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Guest Editorial

Re-Managing the Library

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Library management is a field that inspires strong feelings from across the spectrum of library and university employees, and for good reason. A strong library director can steer the team to create a vibrant and engaging environment for faculty and staff throughout the University, and their strategic direction can help the library thrive as a hub of scholarship and collaboration. Bad management, on the other hand, can create a workplace that breeds hard feelings among staff, and may allow the library to become a dusty and irrelevant campus building. And, of course, there are endless other variations, from managers who try everything innovative they read in the current library literature and lose sight of the library's core competencies, to those who are successful at creating a vital part of the institution but are then resented for successfully advocating on behalf of the library.

One thing that many academic libraries are currently experiencing is not "good" or "bad" management, but the absence—or distance—of leadership entirely. It's become increasingly common for libraries to be led by deans of colleges, or by schools unrelated to librarianship, even on campuses where the library is a unique and discrete university unit. Without degree-granting authority, yet housing faculty and scholars, where does the library belong in higher education's organizational structure? The answer for some universities has been to get creative regarding where the library is placed organizationally, whether putting it within another college, or having the library report to various administrators, such as those related to information technology, academics, research, or student services.

The placement of the library is likely to depend on the type of institution, and how the university sees itself. With luck, the organizational placement enhances a library's stability, opportunities for partnership, and ability to both rely on core competencies of librarianship and make room for innovation.

However, too often we see examples where the library's organizational structure within the university adds not stability, but uncertainty and opacity, to the library's mission and goals. It may be that a dean of a college simply doesn't pay much attention to the library, its services, and its operations. It could be that the unit the library is placed within is not sure what to do with it. For example, a library focused on supporting research efforts might find itself adrift when stationed in Student Services, or a library instrumental in creating an active and encouraging environment for undergraduates may feel stifled by the Office of Research. Furthermore, when the place of the library shifts during campus restructuring, it may lose its own Director or Dean, leading to a situation where libraries are being led by non-librarians.

This is what occurred within my own library, which lost its Director and was subsequently placed under the leadership of a Vice Chancellor. First housed within Student Affairs, and then later within Academic Affairs, the library no longer had the benefit of a daily presence guid-

ing the library's strategic direction, nor its ongoing work. We were lucky that our staff and faculty were hard working and earnest, so the library's operations mostly continued without interruption. Faculty librarians continued to teach instruction sessions; interlibrary loan continued to deliver articles; circulation checked out books. But over three years, the library also managed to lose its way and its identity. Without regular conversations about our work and our role on campus, the library's importance to our institution was diminished. This was not improved by COVID-19 and our extended closure, nor by the loss of several staff members who were not replaced. From 2018 to 2022, the library experienced a complete turnover in both staff and faculty.

By the time I was appointed Interim Director, which was prompted by the departure of the Vice Chancellor to whom we all reported, the value of employing a library director had become clear to both library employees and campus administrators. It helped that we were not the only library in the university system. Our small library is a distinct organizational entity apart from the main libraries on the flagship campus, and we relied on them to provide a measure of stability when it came to a number of backbone services, particularly in technical services and systems. With this relationship in place, we at least had some colleagues we could look to for support, though the realities of working in a health sciences library meant that many of our colleagues were unfamiliar with the nuances and specifics of our work. It left us with a functioning, but increasingly stilted and stultifying, environment.

My arrival in this leadership role did not immediately change the daily realities of the library's work, and the shift was certainly not immediately noticed by the campus at large. Little by little, however, having its own Director had a demonstrable impact, not only on how the library functioned, but how it felt to work there. Without library leadership, collection development had ground to a halt; the confusing and changing realities of the budget were not investigated or discussed with campus administration; the library had been unable to hire for key open positions; staff were left to themselves to identify projects and manage workflows; and the basic logistics of employment, such as requesting PTO or calling out sick, were opaque.

Once I stepped into the role, I prioritized learning more about the state of the library. From conducting a collection inventory, to benchmarking our holdings against subject lists and peer institutions, to simply meeting with staff members weekly (both individually and collectively), I began to understand where we were functioning well, and where we needed to improve. These data-gathering activities informed my conversations with campus administrators. This then allowed me to focus my efforts on righting the organization's structure, funding, and staffing, to communicate these changes to other university library units, and then back to the campus's administration.

None of these experiences were unique to the setting of a small academic health sciences library in the context of a large research university. They were the mundane consequences of uncertain organizational structure, as well as distant leadership that had neither experience or education in libraries, nor the capacity to provide daily management of the facility and its team.. While some of the specifics may vary—for example, a small staff allowed us to rely on one another to ask questions and provide some degree of commiseration, whereas larger settings might develop several different microcosms of staff, each reacting differently based on the existing personalities and professional backgrounds—the same types of failures would likely be seen at any library, whether it be public, academic, medical, large, or small. My library's experience is an example of how a leadership vacuum leads to a lack of innovation, energy,

and clarity for the individuals working in the library. The re-instatement of leadership, first on an interim basis and then ongoing, made a drastic improvement on both our library as a workplace, and the library's role on campus. As we have begun to hire more tenure-track librarians, our relationship with each health sciences college has grown and improved; our new conversations with faculty have demonstrated their need for robust and dedicated library support. Regular meetings with staff have improved clarity regarding everything from job duties to requests for vacation time, and staff members report that they feel more secure and attached to the library because of these changes. One staff member recalled this period as a "hopeful transition," which—while not immediately transformative—did give her optimism and hope for her future at the library.

In talking further with this staff member about the return of a Director to the library, she identified one particularly important change in the workplace: respect. While the workplace did not experience open hostility or unpleasant interpersonal dynamics while director-less, she found that having someone in this role increased her experience of respect, because I could set an intentional tone in the office. Such an outcome does not solely depend on having a leader in the library, of course, but also on the values and actions of that leader. I was careful, during my transition to the role, to do the following: to encourage staff to use their PTO; to make decisions based on how they would affect library operations, rather than arbitrary expectations about "butts in seats;" to solicit feedback and dialog about library services; to nurture relationships with each individual and as a collective group; to start from a place of trust in each staff member; and to actively accept that, while we may not all be experts in all areas, we support one another in our professional development. This approach fostered a culture of respect, and it is an approach that can most easily be carried out by a leader whose job is focused substantially on the day-to-day management of the library, rather than someone whose job includes many non-library functions, or who is focused on a higher conceptual level. Individuals may be able to encourage and support this type of culture from within the staff, but it is exceptionally difficult for a group to set a tone with as much intention and clarity as a Director.

As I stated above, our library is certainly not the only one that has experienced this shift from having a library Director or Dean, to being placed a different campus unit, and thus ending up with distant or absent leadership. There are many ways to structure a university, but I contend that the basic needs of an academic library and its members are best served with present and available leadership that is deeply familiar with the operations of a library. Library leadership can, and should, liaise with many other parts of the institution, be open to innovation related to how a library serves its constituents, and consider new ways of organizing itself based on current and future needs of the institution, but removing a Director/Dean position, as the experience with my library demonstrates, can have the opposite effect. Instead of becoming more innovative or efficient, my library became alternately stuck in former ways of doing things, and occasionally chased after new ideas that didn't align with our core competencies. The basic, traditional hierarchical structure is the more effective way to run an academic library, both in terms of the staff's experience at work, and the outcomes of our operations.

Are there other ways of organizing the library staff that would work even better and eschew the top-down approach? Perhaps, but changes like these need to be carefully considered, and the long-term effects on operations evaluated; furthermore, the decision would need to be

made from the perspective of how to increase the library's success as an organizational unit. Making this type of change in the name of streamlining, for example, rather than evaluating what changes would help the library thrive, is likely to result in similar negative externalities for both the library and, ultimately, the campus or institution.

Our experience in the library proved to be a useful and effective natural experiment. Without intending to, we were able to answer the question: Is management, in and of itself, valuable? For us, the answer is a resounding "yes."

Librarians for the Study of the African-American Experience: A Content Analysis of Position Announcements, 1970–2019

Ryan Ellis Tickle

> *Every isolated group or race must have its "preservers;" those who keep alive their rich heritage. Today your role is vital to the salvation of black people and perhaps all people. Our society appears to be at the crossroads. Social problems, that have direct bearing on the destiny of black people are increasing. Problems growing out of poverty, population explosion, minority discrimination and racial unrest ignited by the uncertainty of action by governmental officials are the everyday syndrome of American life.*[1]
>
> — Norman W. Walton, in his paper "Black Librarians, Archivists and Black Collections," presented at the Institute for Training Librarians for Special Black Collections and Archives, April 1973.

To document the change over time in African-American/Africana/Black Studies (AABS) librarianship in the United States, this study analyzed 71 position announcements published in physical and digital sources beginning in 1970 through 2019.[2] Using content analysis, the author found that most AABS librarians should expect to have an MLIS and work in academic settings where they develop collections and provide reference services. This study hopes to fill a gap in the current research by exploring how these positions, the job market, and librarianship in this particular field have evolved. Administrators assessing staffing needs, faculty seeking collaborative partners, students interested in AABS librarianship, and anyone curious about the evolution of library work will find this study useful.

Introduction

In 1619, people of African descent disembarked from their first forced voyage to North America, marking the beginning of the African-American experience and an inextricable link to United States history. However, almost 350 years passed before academic programs dedicated to the study of African-American life and history gained official recognition at an American uni-

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versity.[3] When programs did emerge during the 1968–69 academic year, they did so amid social movements for ethnic studies and nationwide civil unrest. This sudden growth in new programs often translated to AABS library collections suffering from rather hasty organization because their campus libraries lacked the staff, funding, and knowledge to answer the demands of a new curriculum.[4] During these formative years, underprepared librarians, along with faculty, focused the bulk of their efforts on stocking many of these "instant black collections" with mostly reprinted material.[5] Over the next four decades, AABS programs and departments proliferated rapidly and, as of 2013, the number of institutions with what Abdul Alkalimat identified as "formal units" in AABS stood at 361.[6] Scholar Henry Louis Gates, Jr. recently argued that the "role of black studies in the academy has never been more crucial," and that "its interdisciplinary perspectives have not just added information; they have also helped bridge a serious intellectual gap among academic specialties and disciplines."[7] Creating knowledge and bridging intellectual gaps requires not only substantial resources but, perhaps more importantly, knowledge about where those resources are and how to access them. But what do we know about the librarians who have long served as guides to students, faculty, and scholars in AABS? Who are the information professionals that help scholars connect the past with the present? In 2018, librarian Courtney Becks observed that, when it comes to the library and information studies literature, very little "has been written about African American Studies *collections* specifically"; the author of this study argues that the same sentiment applies to African American Studies *librarians*.[8] And so, this study seeks a better understanding of those individuals and their work. Specifically, it hopes to gain insight into the change over time in their roles, responsibilities, and qualifications, in addition to the location and nature of the institutions in which they labor.

Literature Review

Readers of LIS literature are likely familiar with content analysis and its application to job announcements. The popularity of this approach stems in part from the thousands of MLIS graduates and early-career librarians interested in the job market every year, as well as researchers interested in long-term shifts in library trends.[9] However, despite its rather widespread application, no previous publications analyzing the content of AABS librarian job announcements could be located.

