55. https://doi.org/10.1353/pla.2017.0014.

Herbert, Bruce E., Dong Joon Lee, Douglas Hahn, and Ethel Mejia. "Using Campus Needs Involving Tenure and Promotion, Interdisciplinary Collaborations, and Institutional Research to Drive the Evolution of VIVO at Texas A&M University." VIVO 2019 Conference presentation, Podgorica, Montenegro, September 4–6, 2019. https://hdl.handle.net/1969.1/177789.

Hicks, Diana, Paul Wouters, Ludo Waltman, Sarah de Rijcke, and Ismael Rafols. "Bibliometrics: The Leiden Manifesto for Research Metrics." *Nature* 520, no. 7548 (April 23, 2015): 429–31. https://www.doi.org/10.1038/520429a.

Macken, Megan, and Clarke Iakovakis. "Privacy and Research Information Management Systems." *The Serials Librarian* 8, no. 1 (2021): 88–98. https://doi.org/10.1080/0361526X.2021.1875959.

Park, Jung-ran, and Andrew Brenza, "Evaluation of Semi-Automatic Metadata Generation Tools: A Survey of the Current State of the Art." *Information Technology and Libraries* 34, no. 3 (September 21, 2015): 22–42. https://doi.org/10.6017/ital.v34i3.5889.

"Read the Declaration." *DORA*. Accessed October 1, 2021. https://sfdora.org/read/.

Scherer, David, Kate Byrne, Mark Hahnel, and Daniel Valen. "Collaborative Approaches to Integrate Repositories within the Research Information Ecosystem: Creating Bridges for Common Goals." *The Serials Librarian* 78, nos. 1–4 (June 1, 2020): 181–90. https://doi.org/10.1080/0361526X.2020.1728169.

Smalheiser, Neil R., and Vetle I. Torvik. "Author Name Disambiguation." *Annual Review of Information Science and Technology* 43, no. 1 (2009): 1–43. https://doi.org/10.1002/aris.2009.1440430113.

Stvilia, Besiki, Dong Joon Lee, and Na-eun Han. "'Striking Out on Your Own'—A Study of Research Information Management Problems on University Campuses." *Journal of the Association for Information Science and Technology* 72, no. 8 (2021): 963–78. https://doi.org/10.1002/asi.24464.

Stvilia, Besiki, Shuheng Wu, and Dong Joon Lee. "Researchers' Participation in and Motivations for Engaging with Research Information Management Systems." *PLOS ONE* (2018). https://doi.org/10.1371/journal.pone.0193459.

Stvilia, Besiki, Shuheng Wu, and Dong Joon Lee. "Researchers' Uses of and Disincentives for Sharing Their Research Identity Information in Research Information Management Systems." *Journal of the Association for Information Science and Technology* 69, no. 8 (2018): 1035–45. https://doi.org/10.1002/asi.24019.

The University of Oklahoma. "Library of Congress Accepts OU Libraries' Proposal to Change Subject Heading to 'Tulsa Race Massacre.'" March 22, 2021. http://www.ou.edu/web/news_events/articles/news_2021/library-of-congress-accepts-ou-libraries-proposal-to-change-subject-heading-to-tulsa-race-massacre.html.

Ward, Judit, William Bejarano, and Anikó Dudás. "Scholarly Social Media Profiles and Libraries: A Review." *LIBER Quarterly: The Journal of the Association of European Research Libraries* 24, no. 4 (2015): 174–204. https://doi.org/10.18352/lq.9958.

Wu, Shuheng. "Exploring Chinese Researchers' Research Information Management Practices: Implications for Academic Libraries." *The Journal of Academic Librarianship* 47, no. 3 (2021): 102348. https://doi.org/10.1016/j.acalib.2021.102348.

Wu, Shuheng, Besiki Stvilia, and Dong Joon Lee. "Readers, Personal Record Managers, and Community Members: An Exploratory Study of Researchers' Participation in Online Research Information Management Systems." *Journal of Library Metadata* 17, no. 2 (April 3, 2017): 57–90. https://doi.org/10.1080/19386389.2017.1348783.

13

Soften Up Your Skills

Tips, Strategies, and Methods to
Practice and Enhance Interpersonal Skills

Jay A. Edwards

T HE UNIVERSITY OF OKLAHOMA (OU) Libraries considers itself the "intellectual crossroads" of the university; a place and people with the space, programming, resources and services necessary to "facilitate knowledge creation."[1] This purpose echoes R. David Lankes' assertion of the mission of librarians "to improve society through facilitating knowledge creation in their communities."[2] By providing access to materials, reference and instruction services, and space and programming, libraries have primarily allowed for community members to create knowledge on their own. The library provides research materials, but with few exceptions, it does not do a user's research for them. As several authors in this book discuss, the position of the library as a central hub—both physically and intellectually—provides opportunities to collaborate with colleagues across institutions on research and creating new knowledge.

The question, then, is how *do* librarians facilitate knowledge creation in the communities they serve? How do they collaborate with others on research and publishing? In order to collaborate to facilitate scholarly communication librarians must first be able to communicate. Many library-related skills (e.g., cataloging, collection development and management, and even coding) are already taught through graduate school curricula and on-the-job training programs, but training is much more challenging for soft skills. Experts in education, libraries, and corporate fields have wrestled with the same problem: How can training programs replicate the immediacy and spontaneity of interacting with other people? How can libraries provide training for interpersonal skills in safe, low-anxiety, inclusive, and accessible settings?

Interpersonal skills are recognized as crucial in an increasingly service-oriented economy and especially in the library. These skills consistently rank at or near the top of surveys of necessary skills for librarians and staff.[3] Even before the rise of COVID-19, librarians understood that libraries should devote substantial time and resources to professional development in these areas. In the post-COVID environment, after a lengthy period of isolated work and education for some and stressful in-person work for others, the importance of safely revisiting and rebuilding interpersonal skills will only increase over the next few years.[4]

Interpersonal skills may be developed in many ways, not limited to the occasional webinar or workshop. This chapter explores several concepts, techniques, applied activities, and exercises that OU Libraries uses to enhance interpersonal skills and resources and opportunities for professional development for librarians. According to Miriam Matteson, Lorien Anderson, and Cynthia Boyden, "Critical to any of these methods is supplying employees with the requisite knowledge base, the opportunity for meaningful practice, and feedback on their performance."[5] Therefore, although all the areas may overlap, for ease of reference, the chapter is divided into three primary categories of focus: 1) building a knowledge base; 2) finding opportunities to practice interpersonal skills; and 3) assessing the need for improvement. This chapter also explores concepts and techniques of soft skill development, applied activities and exercises that can be used to enhance interpersonal skills, and resources and opportunities for professional development.

Literature Review

"Soft skills" are loosely defined as learnable, abstract cognitive and meta-cognitive abilities that apply to interpersonal, intellectual, or practical areas.[6] Soft skills are usually defined *in relation* to "hard skills," which are technical and concrete. The abstract nature of soft skills presents a challenge for both research and training. Although technical skills may be challenging for individuals to learn and perform correctly, they are easily measurable, demonstrable, and repeatable, and they can be standardized. Soft skills, such as active listening or adaptability, are not so easily defined, demonstrated, or repeated, and they are highly contextual.

The abstract nature of soft skills encompasses the definition of "soft skills" itself. Despite the plethora of literature on soft skills and their high demand and ubiquity in people-centered services, there is no universally accepted definition, taxonomy, or theoretical model to understand them.[7] Elena Dell'Aquila et al. has provided a count on definitions, listing thirty-four at-

tempts by multiple authors to define soft skills.[8] Joann Keyton et al. identified up to 343 verbal communication behaviors alone.[9] For skills that are hard to define, index, and study, it makes sense that the concept itself is also hard to define, index, and study. A poorly defined and unclear concept also makes it difficult to develop accurate research.[10]

Tacit Knowledge

The concept of soft skills shares similar aspects to "tacit knowledge," which is knowledge that is difficult to express in written and verbal language and is typically best learned through experience.[11] Playing an instrument, for example, may involve studying written notation and theory, but it also requires years of applied practice, rehearsal, and performance participation. Similarly, a library's collection and services can be well documented, but determining which resources and services are most relevant to a user requires practice and experience. Because tacit knowledge is generally "inaccessible for verbalization," sharing it "occurs largely through social interaction, often in spontaneous or serendipitous fashion."[12] This presents its own conundrum; tacit knowledge requires soft skills to teach to others, yet soft skills are themselves a kind of tacit knowledge.

Emotional Intelligence and Interpersonal Skills

A great deal of research on library training has focused on Daniel Goleman's conception of emotional intelligence, or the awareness of the emotional state of yourself and others.[13] It encompasses the ability to understand, manage, and express your own emotions, perceive and understand the emotions of others, and manage your relationship with others. Goleman splits emotional intelligence into five categories: 1) self-awareness of one's own emotion and character, 2) self-regulation of one's emotions, 3) motivation for achievement and improvement, 4) empathy for the emotions of others, and 5) the social skills to manage relationships.

Interpersonal skills, also known as social or people skills, are soft skills used to interact with other people in face-to-face or online contexts. Although no universal definition or taxonomy of soft skills exists, Cameron Klein, Renee DeRuin, and Eduardo Salas attempted to develop the most comprehensive framework for interpersonal skills.[14] They define interpersonal skills as "goal-directed behaviors, including communication and relationship-building competencies, employed in interpersonal interaction episodes characterized by complex perceptual and cognitive processes, dynamic verbal and nonverbal interaction exchanges, diverse roles, motivations, and expectancies."[15]

After conducting a systematic review, they have developed twelve categories of interpersonal skills. The first five skills are grouped as "communication skills," which rely on the knowledge and choices of the individual, with others taking the role of an audience who receives and interprets the message.

1. Active listening: Awareness of what is being said, coupled with questions to clarify meaning and intent.
2. Oral communication: Information that is conveyed verbally. This communication includes word choice and grammar but might be complicated by non-verbal cues that reinforce the speaker's intention.
3. Written communication: Information that is conveyed in writing. This method of communication also includes wording and grammar but may be open to misinterpretation due to the lack of non-verbal cues.
4. Assertive communication: The ability to express one's rights, as well as finding the most appropriate and effective time and methods to do so.
5. Non-verbal communication: The physical and sometimes subconscious indications of thoughts and feelings (particularly as perceived by someone else).

The final seven "relationship-building skills" involve others as participants, whose responses and input are not fully predictable or controllable by the individual, and in this way, they are more difficult to practice on one's own.

6. Cooperation/coordination: The ability to modify behavior to meet the needs of the group and negotiate with others to do so.
7. Trust: Taking the risk that a person or group will perform an important action without unnecessary supervision or scrutiny. Being trustworthy requires being reliable and honest, while building trust may require shared experiences over time and sharing relevant information with each other.
8. Intercultural sensitivity: Understanding the differences between cultures, having empathy for others who are radically different, and developing the ability to change thoughts and behavior as one learns.
9. Service orientation: Behaviors that facilitate transactions to various clients in the service sector. This focus on "orientation" or attitude is a departure from the rest of the framework, which focuses on learnable skills.
10. Self-presentation: Behaviors meant to influence how others perceive and react to you.
11. Social influence: Behaviors meant to persuade others into taking action or adopting beliefs.
12. Conflict resolution and negotiation: Behaviors meant to reduce interpersonal conflict.

Inclusion and Belonging

In today's workplace, the ability to foster an inclusive and equitable environment is a crucial element of an employee's interpersonal skill set. Working in a diverse environment with people of different backgrounds, values, communication, and conflict resolution styles "requires increased soft skills than working in groups where everyone is similar in these personal aspects."[16] An inclusive environment involves the fair and respectful treatment of all individuals, where their experiences, perspectives, and skills are valued.[17]

However, it is important to note that interpersonal skills have a limited power to redress issues of inclusion and belonging. Librarians must be aware of how systemic issues affect historically underprivileged people. This includes understanding how systematic racism impacts how one treats others and how an individual's actions may perpetuate systems that oppress others.[18] For example, when considering forms of professional development, librarians need to consider who has access to them. Convoluted methods of obtaining funding for professional development can create an environment where predominantly white employees frequently attend workshops and conferences that employees of color cannot, leading to further imbalance in multiple skill sets.[19]

Soft Skills in the Library

Because libraries are people-centered institutions, a great deal of effort has gone into research on the interpersonal skills of librarians, primarily focused on professionals in user services[20] or leadership and management.[21] Elaine Jennerich and Edward Jennerich have determined the optimal skill set necessary to interact with library users, which they divide into five non-verbal and eight verbal skills. Their five categories of non-verbal skills include eye contact, gesture, posture, facial expression, and tone of voice. They divide verbal skills into the following: remembering, avoiding premature diagnoses, reflecting feelings verbally, restating or paraphrasing content, using encouragers (minimal responses to indicate interest, e.g., nodding), closing, giving opinions and suggestions, and asking open questions.[22] Compared to Klein, DeRuin, and Salas's framework, several of Jennerich's and Jennerich's categories of verbal skills fall under active listening and assertive communication.

Miriam Matteson, Matthew McShane, and Emily Hankinson interviewed librarians to determine the categories of soft skills necessary for successful librarianship.[23] They categorized responses into three tiers, with the first tier comprising interpersonal skills. Much like Klein, DeRuin, and Salas, they divided interpersonal skills into communication and people skills. Communication skills involve methods of transmission (written, oral, and non-

verbal) as well as behavioral skills (listening, questioning, interpreting), and aspects of communication (tone, clarity, effectiveness). People skills included supervision, motivation, acceptance, conflict resolution, relationship building, and so on.

In defining soft skills, Matteson, Anderson, and Boyden emphasized that soft skills are skills; attributes and personality traits are static, whereas "employees can develop skills of any kind."[24] Because so many variables go into how skills develop over time, from personal experience to psychological differences, researchers have emphasized that, ultimately, everyone has different interpersonal strengths and weaknesses.[25] This not only means that everyone has different skills to focus on in professional development, but also librarians may find different methods of professional development more helpful than others. Critical to the success of any of these methods, according to Matteson, Anderson and Boyden, are "the right knowledge set, the opportunity to practice the actions, and feedback on those actions."[26]

Case Study: University of Oklahoma Libraries

The University of Oklahoma (OU) is a doctoral degree-granting research university with an average of 30,000 students, including over 6,000 postgraduate students. OU Libraries includes over five million items, six locations, and a full suite of services to support the educational and research needs of the university and wider community. The OU Libraries considers itself the "intellectual crossroads" of the university, providing the space, programming, materials, and services necessary to "facilitate knowledge creation."[27]

University Libraries is committed to innovation, collaboration, diversity and inclusion, engagement, integrity, learning, and agility.[28] In holding to these values, staff, librarians, and even graduate assistants and student employees are given year-round opportunities for professional development, ranging from internally developed workshops to funded conference attendance and professional guest visits. The community encourages staff and faculty to determine their individual needs and to participate in their own professional development. Many of these professional development opportunities focus on concrete skills and topics necessary for librarianship, such as skills related to STEM librarianship, information literacy teaching, and employee health, but other opportunities include interpersonal skill development. The following sections describe the collection of methods and strategies utilized across the institution, divided into three categories: 1) developing a set of knowledge, 2) practice and experience, and 3) feedback, reflection, and assessment.

Developing a Set of Knowledge

Unfortunately, because there is not a universal set of agreed-upon facts and figures to help librarians study and implement interpersonal skills, simply listing them in a bulleted list is not feasible. Beyond the previously described research, the following are the methods and resources utilized by OU Libraries for developing a working knowledge of library-based interpersonal skills. Although the following resources may also include practice and feedback (a well-developed webinar, for example, would begin with information, provide active exercises, and provide feedback), their primary focus is presenting information and best practices.

Human Resources Development

A certain benefit for a library that is a part of a larger parent organization is the ability to utilize multiple resources that are available, especially those offered by human resources (HR) departments. OU's HR department frequently holds workshops on best practices for workplace interaction, typically open to all employees. These workshops also provide opportunities for face-to-face and collaborative learning, which is an opportunity to network with faculty and staff in different departments. Employees or community members of a university also have wider access to additional resources on campus, such as auditing classes and visiting events hosted by other departments.[29] Further, schools of communication or theater provide classes and events targeted toward interpersonal and communication skills.

Live Webinars and Archived Online Content

Multiple library associations and nonprofits provide online content year-round, which include opportunities that are typically cheaper and easier to fit into busy schedules, and where attendance is not limited by geographic location.[30] The American Library Association, Amigos, Bibliotheca, Lyrasis, OCLC, and other national, international, and state associations hold webinars year-round at a variety of price points. Although learning environments such as Zoom, Google Meet, and BigBlueButton do not hold the same power as face-to-face learning, they do provide interactive features, including screen sharing, chat, reactions, and drawing applications, in addition to the ability for attendees to stream live video and audio.

Although pre-recorded online content lacks interactive components to help practice interpersonal skills, they are a fount of professional development that provides information both visually and verbally. LinkedIn Learning (formerly Lynda.com) has frequently updated content on several topics,

including emotional intelligence, effective listening, and building trust.[31] LinkedIn Learning provides the ability to stream from multiple devices, have those devices track progress, and download certificates after completion of a course. LinkedIn Learning typically requires participants to create a LinkedIn account, although after pushback from the American Library Association (ALA), LinkedIn can provide libraries with anonymous logins for users.[32]

Some websites and online tools are specifically tailored for or by libraries. G. Edward Evans and Holland Christie recommend targeted resources, such as the Kentucky Department of Libraries, OCLC's WebJunction, and InfoPeople.org, as well tools provided by the ALA and other library institutions.[33] In particular, OCLC's WebJunction, developed by a grant from the Bill and Melinda Gates Foundation, offers multiple pre-recorded webinars on customer engagement.[34] Although these videos are focused primarily on patron service and leadership, these skills can translate well into other people-centered contexts.

Observation

Although the most powerful learning happens through practice and interaction, according to Albert Bandura's social learning theory, a great deal of learning happens through observation.[35] Behavior modeling occurs when behaviors observed in peers and superiors are learned by employees.[36] OU Libraries implements a voluntary peer-shadowing program (encouraged particularly for new employees, but everyone is welcome to participate), in which other institutions have also reported positive benefits.[37] The program is not only a method of learning how other library departments work but also an opportunity to meet coworkers in depth, as well as observe how others interact with each other in various social situations.

Practice and Experience

Just like music, language proficiency, or any other skill, it is not enough to simply read and watch. Knowledge of theory and history may inform and improve approaches to skill development, but skills can only fully develop through regular practical experience. This practice may happen in regular, casual use of a skill through engagement or play, or by identifying specific skills that need improvement and exercising them in a controlled environment.

University Libraries schedules opportunities regularly throughout the year, providing a basis for continued learning of interpersonal skills. The following methods allow employees to engage with others in structured or semi-structured environments, which permit the targeted use of selected

interpersonal skills. Some of these methods also may provide opportunities for feedback and reflection.

Community of Practice Meetings

In 1998, Etienne Wenger described a community of practice (CoP) as a group of practitioners who learn from and support each other, characterized by mutual engagement with each other through a joint enterprise that binds them together and with a shared repertoire of literature and resources.[38] At the OU Libraries, a group of librarians, each with their own role in the institution, will frequently meet to discuss issues of librarianship. Sasha Barab and Thomas Duffy add that the members of a CoP share overlapping histories with each other, and the CoP will replenish itself as members cycle in and out of the community.[39]

Christina Gola and Lisa Martin combine Wenger's concept of a CoP with Goleman's emotional intelligence.[40] In this conceptualization, a community of practice acts as a network of support where members can practice, observe, and receive feedback on interpersonal competencies, particularly emotional intelligence. Through positive reinforcement and the sustained value of emotional intelligence, a community of practice becomes a support structure that continually improves how its members interact with others.

The CoP at the OU Libraries is connected by frequent communication, where they share news, information, experiences, and tips, among other discussions. Although the community of practice may develop organically, regularly meeting with each other outside of project-specific contexts reinforces these benefits. Several quarterly or monthly meetings are formal and revolve around discussions of related topics, guest lectures, or book clubs. Others are informal coffee klatches or happy hours (one after-hours group is titled the Bizzell Employee Engagement Roundtable, or B.E.E.R.), where people are free to come and go. Meeting with coworkers—from other librarians to colleagues throughout the university—outside the context of work or a project has helped librarians at OU Libraries understand each other better, in addition to practicing and observing interactions with each other.

Conferences and Workshops

While a CoP generally consists of local members who meet frequently, meeting with professionals outside of one's own institution, city, state, or even country can provide additional opportunities for socialization.[41] Multiple library associations hold in-person conferences and smaller workshops year-round, just as they hold webinars. Conferences are a chance to meet with

professionals outside of one's own institution, providing a chance to practice new communication strategies with a larger audience of people. Additionally, opportunities for public speaking provide librarians with benchmarks and goals for developing new communication skills.

Mentorship

OU Libraries provide less-experienced professionals with support, encouragement, feedback, and information to help them with career and professional development, and even personal growth, through mentoring.[42] Mentor-mentee relationships have been a popular method of professional development in the library, since they "can result in increased morale, productivity, and enhanced interpersonal working relationships."[43] A mentor typically works one-on-one with a less-experienced protege, although mentors may have more than one protege, proteges may have more than one mentor, and peers may mentor each other.[44] Volunteer mentors at OU Libraries are paired with new employees and tasked with introducing them to the library community, which may involve tours, regular meetings, and professional development.

While the benefits of mentoring are primarily intended for the mentee, mentors are likely to benefit too. According to Raymond Noe, "mentoring relationships provide opportunities for mentors to develop their interpersonal skills and to increase their feelings of self-esteem and worth to the organization."[45] George McClellan, Kristina Creager, and Marianna Savoca also mention the mentor's improved sense of purpose, communication skills, and understanding of others' needs.[46] Mentoring requires sustained use of interpersonal skills, such as active listening and emotional intelligence.[47] The mentor must listen carefully and communicate impartial advice to others and must be reliable and honest in order to build a trusting relationship.