Other area studies positions have received scholarly attention.[10] In 2009, Jesús Alonso-Regalado and Mary Van Ullen examined the Latin American and Caribbean Studies (LACS) specialists' changing "requirements, roles, and responsibilities" from 1970 to 2007 and subsequently built a blueprint around which the present study was constructed.[11] Consulting sources like print copies of *College & Research Libraries News* and an archived listserv, Alonso-Regalado and Van Ullen found that, as the years passed, LACS librarians were increasingly expected to have a related advanced degree, Spanish language proficiency, and the ability to manage a rising number and variety of duties.[12] In addition to developing collections, providing reference services, and teaching, the authors noted that LACS librarians were being asked to demonstrate proficiency with electronic resources and instruction methods, all while routinely facing budget uncertainties.[13]

Previous researchers also explored area studies librarianship using surveys. In 1972, Robert D. Stueart surveyed area specialist bibliographers, library administrators, and faculty members on their perceptions of area studies librarians. He wanted to know more about what

each group thought the librarian ought to be doing on a daily basis.[14] Stueart found several points of disagreement. For instance, librarians liked the idea of evaluating materials in relation to curriculum, teaching with materials, weeding, taking buying trips, and attending faculty meetings and area librarian conferences, whereas faculty and administration tended to disagree with the librarian performing such duties.[15] Administrators were not as enthusiastic about sending librarians away on buying trips and conferences; faculty members were similarly uneasy about librarians attending faculty meetings and their role in instruction.[16] Stueart also noted that librarians were tasked with so many duties "that often he isn't sure what he is or what he is not supposed to be,"—a description that busy librarians might find as befitting now as it was nearly five decades ago, gendered language aside.[17]

Scholars exploring position announcements can use content analysis to trace the origins and patterns of certain skillsets. William C. Robinson reviewed *C&RL News* issues published from 1980 to 1991 to determine what skills and experience were most required of applicants for collection development and management positions. Robinson analyzed over 400 positions; key among his findings were that 80% of the positions advertised required time on the reference desk and 45% of announcements asked for applicants with effective communication skills.[18] In 2002, Croneis and Henderson scoured issues of *C&RL News* published between 1990 and 2000 for announcements containing either "digital" or "electronic" in the title. The authors found that the number of positions handling responsibilities of an electronic or digital nature was rising in tandem with the number of duties these librarians were expected to perform. Additionally, the authors noticed increasing variety in the types of institutions advertising these positions.[19] Croneis and Henderson built from Gary W. White's 1999 study of academic subject specialist position announcements covering the better part of a decade, from 1990 to 1998. White consulted print copies of *Chronicle of Higher Education, American Libraries,* and *C&RL News* to look at advertisements for librarian positions concentrated in business and the sciences, taking note of their required skills, desired education, and desired qualifications. Chief among White's observations was a noted increase in skills and responsibilities related to technology.[20] Rebmann, Molitor, and Rainey performed a content analysis of job ads placed from 1996–2010 in the International Federation of Library Associations and Institutions (IFLA) archive. Using "distance" as their key search term, the authors sought to discover what trends and patterns surrounded distance learning skillsets. They noticed a sharp rise in the number of positions requiring these skills in the late 1990s and then a fairly steady decline from 1999 to 2010.[21] Their study updated and expanded upon one published in 2006 by Boff, Singer, and Stearns, where the authors analyzed job announcements from 1970–2004 for librarian positions related to outreach. While Boff, Singer, and Stearns found that these positions were not advertised in *C&RL News* until 1979, they did find that the demand for people to fill these positions was on the rise, as late as 2004.[22] Yingqi Tang also modeled a 2013 study after the work of Boff, Singer, and Stearns. Among 82 distance education announcements found in *American Libraries* between 1970 and 2010, Tang noted that communication skills and being technologically savvy were among the most sought-after qualities.[23]

Content analysis is useful for exploring positions thoroughly. Rebecca S. Albitz used *College & Research Libraries* job announcements from 1996 to 2001 in her analysis of electronic resources librarian positions. Albitz's findings mirrored White's in many ways, including those that suggested librarians were asked to perform a myriad of duties, including managing electronic resources. Moreover, Albitz found that electronic resources librarians' responsibili-

ties often matched those of subject specialists, with the perhaps surprising requirement of previous work experience totaling three years or *less*.[24] In his 2006 examination of job ads for the "newly emerging position of Instructional Design Librarian," John D. Shank analyzed ten job announcements from 1999 to 2004 and found that most positions required applicants to have knowledge of internet navigation, instructional technology, and products like Adobe, as well as the ability to create online learning resources.[25] Similarly, Linda Frederiksen explored Access Services librarian job announcements in *College & Research Libraries News* and found 217 advertisements published between 1977 and 2004 with "access services" in the title. The author discovered that these positions were not typically entry-level, existed at libraries of various sizes and different types, and usually included circulation among their required duties.[26] As the volume of previous scholarship makes clear, content analysis of job announcements is not a new methodology in library science literature, yet it remains useful for exploring a variety of positions and skills.

Methodology

Researchers use content analysis to ask questions of a variety of data sources. While its origins are traced back to the early days of journalism and mass communication, where it was used to study newspaper content, library researchers today value this methodology for the non-reactive and unobtrusive way it can be used to obtain data from human-produced materials.[27] Rather than observing people and their behavior directly, LIS researchers can mine print resources, websites, and images for information without geographic limitations or IRB approval.

A combination of digital and analog sources informed this study. The author gleaned 71 position advertisements from websites and listservs, along with classified ads printed in *College & Research Libraries News* and *Library Journal*. Collecting and analyzing sources began with either a keyword search or by reading through physical journals' classified section. Only those announcements for a professional position with "African-American," "Black," "Afro-," and/or "Africana" were considered. Terminology specific to the position varied, including job titles with "librarian," "bibliographer," "curator," and "specialist," as part of their description. Duplicated postings were not considered; however, positions that were advertised, for example, two years apart, were both included. Next, the details of each qualified job advertisement were entered into a Microsoft Excel spreadsheet and then coded for entry into SPSS. To periodize these announcements, the author divided results into year groups: 1970–1985; 1986–2002; and 2003–2019.

The author posed the following research questions to the resulting data:

R1. How has the title of this position changed over time?

R2. What pattern do the job advertisements reveal over time? How do the job ads correspond to degree-granting institutions and where are they geographically?

R3. How have the educational and professional requirements changed for this position?

R4. How have the duties and responsibilities of this position evolved?

Assumptions and Limitations

It was assumed that by employing the aforementioned methods and consulting the sources outlined above, the number of position announcements collected would enable a useful analysis. It was also assumed that the position announcements collected would contain enough data to answer the research questions. Further, it was assumed that the roles, responsibilities, and

qualifications listed in these position announcements were actually used in judging applicants and that the librarians who assumed these roles actually carried out these duties. Lastly, it was assumed that regardless of the position's title, the librarians filling these particular positions did in fact work with collections and researchers focused on African-American life. This study was limited by its inability to obtain position announcements published in obscure resources. This study also could not consider any job ads published electronically that were deleted or obscured by a broken URL link. Additionally, this study is limited by the extent of archived information stored by websites like Indeed.com and the IFLA online archive. Once positions are filled, they are removed from Indeed.com and the IFLA archive dates back to August 1995, so this study uses *C&RL News* and *Library Journal* in their entirety from 1970 to 2019 and uses others to the extent possible.

This study did not consider job advertisements for paraprofessional staff or administrative positions. Also, this study could not include positions that may have been advertised internally and therefore published only electronically on a particular institution's job website, and only for a short period of time. Those announcements typically go unnoticed by larger aggregated employment websites and this study could not reasonably attempt to locate and analyze all positions advertised since 1970. Finally, this study made no differentiation between librarians or curators or subject specialists in Africana Studies or Black Studies, for instance. This study may be the first of its kind and was therefore interested broadly in any librarian position facilitating study of the African-American experience.

Findings

Eight separate resources (two print and six digital) yielded the 71 announcements used in this study: 45.1% came from *C&RL News*; 14.1% from IFLA online archive; 12.7% from *Library Journal*; 12.7% from Indeed.com; 9.8% from Google keyword searches; 2.8% from ALA listserv; 1.4% from ACRL listserv, and 1.4% from the LALIBJOBS listserv. As was expected, all 16 announcements placed between 1970 and 1986 came from print sources while, conversely, only one announcement from a print source was located from 2003–2019. Overall, 57.8% of ads came from physical resources and 42.2% were digital.

Institutions hiring AABS librarians fell into three familiar categories: academic, public, and special/research. Academic libraries include both public and private colleges and universities. Advertisements for public roles came from the Seattle Public Library, District of Columbia Public Library, New Orleans Public Library, and the Multnomah County Library in Oregon. Special/research libraries include the Schomburg Center, Library Company of Philadelphia, and the Library of Congress, among others. In total, 73.2% of the ads were for academic library roles, 18.3% were for special/research libraries, and 8.5% were for public library positions. Academically, 27 out of 29 (93.1%) schools offered at least an undergraduate minor in AABS. One school only had an Ethnic Studies department and, the other, while not having a dedicated AABS program, is an HBCU. Fourteen positions were advertised at schools offering just an undergraduate degree, while 21 (42%) of the ads were placed by institutions offering AABS as a stand-alone PhD, co-PhD, or PhD emphasis, and 88% of the job ads from academic institutions came from those offering at least a bachelor's degree. The two most frequent categories that ads fell into were from Northeastern schools offering a bachelor's degree (18%) and Midwestern schools offering both bachelor's and master's degree programs (16%). As this shows, schools with AABS programs of study are much more likely to have librarians to

support those students and faculty. This study does not account for "Ethic Studies" or "Area Studies" librarians whose duties might also include AABS.

In their roles, this study confirmed what readers may have suspected: most AABS librarians would be asked to provide reference assistance (77.5%), develop collections (78.9%), and have an MLIS (80.3%). Providing instruction was required of 32.4% of the positions.

R1. How has the title of this position changed over time?

As might be expected, the language used to describe these positions has changed since 1970. This study found 60 distinct titles. Announcements were categorized into seven title groups, as illustrated by Table 1. Most recently, from 2003–2019, "librarian" appeared in 75%, or 18 out of the 24 job titles posted. Titles such as "subject specialist," "curator," and "bibliographer" rose from 35.5% of job titles posted between 1986 and 2002, then fell to 12.5% of position titles advertised most recently.

TABLE 1
Job Titles over the Years

	1970–1985	1986–2002	2003–2019	Total
Librarian	8	12	18	38 (53.5%)
Cataloger	2	5	2	9 (12.7%)
Curator	0	6	2	8 (11.3%)
Bibliographer	2	4	1	7 (9.9%)
Librarian/Bibliographer	2	3	0	5 (7.0%)
Subject Specialist	2	1	0	3 (4.2%)
Subject specialist/librarian	0	0	1	1 (1.4%)

R2. Do the job advertisements reveal any sort of pattern over time? How do the job ads correspond to degree-granting institutions and where are they geographically?

As Figure 1 indicates, in years when jobs were advertised, the number of postings hovered around one to three per year before experiencing a three-year spike beginning in 2017. Five position announcements were located for 2017, six in 2018, and five again in 2019.

Geographically, the author used a regional distinction drawn by the National Geographic Society to separate the United States into five areas: West, Southwest, Midwest, Southeast, and Northeast.[28]

Geographically, the 71 job announcements were distributed unevenly: 25 in the Northeast, 20 in the Midwest, 13 in the Southeast, 11 in the West, and 2 in the Southwest. The most common time and place for a job announcement was in the Northeast from 1986–2002 (18.3%). On the other hand, only two positions were advertised for positions in the Southwest, most recently in 2011. Together, the Northeast and Midwest were home to 63.3% of all of the announcements located. That these two regions should combine for so many AABS positions is not surprising, considering the number of colleges, universities, and research centers they contain compared to regions with significantly smaller populations and academic institutions, like the Southwest.

FIGURE 1
Number of Job Postings Located per Year, 1970–2019

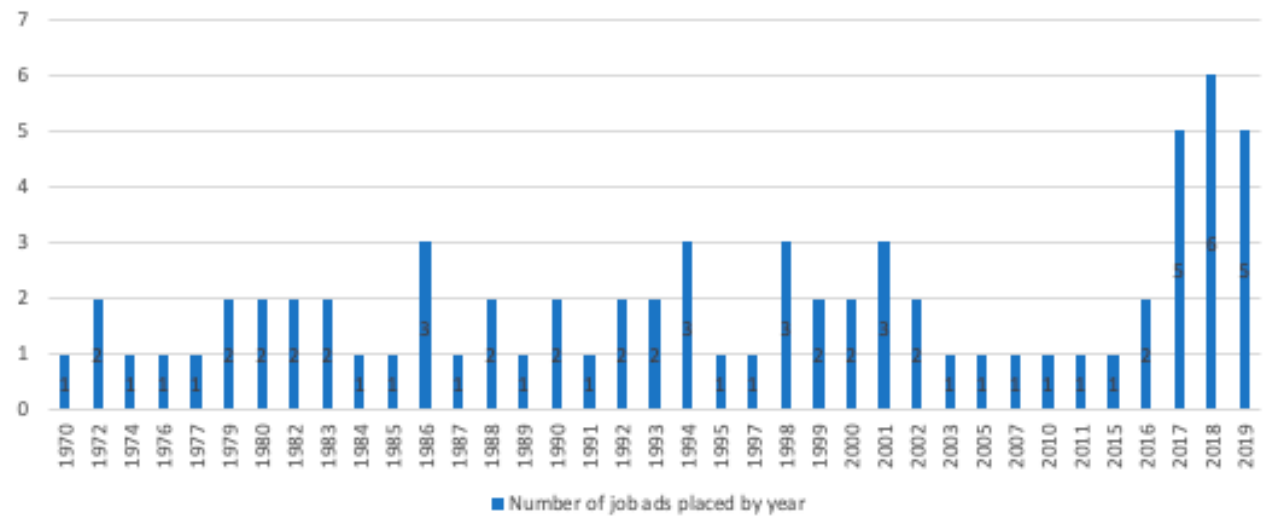
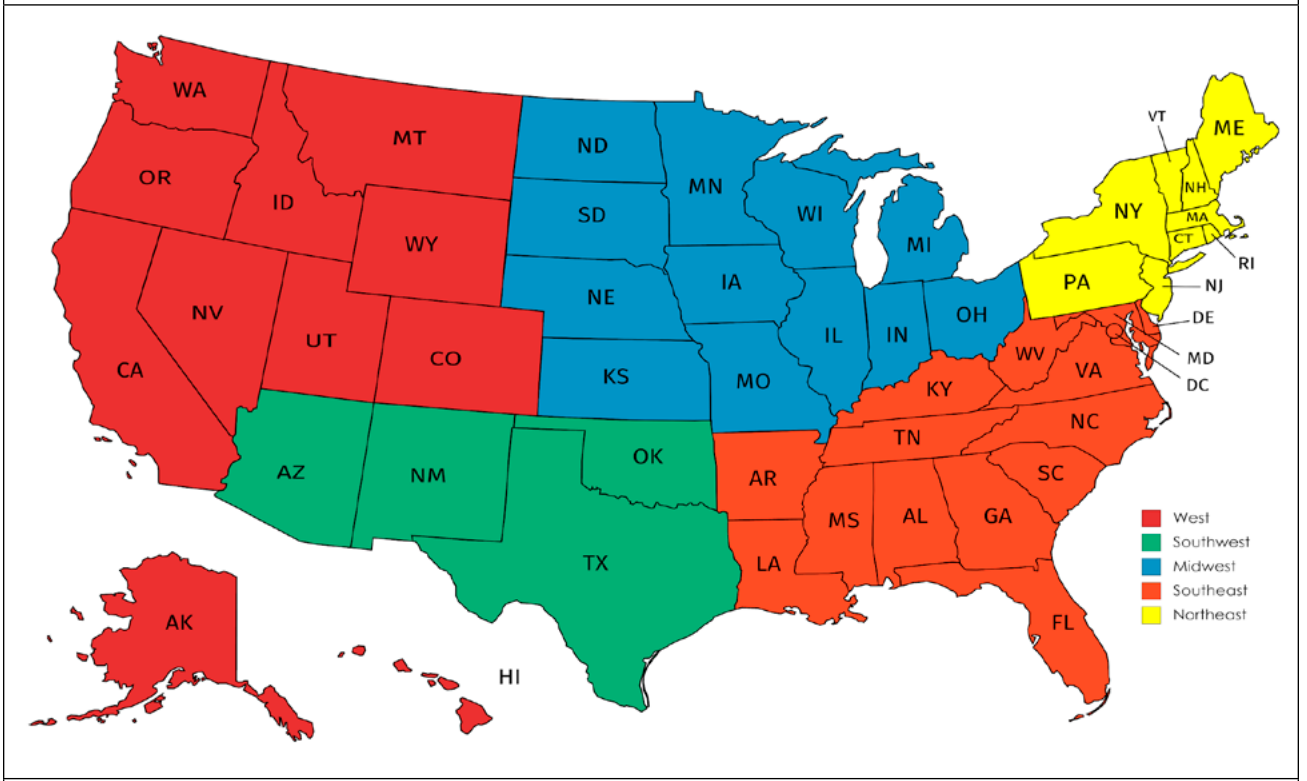


FIGURE 2
Five Geographic Regions of the United States



Map created using MapChart, https://mapchart.net/usa.html

Academic libraries contributed 52 of the job announcements, with 29 different schools represented. Twenty-two of those (75.9%) were public institutions while the remaining seven (24.1%) were private schools. Their average student population was 32,111, meaning that 89.6% of the positions were posted from "very large" institutions.[29] In fact, only three schools had populations below 10,000 students.

R3. How have the educational and professional requirements changed for this position?

As Table 2 indicates, 57 of the 71 (80.3%) advertised positions required that applicants possess an MLIS. This percentage increased and then decreased over time. An MLIS was required in 75% percent of positions from 1970–1985; that number increased to 90.3% from 1986–2002, and then dropped down to 70.8% from 2003–2019.

TABLE 2
Number of Positions that Required an MLIS Degree

	1970–1985	1986–2002	2003–2019	Total
Not required	4	3	7	14 (19.7%)
Required	12	28	17	57 (80.3%)

Table 3 indicates whether a job advertisement listed a master's degree of any type among its educational qualifications, and 60 of 71 (84.5%) did. Somewhat mirroring the pattern in Table 2, 75% of ads from 1970–1985 required a master's degree of any kind; that number increased to 93.5% before sliding back to 79.2% from 2003–2019. As far as how this requirement varied by institution, all public libraries asked for master's degrees from their applicants, 88.5% of academic positions did the same, and less than half (46.2%) of special/research libraries had the same requirement.

TABLE 3
Number of Job Ads that Listed a Master's Degree of Any Type as a Requirement

	1970–1985	1986–2002	2003–2019	Total
Not required	4	2	5	11 (15.5%)
Required	12	29	19	60 (84.5%)

In some cases, holding only a library-related graduate degree is not enough for librarians who specialize in a particular discipline or area of study. Table 4 shows to what extent an additional degree, such as a bachelor's or master's degree in a field like history or African-American Studies, was preferred or required. This study found that nearly half of all jobs preferred or required that applicants have additional educational training. Again, percentages spiked in those positions posted from 1986–2002, rising from 43.8% to 61.3% and then dropping to 37.5% from 2003–2019. One job announcement made a second degree as an absolute requirement. Institutionally, 59.6% of academic libraries, 16.7% of public libraries, and 23.1% of special/research libraries preferred or required an additional degree of its applicants.

TABLE 4
Positions that Either Preferred or Required an Additional Academic Degree

	1970–1985	1986–2002	2003–2019	Total
Not preferred/required	9	12	15	36 (50.7%)
Preferred/required	7	19	9	35 (49.3%)

Proficiency in a language other than English helps librarians open new research avenues for students and faculty. Table 5 illustrates the preference or requirement of an additional

language or languages by hiring committees. Overall, nearly half (47.9%) of the advertised positions either preferred or required that their librarians have knowledge of one or more languages other than English; for twelve positions (16.9%), it was a requirement.[30] By institution type, 31 of the ads came from academic libraries and three from research/special libraries.

TABLE 5
Languages in Addition to English Preferred or Required

	1970–1985	1986–2002	2003–2019	Total
Not preferred/required	7	13	17	37 (52.1%)
Preferred	9	9	4	22 (31%)
Required	0	9	3	12 (16.9%)

Table 6 illustrates the extent to which previous work experience was preferred or required of job applicants. Overall, 67.6% of job announcements preferred or required previous work experience. This percentage began at 50% in the first year group, rose to 70.1%, and increased yet again to 75% most recently.

Specifically, 45.1% of announcements asked candidates to have experience ranging from one to three or more years. One announcement asked for four years of experience while another asked for five. Nearly one-quarter (22.5%) of all positions did not require previous experience while 15.5% of the ads did not specify what, if any, their requirements were. Institutionally, all 13 special/research librarian positions preferred or required previous experience, while 63.5% of academic libraries, and 33.3% of public libraries did the same.

TABLE 6
Previous Work Experience Preferred or Required

	1970–1985	1986–2002	2003–2019	Total
Not preferred/required	8	9	6	23 (32.4%)
Preferred/required	8	22	18	48 (67.6%)

R4. How have the duties and responsibilities of this position evolved?

Librarians perform in a wide range of roles. Technological advances mean that the skills required of AABS librarians continue to evolve; however, some duties remain the same, if in name only.

Table 7 shows how the duty of collection development has figured into the responsibilities of the AABS librarian. Overall, 78.9% of job ads listed collection development as part of their required duties. Collection development has been a consistent charge, listed in 81.3%, 77.4%, and then 79.2% of job announcements over the three groups. Institutionally, 84.6% of academic libraries and 76.9% of special/research libraries made it a requirement. For public libraries, it was listed in 33.3% of advertisements.