Applied Improvisation

"Applied improvisation" is an in-person training technique derived from improvisational theater.[48] Improv theater requires interpersonal skills to participate in writing and performing well-thought-out scenes in real time. Improvisers must actively engage in active listening, oral and non-verbal communication, trust, and cooperation. It's no wonder, then, that improvisers have developed improv as a method of practicing those skills. Kate Dohe and Erin Pappas, and Anthony Stamatoplos, have further developed applied improvisation workshops geared toward librarians, particularly in the fields of management, user services, reference, and information literacy.[49] John Upchurch and Kimberly Westbrooks find that the same skills transfer to in-

terdisciplinary contexts; "While most applicable in the classroom and at the reference desk, these practices also have a place at the meeting table."[50]

Applied improvisation was developed from improv theater, where it is common for performers to be put "on the spot" to create a character and scene in real time. However, training rarely puts people "on the spot" in this way; instead, it relies on group-based active learning exercises to build interpersonal skills. Researchers have long understood that role-playing benefits interpersonal skills, particularly if "practice sessions [break] down tasks into manageable parts."[51] Applied improvisation is particularly suitable for developing exercises that isolate active listening, communication, cooperation, and trust, as well as each of the non-verbal and verbal skills previously listed by Jennerich and Jennerich.[52]

Games

Board games, card games, role-playing games, and some video games also provide various levels of interpersonal interaction through structured play. Playing and even developing board games improves collaboration, communication, and decision-making skills among children and adults.[53] An explosion in the number of independent game developers in the twenty-first century has resulted in a wide variety of new games with innovative mechanics, which allows players to select games that target specific skills. Board game categories include:

- Competitive games where the players attempt to beat each other through a combination of skill and random chance (e.g., *Monopoly* and *Scrabble*);
- Cooperative games where the players work as one team toward a common goal (e.g., *Pandemic* and *Flash Point*);
- Social deduction games where some players use subterfuge while others must determine which players are lying (murder mysteries and games such as *Werewolf*, *Avalon*, and *Secret Hitler*);
- Low-stakes competitive games that downplay their competitive nature in favor of enjoyable gameplay (e.g., *Apples to Apples* and *Superfight*);
- Word-based games where players must employ judicious use of language to communicate ideas (e.g., *Dixit* and *Codenames*); and
- Role-playing games (RPGs) where players portray characters, either playing out or describing their reactions to various scenarios (e.g., *Dungeons & Dragons*, *GURPS*, and *Fiasco*).

Library game events with the OU School of Library and Information Studies and informal gaming groups among staff provide opportunities for

librarians and community members to interact with others in controlled settings. Even family centers, with laser tag, bowling, mini-golf, and other active games, provide either structured or informal participation. Players can practice awareness, communication, and other soft skills through the structured play presented by these games. If a library or college campus already holds such events, librarians should be highly encouraged to participate. If not, it is an option for outreach and programming with the community, or internal professional development with other library personnel.

Feedback and Reflection

A common misconception is that "practice makes perfect." It is more accurate to say "practice makes *permanent*," solidifying a repeated activity in the mind regardless of its rightness. Practice without assessment may develop bad habits. While practice is essential for learning a skill, feedback and reflection are necessary to ensure that skills are being learned accurately and effectively. As much as employers are able to identify interpersonal skills they want employees to demonstrate, the difficulty of measuring those skills creates a challenge for employees who want to identify and improve them. Therefore, continuous assessment from multiple perspectives is necessary.

Feedback

Receiving communication about one's behavior and how it affects others is an integral part of improving interpersonal skills.[54] Many of the methods listed previously in this chapter include some form of feedback and assessment. A more relevant source of feedback are the people librarians interact with regularly, such as peers, external customers, and direct reports, who can help identify where improvements are needed and how much progress has been made. Feedback from others consists of the subjective perspectives, but gathering multiple perspectives helps to create a clearer idea of one's strengths and weaknesses.

It can be challenging to take criticism, but it is an opportunity to improve. Kevin Kruse and McClellan et al. recommend several tips for taking criticism constructively.[55] Use active listening and be present and aware of the full message, even if the feedback is awkward. Resist arguing, especially using clarifying questions as a retort. Take some time to consider the feedback on its merits and reflect on how it may be addressed. And finally, be mindful of one's own behavior afterward, and look for instances where the feedback applies.

Reflection

While feedback from the people librarians interact with most provides a more objective perspective on skills that need to be improved, an individual

is really the only one who witnesses all of their own behaviors, experiences, thoughts, and feelings, albeit subjectively. Self-reflective capacity has been widely identified as an equally important aspect of self-improvement.[56] Journaling interactions with others and noting and revisiting what went right, what went wrong, and areas to improve can help bring awareness to individual actions, habits, and behaviors. Through this self-awareness and ongoing assessment of strengths and weaknesses, librarians will be able to track and improve their soft skills.

Michelle Reale also recommends writing details and thoughts down as soon as possible after an event or interaction (including the ones listed previously) and finding a regular time every week to review them.[57] Honesty in personal reflections and a healthy detachment from ego are difficult but necessary. The process may be messy at first, but just like any other skill, reflection can improve skills over time. Additionally, this does not only have to be an individual exercise but can be used among colleagues in a community of practice, since although "the *act* of reflection is often private, the *results* of that reflection don't have to be."[58]

Conclusion

Reale quotes Osterman and Kottkamp's credo for reflective practice:[59]

1. Everyone needs professional growth opportunities.
2. All professionals want to improve.
3. All professionals can learn.
4. People want to change.
5. People need and want information about their own performance. All professionals are capable of assuming responsibility for their own professional growth and development.
6. Collaboration enriches professional development.

The goal of professional development at the University of Oklahoma Libraries is not to become the paragon of people skills; everyone from the shyest and inexperienced librarians to those with experience and talent in interacting with others have the capacity to improve. And as Reale emphasizes, professionals must also have patience. Interpersonal skills will not be learned in one sitting, so librarians are constantly searching for opportunities for continued learning, experimenting with new methods, revisiting methods in new contexts, and undertaking reflection and assessment. These endeavors have opened the culture of OU Libraries, allowing for more adventurous collaboration among librarians and the wider university community.

Several approaches to interpersonal development used throughout OU Libraries are a place to start. Webinars and archived content are sources of information on relevant skill sets, including history, research, and advice. Observation of others through formal mentoring programs and informal job shadowing can help identify skills in others to model. Formal and informal community of practice discussions strengthen relationships between community members. Professional conferences and workshops provide opportunities to practice and "flex" interpersonal skills. Human resource departments frequently hold resources for professional development of communication skills. Mentoring not only provides the protege with support but also provides mentors with opportunities to engage in communication skills and emotional intelligence. Applied improvisation workshops create classroom environments where soft skills can be isolated and rehearsed. Board games and related media provide controlled settings for interactions with each other. Feedback and reflection provide multiple perspectives for an individual to assess their skills, identify where they need improvement, and track their progress.

These methods are both formal and informal at the University of Oklahoma Libraries, from individually implemented endeavors to institutionally supported programs. This list is not exhaustive, and finding new innovations for personal interaction should be encouraged for academic librarians and staff. These are also not mutually exclusive; multiple activities may be scheduled throughout the calendar year and may be combined to strengthen their impact. Developing interpersonal skills is also personal; methods that work for one person or team may not work for another (be mindful, too, of team members' comfort level when recommending or assigning interactive activities).

The importance of interpersonal skills used to connect with the wider university community should compel librarians to seek development, either independently or as part of a team. Likewise, academic libraries as institutions should devote substantial resources and time for interpersonal skill development. These skills are as important as any technical skills, especially for a profession so focused on people and community. To reach their community, the best place to start is the best resource librarians have: each other.

Notes

1. "OU Libraries: Facts," University Libraries, accessed September 30, 2021, https://libraries.ou.edu/content/ou-libraries-facts.

2. R. David Lankes, *The Atlas of New Librarianship* (Cambridge, MA: MIT Press, 2011), 13.

3. Emy Nelson Decker, "The X-Factor in Academic Libraries: The Demand for Soft Skills in Library Employees," *College & Undergraduate Libraries* 27, no. 1 (2020): 17–31; Laura Saunders, "Core Knowledge and Specialized Skills in Academic Librar- ies," *College & Research Libraries* 81, no. 2 (2020): 288–311; Meredith Schwartz, "Top Skills for Tomorrow's Librarians," *Library Journal* 141, no. 4 (2016): 38–39.

4. Kate Murphy, "We're All Socially Awkward Now," *The New York Times*, Sep- tember 6, 2020.

5. Miriam L. Matteson, Lorien Anderson, and Cynthia Boyden, "'Soft Skills': A Phrase in Search of Meaning," *portal*: *Libraries and the Academy* 16, no. 1 (2016): 83.

6. Miriam Matteson, Matthew McShane, and Emily Hankinson, "Soft Skills Revealed: An Examination of Relational Skills in Librarianship," in *Recasting the Narrative: The Proceedings of the ACRL 2019 Conference* (Chicago, IL: Association of College and Research Libraries, 2019).

7. Decker, "The X-Factor in Academic Libraries;" Cameron Klein, Renee E. DeRuin, and Eduardo Salas, "Uncovering Workplace Interpersonal Skills: A Review, Framework, and Research Agenda," in *International Review of Industrial and Or- ganizational Psychology* (West Sussex, England: John Wiley & Sons, 2006), 79–126; Matteson, McShane, and Hankinson, "Soft Skills Revealed."

8. Elena Dell'Aquila, Davide Marocco, Michela Ponticorvo, Andrea di Ferdi- nando, Massimiliano Schembri, and Orazio Miglino, "Soft Skills," in *Educational Games for Soft-Skills Training in Digital Environments* (New York: Springer Interna- tional Publishing, 2017), 1–18.

9. Joann Keyton, Jennifer Caputo, Emily Ford, Rong Fu, Samantha Leibowitz, Tingting Liu, Sarah Polasik, Paromita Ghosh, and Chaofan Wu, "Investigating Verbal Workplace Communication Behaviors," *Journal of Business Communication* 50, no. 2 (2013): 152–69.

10. Matteson, Anderson, and Boyden, "Soft Skills."

11. Margaret Burnette, "Tacit Knowledge Sharing among Library Colleagues: A Pilot Study," *Reference Services Review* 45, no. 3 (2017): 382–97.

12. Ibid., 383.

13. Daniel Goleman, *Working with Emotional Intelligence* (New York: Bantam Books, 1998); Debra Lucas, "Emotional Intelligence for Librarians," *Library Leader- ship & Management* 34, no. 3 (2020): 1–14; Diane Klare, Melissa Behney, and Barbara Ferrer Kenney, "Emotional Intelligence in a Stupid World," *Library Hi Tech News* 31, no. 6 (2014): 21–24; Klein, DeRuin, and Salas, "Uncovering Workplace Interpersonal Skills," 79–126.