TABLE 7
Collection Development Duties for the AABS Librarian over Time

	1970–1985	1986–2001	2002–2019	Total
Not required	3	7	5	15 (21.1%)
Required	13	24	19	56 (78.9%)

Table 8 illustrates how the requirement of instruction has changed over time. In total, 32.4% of advertised positions required their librarians to engage in instruction while more than two-thirds (67.6%) percent) did not. From 1970–1985, one out of 16 job ads required teaching as part of its duties; on the other hand, 14 positions required it from 1986–2002 and that number dropped back down to eight in the last year group. Most teaching was required by academic positions. 42.3% of academic ads listed instruction as a duty whereas no public librarians were expected to teach, and 7.7% of librarians in special/research libraries could expect to lead instruction sessions.

TABLE 8
Instruction Duties Required of the Librarian

	1970–1985	1986–2002	2003–2019	Total
Not required	15	17	16	48 (67.6%)
Required	1	14	8	23 (32.4%)

Table 9 shows how reference duties have factored into AABS positions over time. Overall, 77.5% percent of job ads listed reference—either general or specialized—as part of their required duties. Reference duties have been consistently important, required by 87.5% of positions in the first group, 74.2% in the second, and then 75% most recently. Institutionally, academic librarians would provide reference services in 80.8% of positions; public librarians would provide reference in 83.3% of their roles; and special/research librarians would offer reference services in 61.6% of their positions.

TABLE 9
Reference Duties for the Librarian

	1970–1985	1986–2002	2003–2019	Total
Not required	2	8	6	16 (22.5%)
Required	14	23	18	55 (77.5%)

Regarding subject area responsibilities, AABS librarians have increasingly been able to focus solely on AABS. For example, from 1970–1985, 11 out of 16 positions asked that AABS librarians also handle duties related to, for instance, Asian American studies or Social Sciences. By contrast, in jobs posted from 2003–2019, 4 out of 24 required the same. In other words, the percentage of AABS librarians who focused only on AABS increased from 31.3% to 83.3% over time.

Discussion and Conclusions

According to the analysis, most AABS professionals have "librarian" in their title, possess an MLIS, and perform collection development and reference duties. This study found that a library science graduate degree has been a common requirement since 1970 and, in fact, was required in 90.3% of job announcements placed in 1986–2002. From 2003–2019, the MLIS requirement dipped to 70.8% of advertisements. Some of this recent drop could be attributed to institutions accepting either an MLIS or a PhD in, say, African-American Studies or history. This drop could also be tied to a reevaluation of librarian education that appears to be gaining traction.[31] More data and analysis are required to better understand this percentage decrease,

however. More generally, this study found that 81.2% of AABS positions required at least a master's degree of some kind, illustrating that a vast majority of AABS librarians hold positions that are professional in stature; however, further research is needed to track the salary history and tenure-track status of these positions. Students interested in AABS librarianship should certainly plan on at least one master's degree after their undergraduate work.

Respected and relied on for their expertise, librarians—particularly those in academic settings—were often asked to have extensive training. The data showed that for 49.3% of the positions, it was preferred or required that the candidate have a second, related academic degree. These were often in humanities and social sciences disciplines. As proponents of lifelong learning, it should surprise no one that extensive educational training has remained important to hiring committees; this study found that the number of positions requiring schooling beyond the MLIS climbed from 43.8% to 61.3%, before dropping down to 37.5% in the last group. Similar to the MLIS trend, positions advertised from 2003–2019 that required a second degree dropped significantly, in this case, 23.8%, from the previous group. It is perhaps disappointing then to find that less than half of academic AABS librarians teach. Demonstrating expertise and building relationships with students, faculty, and researchers is perhaps the best way to build enthusiasm for AABS and get the attention of the folks crunching the numbers for next year's budget. Library leaders should make every effort to get their AABS librarians into the classroom or facilitating public discussions; when students and patrons witness firsthand the added value librarians provide, it makes a lasting impact.

In that same vein, previous work experience was also important to hiring committees. Data extracted from the job advertisements showed a steady percentage increase from 1970 to 2019, from 50% of ads in the first group to 75% of them in the last. Overall, 67.6% of position announcements either preferred or required previous experience. This represents a marked difference from the first Black Studies librarians in the late 1960s who were often faculty members or librarians thrust into the position. A breakdown by institution reveals that 100% of special/research librarian positions asked for previous experience; that figure was 63.5% for academic libraries and 33.3% for public libraries. This increase is reassuring because it supports the professional image of this position on campus; public libraries still have room for improvement in this area.

One surprising requirement was that applicants have knowledge of at least one language other than English. Overall, 47.9% percent of positions either preferred or required this skill. While some may question the need for AABS librarians to have international language proficiency, the reasoning becomes clearer considering librarians may be asked to develop collections for an Africana Studies program, for instance, that has much larger geographic and linguistic scope. To that end, it makes sense that 59.6% of academic library jobs preferred or required a second language proficiency, with 19.2% actually requiring it. Knowledge of international languages also opens doors for AABS librarians to collaborate with, for example, Spanish or Portuguese departments, as a way of incorporating Afro-Latino and Afro-Brazilian history and resources into the cultural component of language coursework. The opportunities there are only limited by our creativity.

Titles for AABS positions have changed over the years while maintaining some consistency. From 1970 to 1985, eight of the announcements were for "librarians" while two each were for "bibliographer" and "subject specialist." As time passed, "librarian" became more common among academic library positions while titles like "bibliographer," "subject special-

ist," and "curator" disappeared entirely from positions advertised from 2003 to 2019. In fact, an academic library has not sought a "bibliographer" since 2001, a "subject specialist" since 1998, or a "curator" since 2002. Perhaps the more general "librarian" description grew in popularity as the number and nature of duties increased over time, while titles that seemed to pigeon-hole the position fell short in their descriptive accuracy. Surprisingly, no positions of "reference librarian" specializing in African-American studies were located. Likewise, *C&RL News* advertised many positions for Humanities or Social Science librarians over the decades, yet none of those located required expertise in AABS. This might point to the reluctance on the part of reference departments to dedicate a position to AABS—a sign that it still faces an uphill climb to gain an equal footing with disciplines like history and American Studies.

Despite variations in position title, core duties for these positions remained fairly consistent over the decades. Both reference services and collection development continue to feature heavily in the librarian's daily tasks. Since 1986, 77.5% of AABS librarian positions called for the development of collections. In the most recent time period, 75% of librarians were required to provide reference assistance. Reference has long been important for librarians in AABS, appearing in 77.5% of job ads since 1970. Instruction has become more important since the 1980s and continued to be a requirement for 33.3% of librarian positions since 2002. Instruction was a duty in 42.3% of academic librarian positions while it was not a duty in any of the public library roles advertised.

When compared with Alonso-Regalado and Van Ullen's similar analysis of position announcements for Librarians for Latin American and Caribbean Studies, this study revealed many similarities and found some interesting points of departure. For instance, Alonso-Regalado and Van Ullen also found "librarian" to be the most common job title, replacing "bibliographer." Similarly, most of their job ads came from academic institutions and required the duties of providing reference services and developing collections. Overall, however, instruction was required of 57.4% of the positions they analyzed, compared to just 32.4% of all AABS roles. Moreover, even with twelve more years in its scope, this study located 23 fewer job ads, representing significantly fewer AABS ambassadors building relationships with students, faculty, and patrons in the classroom.

Continued analysis of AABS position advertisements will shed more light on the profession. For instance, analysis may explicate the change in the skills required of AABS librarians with the digital revolution beginning in the 1990s. Or interviews with librarians in these roles could describe how their jobs differed from the position described in the announcement. Could the recent spike in position announcements reflect changes in academic libraries or academia overall, or reflect library budgets growing or shrinking? The long-term impacts of COVID-19 and social justice movements will surely make for important studies. For instance, how did AABS librarians handle the transition to online learning and building e-resource collections and did the independent Black presses, who often project the voices of the underrepresented in the form of the printed book, survive?

With 16 postings in the final three years of this study, sources for future research appear to be plentiful. The increase documented in this study could be recency bias, in that internet advertisements are difficult to access as time passes or they disappear entirely after the positions are filled. This spike could also be the result of there simply being more AABS programs or an increase in their student enrollment. Perhaps future scholars will find a correlation between the number of job ads placed and the economic fortunes of the universities hiring.

This recent increase can also be viewed with some skepticism. With the drastic increase in AABS departments over the decades, one would have expected a corresponding increase in the number of AABS librarian positions; however, the number of job ads remained steady until 2017. Does this increase finally mark a turning point? Is this when university administration begins supporting AABS faculty, students, and researchers? As Frederiksen argued, analyzing the changes in positions "acts as an indicator of how the academic library continues to define and present itself."[32] With the growing number of underrepresented groups, departments, and programs across college campuses, libraries would do well to demonstrate—not just talk about—their commitment to student learning and research by having an AABS librarian on staff. If what Frederiksen said is true, then the relatively stagnant number of job ads over the past 50 years illustrates the work left to be done in this regard.

The announcements also tell the reader something in the pattern they *do not* reveal. For instance, the first public librarian announcement appeared in 1972, not far behind academic libraries; however, it would be another 25 years before a public library position advertisement was located. The IFLA archive, which dates back to 1996, contained public librarian job ads from 1997 and again in 1998. Perhaps this is an indication that the present study's resources were not optimal for locating public library jobs. Or maybe this is an indication that public libraries are lagging behind their academic counterparts when it comes to addressing their collections and community's research needs. In fact, only two of those 16 jobs posted from 2017–2019 were by public libraries. This is an opportunity for AABS librarians to reach across library lines to shore up the disparity: co-curate book displays and exhibits in each other's libraries, co-host guest speakers, and co-develop collections that build patron excitement and interest in AABS titles. Patron enthusiasm could translate into bigger budgets for AABS positions and collections moving forward. Additionally, these partnerships can go a long way in reducing the barriers between a campus and its surrounding community—a common challenge for institutions of higher education.

On university and college campuses, AABS librarians and faculty should find every opportunity to collaborate in strengthening their collections and their partnerships. As Mcdougal III stressed, it is absolutely critical for "researchers to be familiar with the breadth of analytical tools at their disposal."[33] With their education and experience, AABS librarians do not simply find resources and build collections, they *are* resources. Perhaps this study can help AABS librarians and faculty envision their shared space both in the library stacks and in the classroom. It is also hoped that those students who see the value that librarians add to their academic experience will remember it once they become alumni, faculty members, administrators, and educated voters. Finally, if library administrators are creating a new AABS librarian position, hopefully they see that the individuals in these roles will benefit from support in the form of professional development opportunities, mentorship programs, sufficient funding, and time to adjust to new job functions. Librarians new to AABS roles should also embrace the ideas that libraries are not race-neutral spaces and that they should actively remove barriers to success that are faced by underserved groups.

Today, it seems that American society is facing a crossroads very similar to the one Norman W. Walton described in his paper from 1973. Unfortunately, according to Kara Olidge, executive director of the Amistad Research Center, libraries and archives are *still* suffering from reactive rather than proactive collecting, and many lack a real plan for the future. In a somewhat optimistic tone, Olidge continued, "It's a marathon…we just have to keep passing the torch."[34]

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Notes

1. Norman W. Walton, "Black Librarians, Archivists and Black Collections," in *Lift Ev'ry Voice and Sing: Papers Presented at an Institute for Training Librarians for Special Black Collections and Archives, April 12–14*, 1973, ed. Harry Robinson, Jr. (Montgomery: Alabama State Univ., 1974), 47.