14. Klein, DeRuin, and Salas, "Uncovering Workplace Interpersonal Skills."

15. Ibid., 81.

16. Susan Elaine Murphy, Stefanie Putter, and Stefanie K. Johnson, "Soft Skills Training: Best Practices in Industry and Higher Education," in *Leader Interpersonal and Influence Skills: The Soft Skills of Leadership* (New York: Routledge, 2013), 278.

17. Jonathan Kelley and Lois Ann Gregory-Wood, "Committee on Diversity Re- port to Council," 2017: 4.

18. Paul Gorski, "Avoiding Racial Equity Detours," *Educational Leadership* 76, no. 7 (2019): 56–61.

19. Bridgette Comanda, Jaci Wilkinson, Faith Bradham, Amanda Koziura, and Maura Seale, "Service Ceiling: The High Cost of Professional Development for Academic Librarians," *In the Library With the Lead Pipe* (2021).

20. Elaine Jennerich and Edward Jennerich, *The Reference Interview as a Creative Art* (Englewood, CO: Libraries Unlimited, 1997).

21. Lucile Wilson, *People Skills for Library Managers: A Common Sense Guide for Beginners* (Englewood, CO: Libraries Unlimited, 1996); Klare, Behney, and Kenney, "Emotional Intelligence in a Stupid World."

22. Jennerich and Jennerich, *The Reference Interview as a Creative Art*.

23. Matteson, McShane, and Hankinson, "Soft Skills Revealed."

24. Matteson, Anderson, and Boyden, "Soft Skills," 78.

25. Klein, DeRuin, and Salas, "Uncovering Workplace Interpersonal Skills."

26. Matteson, Anderson, and Boyden, "Soft Skills," 83.

27. "OU Libraries: Facts," *University Libraries*, accessed September 30, 2021, https://libraries.ou.edu/content/ou-libraries-facts.

28. "OU Libraries: About," *University Libraries*, accessed September 30, 2021, https://libraries.ou.edu/about.

29. Peggy Keeran and Carrie Forbes, eds., *Successful Campus Outreach for Academic Libraries: Building Community through Collaboration* (Lanham, MD: Rowman & Littlefield, 2018).

30. Beth R. Hendrix and Alyse E. McKeal, "Case Study: Online Continuing Education for New Librarians," *Journal of Library & Information Services in Distance Learning* 11, nos. 3–4 (2017), https://doi.org/10.1080/1533290X.2017.1404545.

31. Thomas Pack, "LinkedIn Learning Provides 9,000-Plus Online Courses," *Information Today* 34, no. 1 (2017).

32. American Libraries, "LinkedIn Learning Updates Policies after ALA Pressure," *American Libraries* 51, no. 6 (2020).

33. G. Edward Evans and Holland Christie, *Managerial Leadership for Librarians* (Santa Barbara, CA: Libraries Unlimited, 2017).

34. "WebJunction," WebJunction, OCLC, 2020, https://learn.webjunction.org/.

35. Raymond A. Noe, *Employee Training and Development,* 4th ed. (New York: McGraw-Hill/Irwin, 2008), 35–36.

36. Klein, DeRuin, and Salas, "Uncovering Workplace Interpersonal Skills," 110.

37. Emily Rae Aldridge, "What They Didn't Tell Me in Library School Is That My Colleagues Would Be My Biggest Asset," *Reference & User Services Quarterly* 52, no. 1 (2012): 28–29.

38. Etienne Wenger, *Communities of Practice: Learning, Meaning, and Identity* (Cambridge, UK: Cambridge University Press, 1998).

39. Sasha Barab and Thomas Duffy, "From Practice Fields to Communities of Practice," in *Theoretical Foundations of Learning Environments,* eds. David Jonassen and Susan M. Land (Mahwah, NJ: Lawrence Erlbaum Associates, 2000), 25–56.

40. Christina H. Gola and Lisa Martin, "Creating an Emotional Intelligence Community of Practice: A Case Study for Academic Libraries," *Journal of Library Administration* 60, no. 7 (2020): 752–61.

41. Cindy Hill, "Jumping Hurdles: How to Build on Your Strengths," *Information Outlook* 24, no. 1 (2020): 26; Stacey Konkeil, *The 30-Day Impact Challenge: The Ultimate Guide to Raising the Profile of Your Research* (Self-published: Impactstory, 2014).

42. Jolie O. Graybill, Maria Taesil Hudson Carpenter, Jerome Offord, Mary Piorun, and Gary Shaffer, "Employee Onboarding: Identification of Best Practices in ACRL Libraries," *Library Management* 34, no. 3 (2013): 200–18; Klein, DeRuin, and Salas, "Uncovering Workplace Interpersonal Skills;" Kevin M. Ross, "Purposeful Mentoring in Academic Libraries," *Journal of Library Administration* 53, nos. 7–8 (2013): 412–28.

43. Klein, DeRuin, and Salas, "Uncovering Workplace Interpersonal Skills," 112.

44. Juliann Couture, Jennie Gerke, and Jennifer Knievel, "Getting into the Club: Existence and Availability of Mentoring for Tenured Librarians in Academic Libraries," *College & Research Libraries* 81, no. 4 (2020): 676–700.

45. Noe, *Employee Training and Development*, 341.

46. George S. McClellan, Kristina Creager, and Marianna Savoca, *A Good Job: Campus Employment as a High-Impact Practice* (Sterling, VA: Stylus Publishing, 2018).

47. Konkeil, *The 30-Day Impact Challenge*.

48. Jay Edwards, "Lessons From Improv Theater: Applying Improvisational Concepts and Techniques to LIS," *Texas Library Journal* 96, no. 2.5 (2020): 135–40.

49. Kate Dohe and Erin Pappas, "Lessons From the Field: What Improv Teaches Us About Collaboration," *Library Leadership & Management (Online)* 32, no. 1 (2017): 1–16; Anthony Stamatoplos, "Improvisational Theater as a Tool for Enhancing Cooperation in Academic Libraries," in *Pushing the Edge: Explore, Engage, Extend: Proceedings of the Fourteenth National Conference of the Association of College and Research Libraries, March 12–15, 2009, Seattle, Washington* (Chicago, IL: Association of College and Research Libraries, 2009); John Upchurch and Kimberly Westbrooks, "Learning to Say 'Yes, And': An Introduction to Improv Philosophy for Library Professionals," *The Southeastern Librarian* 69, no. 2 (2020).

50. Upchurch and Westbrooks, "Learning to Say 'Yes, And,'" 14.

51. Klein, DeRuin, and Salas, "Uncovering Workplace Interpersonal Skills," 110.

52. Jennerich and Jennerich, *The Reference Interview as a Creative Art*.

53. Emily C. Anania, Joseph R. Keebler, Katlin M. Anglin, and Jason P. Kring, "Using the Cooperative Board Game Pandemic to Study Teamwork," *Proceedings of the Human Factors and Ergonomics Society Annual Meeting* 60, no. 1 (2016); Rebecca Yvonne Bayeck, "Examining Board Gameplay and Learning: A Multidisciplinary Review of Recent Research," *Simulation & Gaming* 51, no. 4 (2020): 411–31; Mariette Frazer and Marius Wait, "Investigating Retention and Workplace Implementation of Board Game Learning in Employee Development," *Acta Commercii* 18, no. 1 (2018): 1–7; Robyn Hromek and Sue Roffey, "Promoting Social and Emotional Learning With Games," *Simulation & Gaming* 40, no. 5 (2009): 626–44.

54. Klein, DeRuin, and Salas, "Uncovering Workplace Interpersonal Skills"; Matteson, Anderson, and Boyden, "Soft Skills."

55. McClellan, Creager, and Savoca, *A Good Job*; Kevin Kruse, "How to Receive Feedback and Criticism," *Forbes.com* (2014).

56. Matteson, Anderson, and Boyden, "Soft Skills"; Tammi M. Owens and Carol A. Daul-Elhindi, *The 360 Librarian: A Framework for Integrating Mindfulness, Emo-*

tional Intelligence, and Critical Reflection in the Workplace (Chicago, IL: Association of College and Research Libraries, 2020); Michelle Reale, *Becoming a Reflective Librarian and Teacher: Strategies for Mindful Academic Practice* (Chicago, IL: American Library Association, 2017).

57. Reale, *Becoming a Reflective Librarian and Teacher.*

58. Ibid., 18.

59. Ibid., 86.

Bibliography

Aldridge, Emily Rae. "What They Didn't Tell Me in Library School Is That My Colleagues Would Be My Biggest Asset." *Reference & User Services Quarterly* 52, no. 1 (2012): 28–29. https://search-ebscohost-com.ezproxy.lib.ou.edu/login.aspx?direct=true&db=llf&AN=80034973&site=ehost-live.

American Library Association. "LinkedIn Learning Updates Policies after ALA Pressure." *American Libraries* 51, no. 6 (2020): 8.

Anania, Emily C., Joseph R. Keebler, Katlin M. Anglin, and Jason P. Kring. "Using the Cooperative Board Game Pandemic to Study Teamwork." *Proceedings of the Human Factors and Ergonomics Society Annual Meeting* 60, no. 1 (2016): 1770–74. https://doi.org/10.1177/1541931213601405.

Barab, Sasha, and Thomas Duffy. "From Practice Fields to Communities of Practice." In *Theoretical Foundations of Learning Environments*, edited by D. Jonassen and S. M. Land, 25–56. Mahwah, NJ: Lawrence Erlbaum Associates, 2000.

Bayeck, Rebecca Yvonne. "Examining Board Gameplay and Learning: A Multidisciplinary Review of Recent Research." *Simulation & Gaming* 51, no. 4 (2020): 411–31.

Burnette, Margaret. "Tacit Knowledge Sharing among Library Colleagues: A Pilot Study." *Reference Services Review* 45, no. 3 (2017): 382–97. https://doi.org/10.1108/RSR-11-2016-0082.

Comanda, Bridgette, Jaci Wilkinson, Faith Bradham, Amanda Koziura, and Maura Seale. "Service Ceiling: The High Cost of Professional Development for Academic Librarians." *In the Library With the Lead Pipe* (2021). https://www.inthelibrarywiththeleadpipe.org/2021/service-ceiling/.

Couture, Juliann, Jennie Gerke, and Jennifer Knievel. "Getting into the Club: Existence and Availability of Mentoring for Tenured Librarians in Academic Libraries." *College & Research Libraries* 81, no. 4 (2020): 676–700.

Decker, Emy Nelson. "The X-Factor in Academic Libraries: The Demand for Soft Skills in Library Employees." *College & Undergraduate Libraries* 27, no. 1 (2020): 17–31. https://doi.org/10.1080/10691316.2020.1781725.