2. Following Serie Mcdougal III's lead, this study uses the terms "Africana Studies," "African American Studies," and "Black Studies" interchangeably. See footnote 1 in Serie Mcdougal, III, "The Future of Research Methods in Africana Studies Graduate Curriculum," *Journal of African American Studies* 15, no. 3 (2011): 280.

3. Oba T'Shaka, "Africana Studies Department History: San Francisco State University," *Journal of Pan African Studies* 5, no. 7 (2012): 21.

4. Denise M. Glover, "Academic Library Support for Black Studies Programs: A Plea to Black Studies Faculty and Administrators," *Journal of Negro Education* 53, no. 3 (1984): 314. See also E.J. Josey and Ann Allen Shockley, eds., *Handbook of Black Librarianship*, (Littleton, CO: Libraries Unlimited, Inc., 1977). In her chapter, "The Role of the Curator of Afro-American Collections," Shockley recalls that "oftentimes, curators were appointed without subject or even reading background in the field. In most instances, the qualifying credential was a black face. It is common knowledge that black skin does not automatically denote erudition in black books, history, culture, or black people." In "The Role of the Curator of Afro-American Collections," E.J. Josey and Ann Allen Shockley, eds., *Handbook of Black Librarianship*, (Littleton, CO: Libraries Unlimited, Inc., 1977), 192.

5. Ann Allen Shockley, *A Handbook for the Administration of Special Negro Collections*, (Nashville: Fisk University, 1970), i. See also Harry Robinson Jr.'s *Lift Ev'ry Voice and Sing. Papers presented at an Institute for Training Librarians for Special Black Collections and Archives April 12–14, 1973*, in which he discusses the early years of black studies librarianship. Robinson specifically mentions institutes held at Fisk University, Atlanta University School of Library Services, and Alabama State University in order to increase "the number of qualified librarians in the area of black studies librarianship." Atlanta University held its institute in 1965, an indication that it foresaw the coming expansion of this field. Unfortunately, as Robinson notes, "since most of these institutes were either funded by the Office of Education or a foundation, the host institutions were only able to invite a selected number of librarians." (iii). https://files.eric.ed.gov/fulltext/ED104355.pdf, accessed February 6, 2020. Robinson notes that his institute at Alabama State attracted attendees from 22 states and even students from outside of the library education field. (iv).

6. Craig Chamberlain, "African American Studies in the U.S. is 'Alive and Well,' New Report Says," last modified August 29, 2013, https://news.illinois.edu/view/6367/204755. "Through a national Web-based survey of 1,777 U.S. colleges and universities, U. of I. researchers found that 76 percent of those institutions had some form of black studies. Twenty percent, or 361 institutions, had formal academic units, most classified as departments or programs, according to the study. But another 56 percent, or 999 institutions, had a course or courses dedicated to the black experience." See Abdul Alkalimat, Ronald Bailey, Sam Byndom, Desiree McMillion,

LaTasha Nesbitt, Kate Williams, and Brian Zelip. *African American Studies 2013: A National Web-Based Survey*. 29 pages. University of Illinois at Urbana Champaign Department of African American Studies, 2013. Available at http://afro.illinois.edu.

7. Henry Louis Gates, Jr., "Academe Must Give Black-Studies Programs Their Due," *Chronicle of Higher Education* 63, no. 11 (2016): 46. Also, according to the National Council for Black Studies, there are 16 institutions offering a standalone PhD in AABS. See National Council for Black Studies, "Africana Studies Graduate Programs," https://ncbsonline.org/students/as-grad-programs/. Accessed February 13, 2020.

8. Courtney Becks, "African American Studies Collections and the American Season of Redemption," *Proceedings of the Charleston Library Conference*, 2018, 59. My emphasis.

9. According to the National Center for Education Statistics, from 2010–2017 the average number of MLIS degrees awarded annually was 6,146. NCES, "Table 323.10. Master's degrees conferred by postsecondary institutions, by field of study: Selected years, 1970–71 through 2016–17." The present study grew out of a capstone project the author completed for his MLIS program at the University of Southern Mississippi when a survey of LIS literature turned up scant information on AABS librarianship, https://nces.ed.gov/programs/digest/d18/tables/dt18_323.10.asp, accessed February 7, 2020.

10. The author uses "area studies" because it is currently a widely-understood term, while also recognizing its troubling connections to colonialism and colonialist language. See, for example, Katharina Schramm "Leaving area studies behind: the challenge of diasporic connections in the field of African studies," *African and Black Diaspora: An International Journal*, 1:1, (2008): 1–12, Https://doi.org/10.1080/17528630701676588 and Megan Browndorf, Erin Pappas, and Anna Arays, eds. *The Collector and the Collected: Decolonizing Area Studies Librarianship,* (Sacramento: Litwin Books, 2021).

11. Jesús Alonso-Regalado and Mary Van Ullen, "Librarian for Latin American and Caribbean Studies in U.S. Academic and Research Libraries: A Content Analysis of Position Announcements, 1970–2007" (2009). *University Libraries Faculty Scholarship*. 2: 139.

12. Alonso-Regalado and Van Ullen, "Librarian for Latin American and Caribbean," 139.

13. Alonso-Regalado and Van Ullen, "Librarian for Latin American and Caribbean," 151.

14. Robert D. Stueart, *The Area Specialist Bibliographer: An Inquiry into His Role*, (Metuchen, NJ: Scarecrow Press, 1972), 113. Stueart's selected bibliography contained more than 150 works on area studies librarianship, indicating its well-documented history up to the early 1970s.

15. Stueart, *Area Specialist Bibliographer*, 110.

16. Stueart, *Area Specialist Bibliographer*, 110.

17. Stueart, *Area Specialist Bibliographer*, 113.

18. William C. Robinson, "Academic Library Collection Development and Management Positions: Announcements in *College and Research Libraries News* from 1980 through 1991," *Library Resources & Technical Services* 37 (April 1993): 134.

19. Karen S. Croneis and Pat S. Henderson, "Electronic and Digital Librarian Positions: A Content Analysis of Announcements from 1990 through 2000", *The Journal of Academic Librarianship* 28, no. 4 (2002): 233.

20. Gary W. White, "Academic Subject Specialist Positions in the United States: A Content Analysis of Announcements from 1990 through 1998," *The Journal of Academic Librarianship* 25, no. 5 (1999): 379.

21. Kristen Radsliff Rebmann, Simone Molitor, and Bonnie Rainey, "Distance Learning Skills and Responsibilities: A Content Analysis of Job Announcements 1996–2010," *Journal of Library & Information Services in Distance Learning* 6, no. 2 (2012): 106–108.

22. Colleen T. Boff, Carol Singer, and Beverly Stearns, "Reaching Out to the Underserved: More Than Thirty Years of Outreach Job Ads," *University Libraries Faculty Publications* (2006), Paper 4.

23. Yingqi Tang, "Distance Education Librarians in the United States: A Study of Job Announcements," *The Journal of Academic Librarianship* 39 (2013): 500.

24. Rebecca Albitz, "Electronic Resource Librarians in Academic Libraries: A Position Announcement Analysis, 1996–2001," *Libraries and the Academy* 2, no. 4: 597. My emphasis.

25. John D. Shank, "The Blended Librarian: A Job Announcement Analysis of the Newly Emerging Position of Instructional Design Librarian," *College & Research Libraries* 67, no. 6 (2006): 521–522.

26. Linda Frederiksen, "Access Services Librarians: A Content Analysis of Job Advertisements, 1977–2004," *Journal of Access Services* 3, no. 2 (2005): 25.

27. Vera Armann-Keown and Liane Patterson, "Content Analysis in Library and Information Research: An Analysis of Trends," *Library & Information Science Research* 42 (2020): 1.

28. National Geographic, "United States Regions," https://www.nationalgeographic.org/maps/united-states-regions/

29. Carnegie Classification of Institutions of Higher Education, "Size & Setting Classification Description,"

https://carnegieclassifications.iu.edu/classification_descriptions/size_setting.php

30. The languages, in descending order by frequency of appearance are: French, 20; Spanish, 13; Portuguese, 11; any European language, 7; any African language, 7; German, 5; Italian, 3; Afrikaans, 3; Arabic, 1. Some advertisements asked for knowledge of more than one language, so the numbers exceed the total number of postings.

31. For instance, see the ALA's Librarian Education Reform Discussion Group.

32. Frederiksen, "Access Services Librarians," 16.

33. Mcdougal, "The Future of Research Methods," 280.

34. Kara Olidge, "When WHITE Libraries Happen to BLACK Rare & Distinctive Collections: Finding Pathways from Marginalization to Narratives of Empowerment," (webinar from Cornell University Library Rare & Distinctive Collections [RAD] Hour webinar, October 19, 2020), https://vod.video.cornell.edu/media/Cornell+University+Library%2C+Rare+and+Distinctive+Collections+%28RAD%29+HourA+When+WHITE+Libraries+Happen+to+BLACK+Rare+%26+Distinctive+CollectionsA+Finding+Pathways+from+Marginalization+to+Narratives+of+Emp/1_sy6plfuq. My emphasis.

Apportioning the Cost of a Full-Text Database Among the Journals in the Database: A Comparison of Six Methods

William H. Walters

Estimates of the price or value of the individual journals within a full-text database may be useful to librarians engaged in serials reviews or other collection development projects, to scholars investigating the determinants of journal prices, and to publishers seeking to rationalize their pricing strategies. This paper evaluates six methods of apportioning the cost of a full-text database among the individual journals in the database—methods based on variables such as journal size, total citations, Journal Impact Factor (JIF) percentile, and single-journal list price. Each method is evaluated based on how well the resulting prices can be predicted by the determinants of journal prices identified in previous research. Although the six methods yield similar results, the single best option is to use price estimates that account for JIF percentile. If citation data are not available and cannot be estimated, the best alternative is to rely on the equal-value assumption—to split the total price equally among the wanted journals in the database.

Introduction

Although nearly 20 studies have examined the determinants of scholarly journal prices since 1989, virtually all of them have focused exclusively on the prices of single-journal subscriptions.[1] The single-journal approach to price analysis remains common even today, when academic libraries acquire most of their journals through full-text databases.[2]

Just a few large-scale price studies have accounted for the journals available through online databases or collections. One approach to evaluating the cost of these journals is to treat each database as an indivisible entity, calculating statistics such as price per article and price per citation for each database.[3] A second approach is to estimate the cost of each individual journal by apportioning the total database price among the journals in the database.[4] The first approach has the advantage of relying on authoritative data; no price estimation is required. However, the second approach may be more useful when the goal is to evaluate journal-specific determinants of price (e.g., subject area and scholarly reputation) or when the prices of individual journals are required for library collection development decisions—

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when determining whether to bundle or unbundle subscriptions to individual journals and full-text collections, for instance.[5]

When estimates of individual journal prices are required, the total cost of each full-text database must be apportioned among the journals in the database. This can be done on the basis of

1. The equal-value assumption (total cost split equally among the wanted journals in the database)
2. Journal size (articles per year)
3. Total citations for the journal as a whole
4. Journal Impact Factor (JIF) percentile (average citations per article)
5. Single-journal list price, representing the publisher's own assessment of the journal's relative value
6. A composite indicator that accounts for variables 2–5.

There are other possibilities, of course, but these are the journal-level variables identified in previous research as the most consistent correlates of journal prices.[6]

This paper first estimates journal prices based on each of the six criteria. Each price variable is then used as the dependent variable in a regression with independent variables representing resource provider type (scholarly society, university, other non-profit, commercial publisher, or library vendor), subject field (engineering, physical sciences, life sciences, business, social sciences, or education), publisher size, JIF percentile, and journal size. The study evaluates one primary research question: Which method of estimating prices results in a dependent variable that is most fully explained by the combination of independent variables? That is, which method results in the highest R^2 value? The assumption is that an effective method of estimating price is one for which variations in price are (a) systematic rather than random, and (b) closely linked to the variables that might reasonably be expected to contribute to variations in price.

A secondary question is whether the results support or challenge an earlier finding—that for a typical U.S. master's university, the journals available through commercial publishers' databases cost substantially less than those available through the databases of non-profit publishers and library vendors. Previous research shows that while commercial databases are especially expensive for the major research universities, they are especially *inexpensive* for American bachelor's and master's universities.[7] This study investigates whether the same finding can be seen when several different methods of price estimation are used.

Methods

The data used in this analysis were compiled for a recent Manhattan College serials review. Specifically, we attempted to acquire 2,717 *wanted journals*—those identified by the faculty as the most important titles for their teaching and research—while minimizing cost per wanted journal. Manhattan College, a 4,000-student university in the Bronx, offers bachelor's and master's degrees in engineering, business, arts and sciences, education, health, and professional studies. The college is typical of U.S. universities in the Carnegie *master's—larger* category except for the size of its engineering school, which accounts for 30% of undergraduate students.

The price data used here are actual 2019 or 2020 invoice prices (or, in some cases, price quotes) obtained by Manhattan College for the 236 full-text databases considered as possible means of gaining access to the 2,717 wanted journals. Unlike list prices, they represent the amounts actually paid or payable. The details of the data compilation process are described in an earlier study.[8]

Journals in the arts and humanities (A&H) were excluded from the study due to data limitations—specifically, because citation data were unavailable for a relatively high proportion of those journals. That is, the A&H journals selected by the faculty include quite a few that are not indexed in Web of Science. Open Access (OA) journals were also excluded from the analysis since they are freely accessible without a subscription. Consequently, *number of wanted journals in the database* refers to the number of wanted journals that are neither A&H nor OA. Likewise, *total database price* refers to the total price times the proportion of journals in the database that are neither A&H nor OA.

It is important to keep in mind that any one journal may be acquired through several different subscriptions or databases. Consequently, price is an attribute not of a particular journal, but of a particular *acquisition opportunity*.[9] To gain current access to *Northeastern Naturalist*, for instance, a library might choose a single-journal subscription from the publisher or subscribe to any of 13 full-text databases offered by BioOne, EBSCO, or ProQuest. That's 14 acquisition opportunities with annual prices ranging from $105 to $545. The data file for this investigation has 4,529 cases that correspond to 4,529 acquisition opportunities—4,529 instances in which a particular wanted journal was included in a particular full-text database. For each case, there are 6 dependent variables (price estimates) and 14 independent variables that represent 5 constructs: resource provider type, subject field, publisher size, JIF percentile, and journal size.

Price Estimates (Dependent Variables)

Five of the six price estimates—all but the composite indicator—were calculated using similar methods.

1. For *price (equal value)*, the total database price was split equally among the wanted journals in the database. This calculation is based on the assumption that the value of each journal (relative to that of the other journals in the same database) does not vary systematically on the basis of size, scholarly impact, or list price.
2. For *price (journal size)*, each wanted journal was assigned a value equal to the total database price times the proportion of the wanted-journal articles in the database that appeared in the journal. (*Wanted-journal articles* are simply articles that appeared in the wanted journals. No differentiation between *wanted* and *not wanted* status was made at the article level.) This calculation is based on the assumption that price is determined mainly by the number of articles in each journal—specifically, the number of Web of Science citable items published in 2019. Citable items include empirical articles, review articles, research notes, and other substantive contributions but not items such as announcements, editorials, and letters to the editor.
3. For *price (total citations)*, each wanted journal was assigned a value equal to the total database price times the proportion of the database's wanted-journal citation total (number of citing articles) that could be attributed to the journal. With this variable, price is proportional to the number of times the journal (all articles combined) was cited in 2019.[10]
4. For *price (JIF percentile)*, each wanted journal's 2019 Impact Factor was first expressed as the average of the journal's percentile ranks in all the Web of Science subject categories in which the journal was classified. Each journal was then assigned a value equal to the total database price times the proportion of the database's wanted-journal

percentile-rank total that could be attributed to the journal. *Price (JIF percentile)* is based on the assumption that price is proportional to the average number of times each article in the journal was cited in 2019. It is therefore different from *price (total citations)* in two important ways. First, it makes use of data on average citations per article rather than total citations per journal; it is therefore not influenced by the number of articles published in the journal. Second, it is based on percentile ranks rather than raw scores; it represents each journal's impact relative to that of the other journals in the same subject category. With *price (JIF percentile)*, a top-tier political science journal is assigned the same price as a top-tier biochemistry journal in the same database. This method disregards the fact that the average citation rate is higher in biochemistry than in political science.

5. For *price (single-journal price)*, each wanted journal was assigned a value equal to the total database price times the proportion of the database's single-journal list price total (the sum of the single-journal list prices of the wanted journals) that could be attributed to the journal. This calculation assumes that the publishers themselves have a good idea of the value of each of their journals, and that their assessments of value are incorporated into the journals' list prices. *Price (single-journal price)* is consistently lower than actual list price, but proportional to it. With just a few exceptions, the single-journal list prices used in this analysis are 2019 or 2020 prices from EBSCO or from the publishers' web sites.
6. A different method was used to arrive at *price (composite)*, a composite indicator that incorporates dependent variables 2–5, above. First, unweighted least squares extraction—the initial step in factor analysis—was used to calculate communality values, which represent the extent to which each price variable contributes to the shared variance within the set of four variables (i.e., the extent to which each variable can be represented by the other three).[11] Communalities of 0.89, 0.76, 0.67, and 0.72 were obtained for variables 2–5, respectively, revealing that *price (journal size)* best captures the variance common to the set of four variables. Because the eigenvalues of the extracted factors showed that all four variables could be represented well by a single composite indicator, a composite score for each journal was calculated as the sum of the four (*communality* * *estimated price*) values. That is, each of the four component variables was weighted in proportion to its contribution to the shared variance.[12] Finally, each wanted journal was assigned an estimated price equal to the total database price times the proportion of the database's composite-score total that could be attributed to the journal.

Three of the six price estimates require the use of citation data. Because the A&H journals—those most likely to have missing values for the citation variables—were excluded from the analysis, just 5.7% of the remaining 4,529 cases have one or more missing values. For those cases, *total citations* and *JIF percentile* were estimated.[13]

The correlations among the six price variables are shown in Table 1. As described earlier, each price variable was used as the dependent variable in a regression that included the independent variables identified in earlier research as effective predictors of journal prices. (See below.) The dependent variables were entered in natural log form in order to maintain linearity.

TABLE 1
Correlations Among the Dependent Variables (the Six Price Variables)

Variable	Price (equal value)	Price (journal size)	Price (total citations)	Price (JIF percentile)	Price (single-journal price)	Price (composite)
Price (equal value)	—	0.75	0.66	0.92	0.79	0.84
Price (journal size)	0.75	—	0.85	0.74	0.81	0.95
Price (total citations)	0.66	0.85	—	0.73	0.70	0.92
Price (JIF percentile)	0.92	0.74	0.73	—	0.72	0.86
Price (single-journal price)	0.79	0.81	0.70	0.72	—	0.89
Price (composite)	0.84	0.95	0.92	0.86	0.89	—

Correlates of Price (Independent Variables)

All six regressions used the same set of independent variables:

1. Resource provider type (five categories): scholarly society, university, other non-profit, commercial publisher, or library vendor. The resource provider is almost always the publisher, except for the databases provided by library vendors such as EBSCO and ProQuest. The *university* category includes both university presses and academic departments/centers.
2. Subject field (six categories): engineering, physical sciences, life sciences, business, social sciences, or education, based on the Manhattan College department(s) that identified the journal as a wanted journal. Because some journals were wanted by more than one department, about 10% of the journals have more than one subject designation.
3. Publisher size: number of wanted journals published by the publisher (not always the resource provider), including those of subsidiary imprints.
4. JIF percentile: 2019 JIF, expressed as a percentile within the relevant Web of Science subject category. If the journal appeared in multiple subject categories, the percentile scores were averaged. Because JIF is independent of journal size, it represents the average citation impact of an article in the journal rather than the impact of the journal as a whole.
5. Journal size: number of citable items published in 2019.

Although two of the independent variables were used in the construction of the dependent variables, this is not a problem, since the dependent and independent variables do not represent the same constructs. Moreover, because characteristics *not* represented within the set of independent variables (e.g., total database price and the number of wanted journals) figure heavily in each price estimate, the correlations between the dependent variables and the independent variables are modest. The correlation between *price (journal size)* and *journal size* is 0.27, for instance, indicating that just 7% of the variation in *price (journal size)* can be

explained by *journal size* ($r^2 = 0.07$). Likewise, the correlation between *price (JIF percentile)* and *JIF percentile* is just 0.17 ($r^2 = 0.03$).

TABLE 2
R^2 Values and Standard Errors of Estimate for the Six Regressions (the Six Price Variables)

Variable	Adj. R^2	SEE
Price (JIF percentile)	0.43	0.91
Price (equal value)	0.33	0.81
Price (composite)	0.33	0.97
Price (total citations)	0.29	1.24
Price (single-journal price)	0.21	1.21
Price (journal size)	0.20	1.46

Results and Discussion

The independent variables, taken together, are more closely associated with some price estimates than with others (Table 2). The highest R^2 value is that for *price (JIF percentile)*. This indicates that the independent variables are most effective at explaining variations in price when the total database price is allocated among the wanted journals based on the average citation impact of an article in each journal (JIF), expressed as a percentile score (i.e., relative to the other journals in the same Web of Science subject category). If we want the price variable that is most sensitive to the characteristics that might reasonably be expected to influence price, then *price (JIF percentile)* is the best of the options shown in Table 2.

If price estimates are needed for journals for which citation data are unavailable, then *price (equal value)* is a good alternative to *price (JIF percentile)*. As noted earlier, three of the six price estimation methods require actual or estimated citation data for every journal. For journals not included in Web of Science, three options are available: (1) use a price estimation method that does not rely on citation data, such as the equal-value method; (2) use a data source that includes citation data for a broader range of journals (e.g., Scopus rather than Web of Science, and CiteScore rather than JIF); or (3) estimate the citation values for the journals with missing data before calculating price estimates. Fortunately, the regression results suggest that the first of these options is entirely reasonable. Based on the R^2 and SEE values shown in Table 2, the equal-value method is a good alternative to the JIF percentile method. Moreover, the two methods result in price estimates that are very closely related ($r = 0.92$; see Table 1).