Dell'Aquila, Elena, Davide Marocco, Michela Ponticorvo, Andrea di Ferdinando, Massimiliano Schembri, and Orazio Miglino. "Soft Skills." In *Educational Games for Soft-Skills Training in Digital Environments*, edited by Elena Dell'Aquila, Davide Marocco, Michela Ponticorvo, Andrea Di Ferdinando, Massimiliano Schembri, and Orazio Miglino, 1–18. New York: Springer International Publishing, 2017. https://doi.org/10.1007/978-3-319-06311-9_1.

Dohe, Kate, and Erin Pappas. "Lessons from the Field: What Improv Teaches Us About Collaboration." *Library Leadership & Management (Online)* 32, no. 1 (2017): 1–16. https://search-proquest-com.ezproxy.lib.ou.edu/docview/1966065804?account id=12964.

Edwards, Jay. "Lessons from Improv Theater: Applying Improvisational Concepts and Techniques to LIS." *Texas Library Journal* 96, no. 2.5 (2020): 135–40.

Evans, G. Edward, and Holland Christie. *Managerial Leadership for Librarians*. Santa Barbara, CA: Libraries Unlimited, 2017.

Frazer, Mariette, and Marius Wait. "Investigating Retention and Workplace Implementation of Board Game Learning in Employee Development." *Acta Commercii* 18, no. 1 (2018): 1–7.

Gola, Christina H., and Lisa Martin. "Creating an Emotional Intelligence Community of Practice: A Case Study for Academic Libraries." *Journal of Library Administration* 60, no. 7 (2020): 752–61. https://doi.org/10.1080/01930826.2020.1786982.

Goleman, Daniel. *Working with Emotional Intelligence*. New York: Bantam Books, 1998.

Gorski, Paul. "Avoiding Racial Equity Detours." *Educational Leadership* 76, no. 7 (2019): 56–61.

Graybill, Jolie O., Maria Taesil Hudson Carpenter, Jerome Offord, Mary Piorun, and Gary Shaffer. "Employee Onboarding: Identification of Best Practices in ACRL Libraries." *Library Management* 34, no. 3 (2013): 200–18. https://doi .org/10.1108/01435121311310897.

Hendrix, Beth R., and Alyse E. McKeal. "Case Study: Online Continuing Education for New Librarians." *Journal of Library & Information Services in Distance Learning* 11, nos. 3–4 (2017): 346–54. https://doi.org/10.1080/1533290X.2017.1404545.

Hill, Cindy. "Jumping Hurdles: How to Build on Your Strengths." *Information Outlook* 24, no. 1 (2020): 26. https://search.ebscohost.com/login.aspx?direct=true&db =llf&AN=142221466&site=ehost-live.

Hromek, Robyn, and Sue Roffey. "Promoting Social and Emotional Learning with Games." *Simulation & Gaming* 40, no. 5 (2009): 626–44.

Jennerich, Elaine, and Edward Jennerich. *The Reference Interview as a Creative Art*. 2nd ed. Englewood, CO: Libraries Unlimited, 1997.

Keeran, Peggy, and Carrie Forbes. *Successful Campus Outreach for Academic Libraries: Building Community through Collaboration*. Lanham, MD: Rowman & Littlefield, 2018.

Klare, Diane, Melissa Behney, and Barbara Ferrer Kenney. "Emotional Intelligence in a Stupid World." *Library Hi Tech News* 31, no. 6 (2014): 21–24. https://doi.org /10.1108/LHTN-06-2014-0042.

Kelley, Jonathan, and Lois Ann Gregory-Wood. "Committee on Diversity Report to Council," 2017, 4. http://www.ala.org/aboutala/sites/ala.org.aboutala/files/content /governance/council/council_documents/2017_annual/cd_44-44.2_cod_62617 _FINAL.pdf.

Keyton, Joann, Jennifer Caputo, Emily Ford, Rong Fu, Samantha Leibowitz, Tingting Liu, Sarah Polasik, Paromita Ghosh, and Chaofan Wu. "Investigating Verbal Workplace Communication Behaviors." *Journal of Business Communication* 50, no. 2 (2013): 152–69. 10.1177/0021943612474990.

Klein, Cameron, Renee E. DeRuin, and Eduardo Salas. "Uncovering Workplace Interpersonal Skills: A Review, Framework, and Research Agenda." In *International Review of Industrial and Organizational Psychology*, edited by Gerard P. Hodgkinson and J. Kevin Ford, 79–126. West Sussex, England: John Wiley & Sons, 2006.

Konkeil, Stacey. *The 30-Day Impact Challenge: The Ultimate Guide to Raising the Profile of Your Research*. Self-published: Impactstory, 2014. http://blog.impactstory .org/wp-content/uploads/2015/01/impact_challenge_ebook_links.pdf.

Kruse, Kevin. "How to Receive Feedback and Criticism." *Forbes.com* (2014). https:// www.forbes.com/sites/kevinkruse/2014/08/12/how-to-receive-feedback-and -criticism/?sh=1120ca0f7c3f.

Lankes, R. David. *The Atlas of New Librarianship*. Cambridge, MA: MIT Press, 2011.

Lucas, Debra. "Emotional Intelligence for Librarians." *Library Leadership & Management* 34, no. 3 (2020): 1–14. http://search.ebscohost.com.ezproxy.lib.ou.edu/login .aspx?direct=true&db=llf&AN=144305455&site=ehost-live.

Matteson, Miriam L., Lorien Anderson, and Cynthia Boyden. "'Soft Skills': A Phrase in Search of Meaning." *portal: Libraries and the Academy* 16, no. 1 (2016): 71–88.

Matteson, Miriam, Matthew McShane, and Emily Hankinson. "Soft Skills Revealed: An Examination of Relational Skills in Librarianship." In *Recasting the Narrative: The Proceedings of the ACRL 2019 Conference*. Chicago, IL: Association of College and Research Libraries, 2019. https://www.ala.org/acrl/conferences/acrl2019/papers.

McClellan, George S., Kristina Creager, and Marianna Savoca. *A Good Job: Campus Employment as a High-impact Practice*. Sterling, VA: Stylus Publishing, 2018.

Murphy, Kate. "We're All Socially Awkward Now." *The New York Times* (September 6, 2020).

Murphy, Susan Elaine, Stefanie Putter, and Stefanie K. Johnson. "Soft Skills Training: Best Practices in Industry and Higher Education." In *Leader Interpersonal and Influence Skills: The Soft Skills of Leadership*, edited by Ron Riggio and Sherylle Tan, 276–310. New York: Routledge, 2013. https://doi.org/10.4324/9780203760536.

Noe, Raymond A. *Employee Training and Development*. 4th ed. New York: McGraw-Hill/Irwin, 2008.

"OU Libraries: About." *University Libraries*. Accessed September 30, 2021. https:// libraries.ou.edu/about.

"OU Libraries: Facts." *University Libraries*. Accessed September 30, 2021. https:// libraries.ou.edu/content/ou-libraries-facts.

Owens, Tammi M., and Carol A. Daul-Elhindi. *The 360 Librarian: A Framework for Integrating Mindfulness, Emotional Intelligence, and Critical Reflection in the Workplace*. Chicago, IL: Association of College and Research Libraries, 2020.

Pack, Thomas. "LinkedIn Learning Provides 9,000-Plus Online Courses." *Information Today* 34, no. 1 (2017): 31.

Reale, Michelle. *Becoming a Reflective Librarian and Teacher: Strategies for Mindful Academic Practice*. Chicago, IL: American Library Association, 2017.

Ross, Kevin M. "Purposeful Mentoring in Academic Libraries." *Journal of Library Administration* 53, nos. 7–8 (2013): 412–28. https://doi.org/10.1080/01930826.2013 .882195.

Saunders, Laura. "Core Knowledge and Specialized Skills in Academic Libraries." *College & Research Libraries* 81, no. 2 (2020): 288–311. https://doi.org/10.5860/crl.81.2.288.

Schwartz, Meredith. "Top Skills for Tomorrow's Librarians." *Library Journal* 141, no. 4 (2016): 38–39. https://search.ebscohost.com/login.aspx?direct=true&site=eds-live&db=ehh&AN=113203139.

Stamatoplos, Anthony. "Improvisational Theater as a Tool for Enhancing Cooperation in Academic Libraries." In *Pushing the Edge: Explore, Engage, Extend: Proceedings of the Fourteenth National Conference of the Association of College and Research Libraries*. Chicago, IL: Association of College and Research Libraries, 2009. https://www.ala.org/acrl/conferences/confsandpreconfs/national/seattle/seattle.

Upchurch, John, and Kimberly Westbrooks. "Learning to Say 'Yes, And': An Introduction to Improv Philosophy for Library Professionals." *The Southeastern Librarian* 69, no. 2 (2020).

"WebJunction." WebJunction. OCLC, 2020. https://learn.webjunction.org/.

Wenger, Etienne. *Communities of Practice: Learning, Meaning, and Identity*. Cambridge, UK: Cambridge University Press, 1998.

Wilson, Lucile. *People Skills for Library Managers: A Common Sense Guide for Beginners*. Englewood, CO: Libraries Unlimited, 1996.

14

Expanding the Skillset

Data Literacy in Undergraduate Education

Susan E. Montgomery

COLLEGES, UNIVERSITIES, AND employers recognize the importance that students be information literate. The age of information, where content is easily available and accessible, has reinforced the value that students need to learn where to find quality information and to know how to critically evaluate it. Librarians have positioned themselves to provide relevant and meaningful instruction sessions to students on finding, accessing, and using information resources. Although the focus initially was on textual sources, librarians have begun to expand the definition of sources as researchers adopt new types of information formats in their scholarship.[1] Data as an information source and data literacy knowledge have emerged as essential topics in this information literacy conversation. As the National Research Council states, "*Data* are facts, numbers, letters, and symbols that describe an object, idea, condition, situation or other factors."[2] The growth of a "data-rich society" and "data-driven" research where massive amounts of data are created daily has underscored the increased need for students to become data literate.[3] Librarians as information specialists must be engaged in the conversation and contribute to educating data-literate students.

This chapter discusses the intersections between data literacy and information literacy in the context of the Association of College and Research Libraries' (ACRL) *Framework for Information Literacy for Higher Education.*[4] It also looks at how three different disciplines (history, sociology, and biology) define data and the expectations for students to use data to reveal the interdisciplinary nature of data literacy. Finally, using examples from several different academic

libraries, it provides approaches for how librarians can best support and serve students and faculty regarding data literacy on their campuses.