Comparing the Results for Particular Price Variables

The fact that *price (JIF percentile)* has a higher R^2 value than *price (equal value)*, *price (composite)*, and *price (total citations)* is surprising for at least two reasons. First, we might expect a higher R^2 value for the composite indicator since it incorporates the shared variance common to all four of its component variables. In fact, however, the composite indicator produces less satisfactory results than either *price (JIF percentile)* or *price (equal value)*.

Second, we might expect a higher R^2 value for *price (total citations*) than for *price (JIF percentile)* since *total citations* represents the scholarly impact of the journal as a whole rather than the average impact of a single article in the journal. For instance, if there are two journals with equal JIF percentile scores but one publishes twice as many articles as the other, *price (total citations)* will account for the difference in journal size while *price (JIF percentile)* will not. One explanation for the lower R^2 value for *price (total citations)* is that the price or value of a journal is not closely related to the number of articles it publishes. This first explanation is not unreasonable, especially considering the relatively low R^2 value associated with *price (journal size)*.

There is a second and perhaps more likely possibility, however; the high R^2 value for *price (JIF percentile)* may be related to the use of percentile scores. If this is the case, it suggests that the price of a journal is tied to its relative standing within its subject area—not to its actual citation rate—and that we ought to use percentile scores to account for the differences in average citation rates across disciplines. A price variable based on JIF raw scores can be used to test this assertion. If the assertion is valid, then *price (JIF raw score)* will have a lower R^2 value than *price (JIF percentile)*—and it does. A regression with *price (JIF raw score)* as the dependent variable results in a low R^2 value (0.22) and an error (SEE) value of 3.12, far higher than any of the values shown in Table 2. We can therefore conclude that *price (JIF percentile)* is probably effective due to the use of percentile scores rather than actual JIF values.[14]

As Table 2 shows, *price (single-journal price)* and *price (journal size)* are associated with the lowest R^2 values. Notably, the price variable with the most shared variance, *price (journal size)*, has the lowest R^2 value of all. Conversely, the price variable with the least shared variance, *price (JIF percentile)*, yields the highest R^2 value. The reasons for this are not clear. These results do suggest two related findings, however. First, combining multiple dimensions of price into a single variable (the composite variable) does not increase the extent to which the estimated prices can be explained by the independent variables in the regression. Second, the price estimates that can be predicted most effectively are not necessarily those with the most shared variance.

Correlates of Price

Because the dependent variables were entered in natural log form, the unstandardized regression (*B*) coefficients cannot be interpreted as dollar amounts. Table 3 shows the *effect coefficients*, which are more intuitively meaningful. Each represents the percentage change in price asso-

TABLE 3
Effect Coefficients for the Six Regressions (the Six Price Variables)*

Variable	Price (equal value)	Price (journal size)	Price (total citations)	Price (JIF percentile)	Price (single-journal price)	Price (composite)
Scholarly society	226	169	128	199	319	177
University	216	331	176	212	466	263
Other non-profit	124	439	252	106	473	236
Commercial publisher	—	—	—	—	—	—
Library vendor	189	303	225	200	233	258
Engineering	–12	23	ns	–19	31	ns
Physical sciences	–9	–12	–14	–14	13	–8
Life sciences	23	66	99	33	78	55
Business	–10	ns	ns	–10	12	ns
Social sciences	—	—	—	—	—	—
Education	ns	ns	–13	ns	–12	–13
Publisher size	ns	0.1	0.1	ns	0.1	0.0
JIF percentile	ns	ns	1.7	2.2	0.3	1.0
Journal size	0.0	0.1	0.1	ns	0.1	0.1

*Each effect coefficient is equal to (exp(B)–1) * 100. *Commercial publisher* and *social sciences* are the reference categories. Values of "ns" are not significant at the 0.05 level, two-tailed.

ciated with a one-unit change in the independent variable—or, for categorical variables, the percentage change in price associated with inclusion in the indicated category rather than the reference category. (The complete regression results can be found in the Appendix.)

As Table 3 reveals, the results for resource provider type are similar across all six regressions. Moreover, all six confirm earlier reports that for a typical master's university, the journals available through commercial publishers' databases cost less, all else equal, than those available through the databases of library vendors and nonprofit providers.[15] The publisher-type differentials do vary in magnitude, however. All else equal, the journals acquired from scholarly societies may cost from 128% to 319% more than those acquired from commercial publishers, depending on which price variable is used.

Earlier investigations also identified two subject variables, *life sciences* and *physical sciences*, as important determinants of journal prices. Those same findings can be seen in Table 3. The very modest effects of publisher size, JIF percentile, and journal size are also consistent with previous research.[16]

Conclusion

Because there is no definitive way to determine the correct market price of each journal included in a full-text database, the results presented here cannot be regarded as authoritative. If there is a strong theoretical or methodological reason for estimating prices based on a particular construct, such as journal size or single-journal list price, then that construct should determine the method by which prices are estimated.

In the absence of a strong rationale for a particular price estimation method, however, it seems reasonable to use price estimates that make intuitive sense—estimates that can be explained in terms of the variables most consistently associated with price. By that criterion, the best approach is to use the JIF percentile method described here—to apportion the total database price in accordance with the JIF percentile scores of the wanted journals included in the database. If citation data are unavailable, then *price (equal value)* is a good alternative to *price (JIF percentile)*.

The results for all six price variables are consistent with earlier reports that for a typical master's university, the journals acquired through commercial publishers' databases cost less than those acquired through the databases of scholarly societies, universities, other nonprofits, and library vendors.

Application of These Findings

There are several contexts in which the findings of this investigation may be useful. First, recent studies suggest that the acquisition of full-text journal resources for library collections should involve two separate steps: (1) the selection of individual journals on a title-by-title basis and (2) the identification of the full-text databases that can provide access to those journals in the most cost-effective way.[17] If the serials review or evaluation procedure requires price estimates for every acquisition opportunity—every wanted journal within each full-text database—then a defensible method of apportioning database prices among journals will be needed.

Second, scholarly investigations of the determinants of journal prices are also likely to require the allocation of total database cost among the journals in each database. Some determinants of price (e.g., publisher's market share and for-profit/non-profit status) are attributes of particular publishers or databases rather than individual journals, while others (e.g., subject area and scholarly reputation) are specific to each journal and therefore require

the estimation of prices for individual acquisition opportunities. Recent journal price studies have relied on *price (equal value)* and *price (journal size)*,[18] but this investigation shows that at least one indicator, *price (JIF percentile)*, is likely to be a better choice.

Third, publishers and library vendors may find it useful to disaggregate database prices in order to assess their own pricing strategies, to identify anomalies in the list prices of particular journals, or to demonstrate to libraries that their products are cost-effective—to show, for instance, that their own journals are a good value in comparison with similar titles from other vendors. Because single-journal subscriptions account for relatively few of the titles held by libraries,[19] the most meaningful comparisons involve not single-journal prices, but the prices that would be paid if each journal were acquired through the most cost-effective full-text database offered by the vendor or publisher.

Further Research

Further research using data for a range of institutions might help extend or clarify the findings presented here. Nonetheless, these results, based on Manhattan College price data, are likely to be useful to other universities as well. For one thing, Manhattan College is typical of many U.S. bachelor's and master's institutions with regard to its size, mission, reputation, selectivity, student characteristics, teaching/research focus, and library budget. The curriculum is not unusual except for the size of the engineering program, and the wanted journals selected by the faculty include nearly all the high-impact journals in the subjects typically taught at U.S. undergraduate colleges.[20] Moreover, most of the library's journal budget is devoted to resources acquired through WALDO and LYRASIS, two of the largest library consortia in the United States. The consortial price schedules that apply to Manhattan College also apply to more than 1,400 other member libraries.

Research on journal prices would also benefit from greater transparency and more widespread dissemination of price information. Even today, many investigations rely on list prices, which often bear little relationship to the prices actually paid by libraries. A broader, and perhaps insurmountable, challenge lies in the disconnect between the end user's desire for particular scholarly works and the publisher's (and librarian's) focus on *information products*. While researchers need access to particular journals—or, more accurately, particular articles—publishers and librarians tend to think of cost or revenue in terms of the journal databases or packages that are marketed and acquired as indivisible units. The main analytical problem stems not from the sale or acquisition of full-text databases, but from the fact that their associated costs cannot be readily disaggregated. As long as this remains true, price estimation methods such as those described here are likely to remain useful despite their limitations.

Appendix

Each of the six price variables was used as the dependent variable in a separate regression (Tables A1–A6). *B* is the unstandardized regression coefficient, *Beta* is the standardized coefficient, n = 4,529, and the significance levels are two-tailed. Each effect coefficient is equal to (exp(*B*)–1) * 100. *Commercial publisher* and *social sciences* are the reference categories for resource provider type and subject field.

TABLE A1
Regression Results for *Price (Equal Value)*

	Effect	B	SE	Beta	Sig.
Scholarly society	226	1.182	0.056	0.347	0.00
University	216	1.149	0.065	0.241	0.00
Other non-profit	124	0.807	0.080	0.135	0.00
Commercial publisher	—	—	—	—	—
Library vendor	189	1.061	0.037	0.484	0.00
Engineering	–12	–0.123	0.043	–0.039	0.00
Physical sciences	–9	–0.092	0.034	–0.037	0.01
Life sciences	23	0.210	0.037	0.073	0.00
Business	–10	–0.103	0.033	–0.041	0.00
Social sciences	—	—	—	—	—
Education	–3	–0.035	0.044	–0.010	0.42
Publisher size	0.0	0.000	0.000	–0.035	0.05
JIF percentile	–0.1	–0.001	0.000	–0.015	0.25
Journal size	0.0	0.000	0.000	0.031	0.02
Y-intercept		5.124	0.047		
Adj. R^2		0.33			
SEE	125	0.812			

TABLE A2
Regression Results for *Price (Journal Size)*

	Effect	B	SE	Beta	Sig.
Scholarly society	169	0.990	0.101	0.176	0.00
University	331	1.462	0.117	0.186	0.00
Other non-profit	439	1.685	0.144	0.171	0.00
Commercial publisher	—	—	—	—	—
Library vendor	303	1.395	0.066	0.385	0.00
Engineering	23	0.204	0.077	0.039	0.01
Physical sciences	–12	–0.127	0.062	–0.031	0.04
Life sciences	66	0.507	0.067	0.107	0.00
Business	–2	–0.020	0.059	–0.005	0.74
Social sciences	—	—	—	—	—
Education	–4	–0.044	0.079	–0.008	0.58
Publisher size	0.1	0.001	0.000	0.130	0.00
JIF percentile	0.1	0.001	0.001	0.026	0.07
Journal size	0.1	0.001	0.000	0.284	0.00
Y-intercept		3.856	0.085		
Adj. R^2		0.20			
SEE	332	1.463			