Literature Review

The exponential growth of data combined with quick, easy access to information has meant that it is more important than ever for college students to learn how to find, access, evaluate, and ethically use information. Librarians have long educated students to be competent and critical information consumers. With the changing information landscape, librarians must now advance their instruction to include data. To be data literate, students need to be able to "collect, manage, evaluate, and apply data in a critical manner."[5] Recognizing data as a form of information can facilitate librarians' involvement in developing data-literate students. For example, text-based data, or qualitative data, can be collected from various methods such as semi-structured interviews, content analysis, focus groups, and more. Numeric data, or quantitative data, can be collected through surveys, questionnaires, or polls. Despite the differences in the data format, librarians have often regarded the term *data* "to be almost indistinguishable from *information*."[6] In fact, Kristin Fontichiaro and Jo Angela Oerhli have proposed that data literacy be considered a subset of information literacy since students need to "move fluidly between text and visually represented information."[7] In addition, the overwhelming emphasis on statistics in everyday information has promoted the importance for people to develop statistical literacy to complement data literacy.[8] Milo Schield has contended that at the core of information literacy, statistical literacy, and data literacy is critical thinking.[9] He further stated that librarians are "eminently qualified to teach students how to think critically" about information.[10] Librarians should be committed to helping students develop the skills to be informed consumers and producers of information. Throughout the information ecosystem, data is a form of information that people create, use, and reference in their work. Its increasing significance means that it is a necessity for academic librarians to incorporate data literacy as part of information literacy instruction programs.

ACRL *Framework*

Librarians can easily incorporate the concepts of data literacy into their instruction because of the close ties between data literacy and information literacy. In 2015, ACRL revised its standards for information literacy by

expanding the definition of the term: "Information literacy is the set of integrated abilities encompassing the reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and participating ethically in communities of learning."[11] Accompanying the revised definition, ACRL adopted the *Framework for Information Literacy for Higher Education*, known as the *Framework*, replacing the previous *Information Literacy Competency Standards for Higher Education*, referred to as the *Standards*. The six frames included in the *Framework* are interrelated core concepts that recognize students as information consumers and creators. The frames do not specifically define what information is and thereby gives librarians leeway to expand and modify the concept depending on the goals of their teaching. In the previous *Standards*, several of the outcomes included the term data as an information source citing terms such as "raw data" or "data set" in the document. Standard 3 Outcome 4.e recognized the importance of students evaluating data, stating that students should be able to determine "probable accuracy by questioning the source of the data."[12] Unlike the *Standards*, the *Framework* does not explicitly use the term data. However, the omission of the word from the *Framework* does not indicate that it is irrelevant. Instead, academic librarians have capitalized on the flexibility of the *Framework* to include data instruction in their teaching.[13]

Javier Calzada Prado and Miguel Ángel Marzal analyzed the relationship between the core competencies of data literacy with the prior *Standards* and discipline-focused standards.[14] They concluded that data literacy and information literacy "are complementary" and contribute to expanding the definition of information resources in knowledge creation.[15] Their article proposes five data literacy competencies that they structure similar to the *Standards*. These competencies include the following: understanding data; finding and/or obtaining data; reading, interpreting and evaluating data; managing data; and using data.[16] Each competency includes a definition or explanation on how students demonstrate their learning as well as instructional ideas to incorporate the competency into the classroom.[17] Inspired by earlier research, the next section of this chapter examines the relationship between the data literacy competencies developed by Prado and Marzal and the *Framework for Information Literacy in Higher Education* in order to highlight the intersections of both literacies (see Table 14.1). The data literacy competencies intersect with different "frames" illustrating the strong relationship with information literacy. The table focuses on the "knowledge practices," or the demonstrations of student learning, which librarians apply in their instruction. The frames are presented in alphabetical order, as delineated in the *Framework*.

TABLE 14.1
Comparison Between Framework and Core Competencies for Data Literacy Instruction

Core Competencies for Data Literacy Instruction	ACRL Framework for Information Literacy for Higher Education Knowledge Practices — American Library Association, "Framework for Information Literacy"					
	Authority is Constructed and Contextual	Information Creation as Process	Information has Value	Research as Inquiry	Scholarship as Conversation	Searching as Strategic Exploration
Understanding Data	define different types of authority, such as subject expertise (e.g., scholarship), societal position (e.g., public office or title), or special experience (e.g., participating in a historic event)	articulate the capabilities and constraints of information developed through various creation processes	make informed choices regarding their online actions in full awareness of issues related to privacy and the commodification of personal information	formulate questions for research based on information gaps or on reexamination of existing, possibly conflicting, information	identify the contribution that particular articles, books, and other scholarly pieces make to disciplinary knowledge	determine the initial scope of the task required to meet their information needs
Finding and/or Obtaining Data	use research tools and indicators of authority to determine the credibility of source, understanding the elements that might temper this credibility	assess the fit between an information product's creation process and a particular information need	recognize issues of access or lack of access to information sources	formulate questions for research based on information gaps or on reexamination of existing, possibly conflicting, information	identify barriers to entering scholarly conversation via various venues	identify interested parties, such as scholars, organizations, governments, and industries, who might produce information about a topic and then determine how to access that information

Reading, Interpreting, and Evaluating Data	recognize that authoritative content may be packaged formally or informally and may include sources of all media types	recognize that information may be perceived differently based on the format in which it is packaged	understand how and why some individuals or groups of individuals may be underrepresented or systematically marginalized within the systems that produce and disseminate information	draw reasonable conclusions based on the analysis and interpretation of information	critically evaluate contributions made by others in participatory information environments	understand how information systems (i.e., collections of recorded information) are organized in order to access relevant information
Managing Data	use research tools and indicators of authority to determine the credibility of sources, understanding the elements that might temper this credibility	recognize the implications of information formats that contain static or dynamic information	articulate the purpose and distinguishing characteristics of copyright, fair use, open access, and the public domain	organize information in meaningful ways	recognize that a given scholarly work may not represent the only or even the majority perspective on the issue	manage searching processes and results effectively
Using Data	acknowledge they are developing their own authoritative voices in a particular area and recognize the responsibilities this entails, including seeking accuracy and reliability, respecting intellectual property, and participating in communities of practice	develop, in their own creation processes, an understanding that their choices impact the purposes for which the information product will be used and the message it conveys	give credit to the original ideas of others through proper attribution and citation	synthesize ideas gathered from multiple sources	cite the contributing work of others in their own information production	design and refine search needs and search strategies as necessary, based on search results

Authority Is Constructed and Contextual

The *Framework* expects researchers to understand that the entity responsible for creating data or information may vary. This frame acknowledges the diversity of voices and perspectives that can be an authority for an information source. Understanding the expertise of the person or group providing the data is essential to becoming data literate. Prado and Marzal emphasize the importance for students to determine the authorship of the data and its source in order to evaluate and use the content effectively. Similar to the frame "Research as Inquiry," this frame expects students "to critically examine all evidence and to ask relevant questions about origins, context, and suitability for the current information need."[18] Determining who the authority is for a data source guides students on where to look for data and to understand that an authority has a viewpoint or perspective for providing the data. Students must realize that the data format may facilitate or impede its accessibility and use. Furthermore, students must also think of themselves as an authority in their own data collection and recognize that their data must be reliable, accurate, and collected ethically.

Information Creation as Process

The *Framework* recognizes that the process to create information varies, and researchers must investigate how content is presented to understand how best to use it. Similarly, data is collected in different ways, and the method used reveals an understanding about the content. The type of data, either quantitative or qualitative, informs the researcher about the collection process, the possibilities for how to use the data to create new knowledge, and how to analyze it effectively. As delineated in the second data literacy competency presented by Prado and Marzal, "Reading/interpreting evaluating data," students need to know about the "various forms in which data can be presented (written, numerical or graphic)" so that they can comprehend the various uses for the data.[19] Similarly, the type of data dictates the limitations of what researchers can do with it and what questions they can answer. Students need to familiarize themselves with the metadata of the source, the data about the data, to understand the creation of the data. As they use data in their own research, students must be aware that their own decisions for using it and their own creation process influences the message of the new output. Beyond the data format, students must realize that the way they choose to present data (e.g., visualization) is also a process. Their design choices and techniques to present data conveys a message about the data. The data visualization needs to be clear, to avoid clutter, and to emphasize the most important aspects about the data.[20]

Information Has Value

The concept of a "Big Data World" and a "data-rich society" where an enhanced "globalized networks of commerce, communication, and transport" collect individual data to maximize services is increasingly evident today.[21] Students need to understand that their personal data is part of this data-rich society. Businesses regularly gather, analyze, and sell data—often user data—and this financial exchange of information illustrates that such content does have value. Furthermore, the access, use, analysis, and sharing of individual data is conducted often without users' knowledge or permission. Individual data is a valued commodity, and students need to "make informed choices regarding their online actions."[22] Prado and Marzal identify this competency as "Data in society" and state that students must be informed about the role of data in the world, its creation, by whom, and its purpose.[23] Similarly, students need to understand that users may not have access to those data sources where their personal data is included. Furthermore, the data they locate for their own research may not be comprehensive and exclude some information from the content. The exclusion of those voices means these perspectives cannot be analyzed, which raises the concern for bias in the data output. Part of the "Big Data World" includes the increase in public data, particularly government data. The growth in accessible or readily available data for researchers to analyze does not exclude the need or expectation that they cite who or what group provided the dataset. Students need to recognize that data, regardless of where it originated or where they found it, requires them to give it credit as a valued source in their research.

Research as Inquiry

The research process is a discovery process that requires an individual to understand the importance of asking questions. Developing a strong research question is a skill students must develop. Librarians, either in their teaching or during an individual meeting, regularly help students with this task. As stated in the *Framework*, "research is iterative and depends upon asking increasingly complex or new questions whose answers in turn develop additional questions or lines of inquiry in any field."[24] Data literacy requires students to understand data, whether that be quantitative or qualitative data, and question it. They need to understand where the data originated, who or what group created it, and why it was created. In the first core competency, titled "Understanding data," Prado and Marzal specify the importance that students know how to recognize data, but under the third competency, "Reading/Interpreting and Evaluating data," students must also question the data critically.[25] In addition, they need to determine

whether the data is accurate and how complete it is for their research question. The questions they ask of the data itself will help students determine what questions it can help them answer.

Scholarship as a Conversation

New knowledge or scholarship is inspired or influenced by the work of other researchers. Scholars or professionals "seek out many perspectives," including unfamiliar ones and those outside their disciplines, when investigating a topic or area of interest.[26] Data sources contribute to new knowledge creation. Scholarship requires evaluation and a critical review of the argument to determine the validity and its contribution to the conversation. Students who use data in their own work, regardless of the format, must use it ethically. Prado and Marzal emphasize the ethical use of data in the fifth competency, "Using data," stating students must acknowledge "the source when obtained or formulated by others."[27] Students must understand that scholarship can privilege certain data collection methods and thereby pose barriers to inclusivity. Data may exclude perspectives or may not be representative of a general population. Students need to understand the argument or perspective that a data source provides and determine what other perspectives are necessary to develop a holistic and well-researched product.

Searching as Strategic Exploration

Librarians recognize that research is an iterative process that requires students to review results to decide how to proceed to find useful and meaningful content. When trying to locate data, in any format, students need to determine which data would be useful to answer their question. In their quest for high-quality data sources, researchers "identify interested parties, such as scholars, organizations, and industries, who might produce information" and subsequently "determine how to access" it.[28] The groups that provide the data may use various formats to collect and organize the content, thus students need to recognize that they should be purposeful in their search to locate the data they need. Furthermore, who or what group is providing the data will often dictate the format for the data, so students may need to expand their knowledge of data formats or revise search techniques to find the appropriate format to match their data needs. Prado and Marzal outline the strategic importance of data access and use in the fourth competency, "Managing data," which emphasizes the importance for students to know how to save and organize the data effectively.[29]

Data in the Disciplines

Unlike information literacy, there are no nationally approved or standardized competencies for data literacy to help guide librarians in their instruction. Nevertheless, data is information. Researchers and scholars use data as evidence to support their arguments, promote certain theoretical positions, or challenge claims. This section looks at three different disciplines (history, sociology, and biology) and discusses how these subject areas define and recognize data in student learning. The selected three disciplines represent diverse academic areas: humanities, social science, and science, respectively. The intention is to underscore the widespread use of data across academic departments and to provide an understanding about the relationship between data literacy and information literacy.

Data in History

In 2016, the American Historical Association, the most prominent association in the field of history, released the document "2016 History Discipline Core." In it, the organization proposed six core competencies, with corresponding learning outcomes, labeled alphabetically. The first three competencies include: 1) "Build historical knowledge," 2) "Develop historical methods," and 3) "Recognize the provisional nature of knowledge, the disciplinary preference for complexity, and the comfort with ambiguity that history requires." Each have four learning outcomes, labeled a through d. Competency four—"Apply the range of skills it takes to decode the historical record because of its incomplete, complex, and contradictory nature"—provides three outcomes, labeled a though c. The last two competencies include "Create historical arguments and narratives" and "Use historical perspective as central to active citizenship," which each provide two outcomes: a and b. History faculty can incorporate the core competencies into their curriculum as appropriate "to reflect the distinct character of each institution and its students."[30] For historians, and other academics in the humanities, the research focus has always been on "primary materials" or "primary sources." These appear in diverse formats, both quantitative and qualitative, and are "not perceived or referred to as 'data.'"[31] However, these data sources are central to analysis in the field, and therefore, students need to develop the necessary skills to locate, access, and evaluate this form of data. Learning outcome b under the second competency, "Develop historical methods," states that a history student should be able to "collect, sift, organize, question, synthesize, and interpret complex material."[32] If you replace the term "material" with "data," this outcome is consistent with the data literacy definition posed earlier in this chapter. Moreover, under the third competency,

"Recognize the provisional nature of knowledge . . .," learning outcome recognizes data as a source to help historians develop "more accurate accounts and construct stronger arguments."[33] The fourth competency, "Apply the range of skills . . .," expects students to apply various skills to "decode" history and outcome includes the term "sources."[34] With the understanding that sources are forms of data, this outcome expects students to use multiple historical sources and evaluate them for "credibility, position, perspective, and relevance."[35] The History Discipline Core outlines strong expectations that students engage with research data and demonstrate it in their learning.

Data in Sociology

Sociology, a social science discipline, incorporates both quantitative and qualitative research methods. The mixed-method approach used by researchers aims to uncover the "how" and "why" about people's behavior.[36] The standard use of both forms of data indicates a need for students to develop the skills to know how to locate, access, use, and manage diverse data sources in their research. The "Sociological Literacy Framework," released in 2015, proposed six essential competencies along with corresponding learning outcomes. The competencies identify the necessary skills students must demonstrate during their course of study in sociology. Two of the competencies indicate data as a central component. Students are expected to be able to "evaluate the quality" of data used in research (competency four), as well as develop the skills to "rigorously analyze" data (competency five).[37] These learning expectations complement the data literacy competency "Reading, interpreting and evaluating data" outlined by Prado and Marzal. The "Sociological Literacy Framework" further elaborates that, within this discipline, students need to assess "the empirical sociological research of others," including the methods completed, the data used, and the conclusions drawn from the research.[38] They must also be able to "evaluate statistical information" as well as use analysis to determine if the proposed conclusions or claims are valid.[39] This framework shows strong similarity to those competencies proposed by Prado and Marzal. The competencies and learning outcomes defined in the "Sociological Literacy Framework" reveal the importance of data as an information source in the discipline.

Data in Biology

Science education at the undergraduate level has long recognized the importance of data literacy in the curriculum. In 2009, the American Associa-

tion for the Advancement of Science published "Vision and Change in Undergraduate Biology Education: A Call to Action." The extensive document outlined six core competencies for undergraduate biology education that can be included in any biology course and are flexible and adaptable to meet the course learning outcomes regardless of the level.[40] Similar to the ACRL *Framework*, each competency includes disciplinary practices that elaborate on the skills students must demonstrate. For the second competency, "Ability to use quantitative reasoning," the associated disciplinary practice reads, "apply quantitative analysis to interpret biological data."[41] To demonstrate this competency, students must be able to use, read, and interpret data effectively. In addition, depending on the size of the data set, students must also be able to manage data so that they can analyze it effectively.[42] Science scholars agree that young science researchers need to understand the overall purpose to collect data, quantitative or qualitative, and "how those data can provide appropriate evidence to answer a question."[43] Like history and sociology, the growing emphasis on data literacy in biology is apparent.

As shown in the various data competencies for different disciplines, faculty outside of the library profession have adopted aspects of data literacy into their curriculum standards to help students become data literate. The competencies highlighted in this section illustrate that across disciplines, data, in all formats, is a form of information. The interdisciplinary nature of data supports the argument that data literacy is an transdisciplinary skill much like information literacy. Thus, incorporating data literacy across the curriculum allows students to develop these skills as part of their learning regardless of the course.[44] Although there are discipline distinctions on what constitutes data, librarians need to gain professional knowledge about data literacy to help students meet the course learning outcomes and achieve academic success, in the same way they already incorporate information literacy principles into their teaching.

Recommendations on the Role of Librarians in Data Literacy Instruction

Librarians are dedicated to student learning and to helping students to develop the skills needed to be informed consumers and producers of information. They guide students on where to locate information sources that meet their needs. As information specialists, they are eager to share their expertise. Understanding and accepting data as a form of information that is widely used, librarians can begin to understand the importance of incorporating data literacy into their skillset. Fortunately, there are useful techniques librarians can adopt to achieve that goal.

Conduct a Data Literacy Needs Assessment

Academic librarians can learn about data literacy needs on their campus by asking their faculty colleagues about where data literacy fits in their courses and research. For example, librarians at Miami University organized a listening tour on their campus with the goal "to better understand the types of data support faculty require."[45] At the University of Illinois at Urbana-Champaign, librarians conducted a faculty survey to learn how they were "using data in their teaching and what issues they face[d]."[46] From these conversations with faculty colleagues, librarians can design a "Data Literacy Needs Assessment"—essentially an analysis of faculty expectations for data literacy learning for their students and in their professional research—and learn more about what gaps exist and how the librarians can play a role in filling in the gaps.

Incorporate Data Literacy in Your Library Instruction

Academic librarians are often required to teach instruction sessions to help students meet course expectations and learning outcomes. Course-integrated instruction is a practice librarians can adopted to also help students develop data literacy skills. Don MacMillan, a life sciences librarian at the University of Calgary, has designed instruction sessions, in collaboration with a biology professor, to teach students data literacy concepts. These instruction sessions, taught in sequential courses across two semesters, have given students the opportunity to transfer their data knowledge across both courses and apply new skills in their learning.[47] At UCLA, two librarians have adopted a similar approach in sociology courses. Following conversations with members in the department, the librarians designed introductory and advanced instruction sessions for sociology students to learn and apply data literacy skills in their research.[48] Further, librarians at the University of South Florida St. Petersburg created a faculty learning community (FLC) with the support of the institution's teaching and learning center. The goal of this collaborative initiative, which included faculty and librarians, was to learn ways to help students develop critical thinking and data literacy.[49] At present, the author of this chapter is collaborating on a cross-disciplinary syllabus content analysis at her campus to learn how faculty colleagues define, explain, and incorporate data literacy competencies, as defined by Prado and Marzal, into their courses. The goal is to learn the diverse approaches adopted by faculty to educate students about data literacy with the goal to be better informed and engaged in student learning.

Develop Expertise on a Data Literacy Topic or Tool

Data literacy, similar to information literacy, entails learning various skills or tools to help students develop basic competencies. As underscored by Prado and Marzal, these proficiencies include understanding the different types of data sources, locating reliable data, knowing how to clean data to create visualizations, and citing data appropriately. Librarians interested in data literacy can dedicate time to learning data literacy competencies to be proficient with helping students and faculty. With this new knowledge, librarians can create opportunities to teach workshops for the campus community and to serve as a resource for students. One of the data literacy interests of the author is data visualization. She has developed expertise by reading material on the topic, following blogs and reviewing online learning modules. Consequently, she has designed and taught a micro-course, *Intro to Data Visualization*, and often provides consultations to students who need assistance creating data visualizations.

Data literacy, like information literacy, is an important skillset for college students to develop. The examples described in this section are just a few ways librarians can position themselves to best serve faculty and students. An essential factor to these initiatives is that librarians learn from faculty members at their institutions about their data needs. Conversations with faculty colleagues about how they incorporate data in their classroom assignments and what they expect students to learn about data are essential to developing data literacy initiatives on campuses. With that knowledge, librarians can develop resources, lead workshops, and teach lessons that meet faculty and student needs. Workshop topics can include information such as defining data and finding relevant data sources, similar to sessions librarians already teach on finding articles in a database. Or librarians can teach students about creating their own data sources and ensuring they are aware of the campus IRB (Institutional Review Board) protocol. Sessions can also focus on different tools that can be used to collect and analyze data. These may include free tools such as Google Forms and Survey Monkey, or Qualtrics, which has a cost but which may be provided by institutions. The sessions can focus on developing questionnaires or surveys effectively and obtaining a strong response rate. Librarians can organize these sessions in collaboration with campus partners who are trained on a specific topics to create well-rounded sessions. Text analysis tools like Voyant (free) or NVivo (fee-based) can be taught in sessions that focus on qualitative data analysis. Excel, Google Sheets, or Tableau (another fee-based resource that offers a free option) are tools that students can use to explore datasets or create data visualizations. Similar to information literacy instruction, librarians can create targeted approaches to support data literacy learning on their campus.

Conclusion

Data is information, and regardless of the format, it is present across disciplines in higher education. Librarians need to develop new skills to be prepared to assist faculty and students in their research. The ACRL *Framework* presents librarians with the foundation and space to correlate data literacy to information literacy. The strong intersections between information literacy and data literacy signifies to librarians the need to incorporate data literacy concepts into their overall instruction. For many librarians it may be a challenge to develop the knowledgebase to be proficient in data. Recently, there has been conversation surrounding the need to incorporate data literacy and statistical literacy alongside information literacy in graduate library and information program curriculum.[50] Librarians who see themselves as generalists will need support and training to learn how to serve the data literacy needs of their faculty colleagues and students.[51] Data literacy presents librarians with the opportunity to grow professionally and develop the skills to improve their own librarianship as well as the profession. The age of information includes data, and librarians must be actively involved to educate students about it.

Notes

1. Yasmeen Shorish, "Data Information Literacy and Undergraduates: A Critical Competency," *College and Undergraduate Libraries* 22, no. 1 (2015): 98.

2. National Research Council, *A Question of Balance: Private Rights and the Public Interest in Scientific and Technical Databases* (Washington, DC: National Academy Press, 1999), 15, https://www.nap.edu/read/9692/chapter/1.

3. Chantel Ridsdale et al., "Strategies and Best Practices for Data Literacy Education: Knowledge Synthesis Report," *Dalspace* (2015): 3, http://hdl.handle.net/10222/64578.

4. Association of College and Research Libraries, *Framework for Information Literacy for Higher Education* (Chicago, IL: Association of College and Research Libraries, 2015), http://www.ala.org/acrl/standards/ilframework.

5. Ibid., 8.

6. Robin Rice and John Southall, *The Data Librarian's Handbook* (London: Facet Publishing, 2016), 19.

7. Kristin Fontichiaro and Jo Angela Oerhli, "Why Data Literacy Matters," *Knowledge Quest* 44, no. 5 (2016): 22.

8. Ann S. Gray, "Data and Statistical Literacy for Librarians," *IASSIST Quarterly* (Summer/Fall 2004): 24.

9. Milo Schield, "Information Literacy, Statistical Literacy, Data Literacy," *IASSIST Quarterly* 28, nos. 2–3 (2005): 9.

10. Ibid.

11. Association of College and Research Libraries, *Framework for Information Literacy.*

12. Association of College and Research Libraries, *Information Literacy Competency Standards for Higher Education* (Chicago, IL: Association of College and Research Libraries, 2000), https://alair.ala.org/handle/11213/7668.

13. Ethan Pullman and Lisa Zilinski, "A Multi-Framework Approach to Teaching Data: A Case Study in Modern Languages," *LOEX Quarterly* 44, no. 2 (2017): 8. http://commons.emich.edu/cgi/viewcontent.cgi?article=1312&context=loexquarterly.

14. Javier Calzada Prado and Miguel Ángel Marzal, "Incorporating Data Literacy into Information Literacy Programs: Core Competencies and Contents," *Libri* 63, no. 2 (2013): 127.

15. Ibid., 131.

16. Ibid., 130–31.

17. Ibid., 130.

18. Association of College and Research Libraries, *Framework for Information Literacy.*

19. Prado and Marzal, "Incorporating Data Literacy," 130.

20. Ryan Womack, "Data Visualization and Information Literacy," *IASSIST Quarterly* 38, no. 1 (2015):16, https://doi.org/10.29173/iq619.

21. Ridsdale et al., "Strategies and Best Practices for Data Literacy Education," 8.

22. Association of College and Research Libraries, *Framework for Information Literacy.*

23. Prado and Marzal, "Incorporating Data Literacy," 130.

24. Association of College and Research Libraries, *Framework for Information Literacy.*

25. Prado and Marzal, "Incorporating Data Literacy," 130.

26. Association of College and Research Libraries, *Framework for Information Literacy.*

27. Prado and Marzal, "Incorporating Data Literacy," 131.

28. Association of College and Research Libraries, *Framework for Information Literacy.*

29. Prado and Marzal, "Incorporating Data Literacy," 131.

30. "AHA History Tuning Project: 2016 History Discipline Core," American Historical Association, accessed September 1, 2021, https://www.historians.org/teaching-and-learning/tuning-the-history-discipline/2016-history-discipline-core.

31. Rice and Southall, *The Data Librarian's Handbook*, 19.

32. American Historical Association, "AHA History Tuning Project."

33. Ibid.

34. Ibid.

35. Ibid.

36. Rice and Southall, *The Data Librarian's Handbook*, 3.

37. Susan J. Ferguson, "The Center Does Hold: The Sociological Literacy Framework," *Teaching Sociology* 44, no. 3 (2016): 171, https://doi.org/10.1177/0092055X16651478.

38. Ibid.

39. Ibid.

40. Carol A. Brewer and Diane Smith, eds., *Vision and Change in Undergraduate Biology Education: A Call to Action* (Washington, DC: American Association for the Advancement of Science, 2011), 12, https://live-visionandchange.pantheonsite.io/wp -content/uploads/2013/11/aaas-VISchange-web1113.pdf.

41. Ibid., 17.

42. Ibid.

43. Phil J. Gibson and Teresa Mourad, "The Growing Importance of Data Literacy in Life Science Education," *American Journal of Botany* 105, no. 12 (2018): 1954.

44. Karen Hunt, "The Challenges of Integrating Data Literacy into the Curriculum in an Undergraduate Institution," *IASSIST Quarterly* (Summer/Fall 2004): 13.

45. Aaron K. Shrimplin and Jen-chien Yu, "Focusing in on Student Learning Outcomes: How SDA Helped Us Get Data into the Classroom," *IASSIST Quarterly* 28, nos. 2–3 (Summer/Fall 2004): 55, https://doi.org/10.29173/iq797.

46. Karen Hogenboom, Carissa M. Holler Phillips, and Merinda K. Hensley, "Show Me the Data! Partnering with Instructors to Teach Data Literacy," in *Declaration of Interdependence: The Proceedings of the ACRL 2011 Conference*, ed. D. M. Mueller (Chicago, IL: Association of College and Research Libraries, 2011), 410–17, https://www.ideals.illinois.edu/handle/2142/73409.

47. Don MacMillan, "Developing Data Literacy Competencies to Enhance Faculty Collaborations," *Liber Quarterly* 24, no. 3 (2015): 141.

48. Elizabeth Stephenson and Patti Schifter Caravello, "Incorporating Data Literacy into Undergraduate Information Literacy Programs in the Social Sciences: A Pilot Project," *Reference Services Review* 35, no. 4 (2007): 529.

49. Theresa G. Burress, Emily Z. Mann, and Tina Neville, "Exploring Data Literacy via a Librarian-Faculty Learning Community: a Case Study," *The Journal of Academic Librarianship* 45, no. 1 (2020): 3.

50. Gray, "Data and Statistical Literacy for Librarians," 28.

51. Hunt, "The Challenges of Integrating Data Literacy," 14.

Bibliography

American Historical Association. "AHA History Tuning Project: 2016 History Discipline Core." Accessed September 1, 2021. https://www.historians.org/teaching -and-learning/tuning-the-history-discipline/2016-history-discipline-core.

Association of College and Research Libraries. *Framework for Information Literacy for Higher Education*. Chicago, IL: Association of College and Research Libraries, 2015. http://www.ala.org/acrl/standards/ilframework.

Association of College and Research Libraries. *Information Literacy Competency Standards for Higher Education*. Chicago, IL: Association of College and Research Libraries, 2000. https://alair.ala.org/handle/11213/7668.

Brewer, Carol A., and Diane Smith, eds. *Vision and Change in Undergraduate Biology Education: A Call to Action*. Washington, DC: American Association for the Advancement of Science, 2011. https://live-visionandchange.pantheonsite.io/wp -content/uploads/2013/11/aaas-VISchange-web1113.pdf.

Burress, Theresa G., Emily Z. Mann, and Tina Neville. "Exploring Data Literacy via a Librarian-Faculty Learning Community: A Case Study." *The Journal of Academic Librarianship* 46, no. 1 (2020): 1–6.

Ferguson, Susan J. "The Center Does Hold: The Sociological Literacy Framework." *Teaching Sociology* 44, no. 3 (2016): 163–76. https://doi.org/10.1177/0092055X 16651478.

Fontichiaro, Kristin, and Jo Angela Oerhli. "Why Data Literacy Matters." *Knowledge Quest* 44, no. 5 (2016): 21–27.

Gibson, J. Phil, and Teresa Mourad. "The Growing Importance of Data Literacy in Life Science Education." *American Journal of Botany* 105, no. 12 (2018): 1953–56.

Gray, Ann S. "Data and Statistical Literacy for Librarians." *IASSIST Quarterly* (Summer/Fall 2004): 24–29.

Hogenboom, Karen, Carissa M. Holler Phillips, and Merinda K. Hensley. "Show Me the Data! Partnering with Instructors to Teach Data Literacy." In *Declaration of Interdependence: The Proceedings of the ACRL 2011 Conference*, edited by D. M. Mueller, 410–17. Chicago, IL: Association of College and Research Libraries, 2011. https://www.ideals.illinois.edu/handle/2142/73409.

Hunt, Karen. "The Challenges of Integrating Data Literacy into the Curriculum in an Undergraduate Institution." *IASSIST Quarterly* (Summer/Fall 2004): 12–15.

MacMillan, Don. "Developing Data Literacy Competencies to Enhance Faculty Collaborations." *Liber Quarterly* 24, no. 3 (2015): 140–60.

National Research Council. *A Question of Balance: Private Rights and the Public Interest in Scientific and Technical Databases*. Washington, DC: National Academy Press, 1999. https://www.nap.edu/read/9692/chapter/1.

Prado, Javier Calzada, and Miguel Ángel Marzal. "Incorporating Data Literacy into Information Literacy Programs: Core Competencies and Contents." *Libri* 63, no. 2 (2013): 123–34. https://doi.org/10.1515/libri-2013-0010.

Pullman, Ethan, and Lisa Zilinski. "A Multi-Framework Approach to Teaching Data: A Case Study in Modern Languages." *LOEX Quarterly* 44, no. 2 (2017): 8–10. http:// commons.emich.edu/cgi/viewcontent.cgi?article=1312&context=loexquarterly.

Rice, Robin, and John Southall. *The Data Librarian's Handbook*. London: Facet Publishing, 2016.

Ridsdale, Chantel, James Rothwell, Michael Smit, Hossam Ali-Hassan, Michael Bliemel, Dean Irvine, Daniel Kelley, Stan Matwin, and Bradley Wuetherick. "Strategies and Best Practices for Data Literacy Education: Knowledge Synthesis Report." *Dalspace* (2015): 1–75. http://hdl.handle.net/10222/64578.

Schield, Milo. "Information Literacy, Statistical Literacy, Data Literacy." *IASSIST Quarterly 28*, nos. 2–3 (2005): 6–11. https://doi.org/10.29173/iq790.

Shorish, Yasmeen. "Data Information Literacy and Undergraduates: A Critical Competency." *College and Undergraduate Libraries* 22, no. 1 (2015): 97–106. https://doi .org/10.1080/10691316.2015.1001246.

Shrimplin, Aaron K., and Jen-chien Yu. "Focusing in on Student Learning Outcomes: How SDA Helped Us Get Data into the Classroom." *IASSIST Quarterly* 28, nos. 2–3 (Summer/Fall 2004): 55–57. https://doi.org/10.29173/iq797.

Stephenson, Elizabeth, and Patti Schifter Caravello. "Incorporating Data Literacy into Undergraduate Information Literacy Programs in the Social Sciences: A Pilot Project." *Reference Services Review* 35, no. 4 (2007): 525–40. https://doi.org/10 .1108/00907320710838354.

Womack, Ryan. "Data Visualization and Information Literacy." *IASSIST Quarterly* 38, no. 1 (2015): 12–17. https://doi.org/10.29173/iq619.

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