TABLE A3
Regression Results for *Price (Total Citations)*

	Effect	B	SE	Beta	Sig.
Scholarly society	128	0.826	0.085	0.162	0.00
University	176	1.016	0.099	0.143	0.00
Other non-profit	252	1.258	0.123	0.141	0.00
Commercial publisher	—	—	—	—	—
Library vendor	225	1.178	0.056	0.360	0.00
Engineering	10	0.100	0.065	0.021	0.13
Physical sciences	–14	–0.153	0.052	–0.041	0.00
Life sciences	99	0.691	0.057	0.161	0.00
Business	7	0.067	0.050	0.018	0.18
Social sciences	—	—	—	—	—
Education	–13	–0.141	0.067	–0.028	0.04
Publisher size	0.1	0.001	0.000	0.096	0.00
JIF percentile	1.7	0.017	0.001	0.329	0.00
Journal size	0.1	0.001	0.000	0.237	0.00
Y-intercept		3.008	0.072		
Adj. R^2		0.29			
SEE	246	1.242			

TABLE A4
Regression Results for *Price (JIF Percentile)*

	Effect	B	SE	Beta	Sig.
Scholarly society	199	1.095	0.063	0.263	0.00
University	212	1.137	0.073	0.195	0.00
Other non-profit	106	0.725	0.090	0.099	0.00
Commercial publisher	—	—	—	—	—
Library vendor	200	1.100	0.041	0.410	0.00
Engineering	–19	–0.211	0.048	–0.055	0.00
Physical sciences	–14	–0.150	0.038	–0.049	0.00
Life sciences	33	0.282	0.042	0.081	0.00
Business	–10	–0.106	0.037	–0.035	0.00
Social sciences	—	—	—	—	—
Education	–7	–0.074	0.049	–0.018	0.13
Publisher size	0.0	0.000	0.000	0.023	0.17
JIF percentile	2.2	0.021	0.000	0.510	0.00
Journal size	0.0	0.000	0.000	0.016	0.21
Y-intercept		3.573	0.053		
Adj. R^2		0.43			
SEE	149	0.913			

TABLE A5
Regression Results for *Price (Single-Journal Price)*

	Effect	B	SE	Beta	Sig.
Scholarly society	319	1.432	0.083	0.306	0.00
University	466	1.734	0.097	0.266	0.00
Other non-profit	473	1.746	0.119	0.213	0.00
Commercial publisher	—	—	—	—	—
Library vendor	233	1.202	0.054	0.400	0.00
Engineering	31	0.273	0.064	0.063	0.00
Physical sciences	13	0.126	0.051	0.037	0.01
Life sciences	78	0.575	0.055	0.146	0.00
Business	12	0.113	0.049	0.033	0.02
Social sciences	—	—	—	—	—
Education	–12	–0.129	0.065	–0.028	0.05
Publisher size	0.1	0.001	0.000	0.247	0.00
JIF percentile	0.3	0.003	0.001	0.054	0.00
Journal size	0.1	0.001	0.000	0.168	0.00
Y-intercept		3.659	0.070		
Adj. R^2		0.21			
SEE	235	1.208			

TABLE A6
Regression Results for *Price (Composite)*

	Effect	B	SE	Beta	Sig.
Scholarly society	177	1.017	0.067	0.249	0.00
University	263	1.289	0.077	0.227	0.00
Other non-profit	236	1.212	0.095	0.170	0.00
Commercial publisher	—	—	—	—	—
Library vendor	258	1.276	0.044	0.486	0.00
Engineering	10	0.094	0.051	0.025	0.06
Physical sciences	–8	–0.088	0.041	–0.029	0.03
Life sciences	55	0.438	0.044	0.128	0.00
Business	–2	–0.022	0.039	–0.007	0.58
Social sciences	—	—	—	—	—
Education	–13	–0.139	0.052	–0.034	0.01
Publisher size	0.0	0.000	0.000	0.111	0.00
JIF percentile	1.0	0.010	0.001	0.247	0.00
Journal size	0.1	0.001	0.000	0.222	0.00
Y-intercept		3.819	0.056		
Adj. R^2		0.33			
SEE	163	0.967			

Notes

1. William H. Walters, "Can Differences in Publisher Size Account for the Relatively Low Prices of the Journals Available to Master's Universities Through Commercial Publishers' Databases? The Importance of Price Discrimination and Substitution Effects," *Scientometrics* 127 (Feb. 2022): 1065–97, https://doi.org/10.1007/s11192-021-04205-5.

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7. See Bergstrom et al., "Evaluating Big Deal Journal Bundles," appendix table SI 17; Walters, "Can Differences in Publisher Size"; Walters and Markgren, "Comparing the Prices of Commercial and Nonprofit Journals." Although most journal price studies have reported that commercially published journals are more expensive than those of non-profit publishers, these three papers are more realistic than the others in several respects: (a) unlike other journal price studies, they present data for all types of U.S. colleges and universities rather than just the major research universities; (b) they include only the journals that have met libraries' selection criteria—the journals that faculty and librarians actually want for their collections; (c) they evaluate not just single-journal subscriptions, but the acquisition opportunities available through full-text databases and other online resources; and (d) they are based not on list prices, but on the prices actually paid by academic libraries—the prices negotiated by library consortia, university systems, and individual institutions.

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12. Although factor scores might have been used in the creation of the composite variable, this procedure seemed more appropriate. Factor scores represent departures from the mean for all the journals in the entire data set, but the goal here is to represent the relative prices of the journals within each particular database.

13. The estimation procedure is based on the assumption that the journals not listed in Web of Science are similar to the lower-impact journals listed in Web of Science. Each missing value was replaced with the average value for the wanted journals in the lowest 20% of the Web of Science distribution within the appropriate subject area: engineering, physical sciences, life sciences, business, social sciences, or education.

14. In the calculation of *price (JIF raw score)*, each wanted journal was assigned a value equal to the total database price times the proportion of the database's wanted-journal JIF total that could be attributed to the journal. The regression for *price (JIF raw score)* used the same independent variables as the other analyses. In all seven regressions, *JIF percentile* was used as an independent variable because, overall, (a) it was more closely related to the various price variables than either JIF raw score or total citations, and (b) its use resulted in lower levels of multicollinearity among the independent variables.

15. Bergstrom et al., "Evaluating Big Deal Journal Bundles"; Walters, "Can Differences in Publisher Size"; Walters and Markgren, "Comparing the Prices of Commercial and Nonprofit Journals."

16. Walters, "Can Differences in Publisher Size."

17. Walters and Markgren, "Zero-Based Serials Review"; Walters and Markgren, "A Two-Stage Approach."

18. Walters, "Can Differences in Publisher Size"; Walters and Markgren, "Comparing the Prices of Commercial and Nonprofit Journals."

19. Johnson, Watkinson, and Mabe, *The STM Report*; Strieb and Blixrud, "Unwrapping the Bundle."

20. William H. Walters and Susanne Markgren, "Do Faculty Journal Selections Correspond to Objective Indicators of Citation Impact? Results for 20 Academic Departments at Manhattan College," *Scientometrics* 118 (Jan. 2019): 321–37, https://doi.org/10.1007/s11192-018-2972-7.

Coping During Covid: Yoga and Meditation Accessibility in Academic Libraries During the Pandemic

Erin Burns, Brian Quinn, and Megan Benson

Discussions about coping, resilience, and mental health accompanied the COVID-19 shutdowns and gradual return to academic and workspaces across the US through 2021. As physical and spiritual practices, yoga and meditation have been shown to help people through adversity and create resilience. Academic librarians were surveyed about yoga and meditation programs throughout the pandemic. The survey found that while yoga and meditation programs in academic libraries are on the rise, many cancelled their sessions because of the pandemic. Additionally, more can be done to make these sessions accessible.

Introduction

In March 2020, there was a widespread public movement in search of ways to cope with and manage the associated stress of the COVID-19 pandemic, particularly in the United States. Regarding library workers specifically, Dixon remarked that there was no one reason for burnout among library workers due to the pandemic, but that the levels of exhaustion that library workers were enduring was high.[1] Interviewed by Dixon, Christina Holm at Kennesaw State University noted that library workers face stressors such as "precarity in work circumstances" and "depressed and stagnating wages," especially at places where wages start low and have not seen regular increases.[2] Sometimes this stress might be associated with what Moran and Nadir referred to at the ACRL 2021 Virtual Conference as an unrealistic expectation of excessive positivity.[3]

However, yoga and meditation were repeatedly mentioned by health care professionals as effective tools to help reduce anxiety, relieve depression, and improve resilience.[4] Previous research around yoga as a workplace intervention has shown it is an effective means of coping with the stress of work.[5] Additionally, there are many successful meditation programs that have been shown to reduce anxiety and depression and increase resiliency.[6]

Hoping to improve their well-being, people of widely varying levels of fitness and ability that otherwise might have avoided yoga, soon became interested in trying it. Those with stable internet connections in their homes were able to try both yoga and meditation online. These online yoga sessions served to counter the isolation and anxiety generated by pandemic-related

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lockdowns and created a virtual place where people could meet online and collectively cope by relieving their stress through movement and meditation. Classes allowed participants the comforting choice to remain on- or off-camera and practice yoga in a way that was individual and accessible to them and their level of ability. Online sessions offered a restorative experience that more traditional face-to-face yoga sessions could not provide and that had become more necessary because of the pandemic and the lack of in-person options. In this way, online yoga and meditation became potent coping mechanisms to counter both the physical and mental effects of the pandemic.[7]

Interestingly, yoga has been widely perceived in popular culture and frequently portrayed in the media as being primarily a physical practice consisting largely of poses or asanas. The media often features white, highly-fit and limber yoga practitioners in extreme poses that require considerable strength and flexibility to execute.[8] This image of yoga as a demanding physical practice has given many people the impression that yoga is not for them and that its benefits are not accessible or attainable by ordinary people, or can only be achieved through years of arduous effort.[9] Likewise, meditation as a stillness practice, is seen as something that only those who have already mastered the art of silent contemplation can participate in, thus adding to the disconnect that it too is not for the general public. Because of these portrayals, many people, especially those in marginalized communities, might not think that these programs are accessible to them, especially when the perceptions of these practitioners tend to focus on the white, female, able-bodied and hyper-flexible.[10]

While public libraries have offered yoga sessions for their patrons for quite some time,[11] academic libraries have only in the past 10 years or so written about these programs.[12] Many at these institutions might believe that these types of programs are the purview of other campus entities, but some of these programs in libraries have been well established and helped those in their communities to weather stressors resulting from academic work, the workplace, and more recently, the pandemic.

Literature Review

Lenstra wrote the first comprehensive review of the literature focusing on yoga in academic libraries in 2020, before the COVID-19 pandemic. He identified three main themes of yoga in the library: spaces, collections, and programming. Lenstra described a history of "wellness in the library" and identified Goucher College in Towson, Maryland as one of the first academic libraries to include space dedicated for physical fitness, which in addition to yoga also "included a cardio room, with ellipticals, exercise bikes, and rowing machines" in 2002.[13] He found that most articles about yoga in academic libraries discuss the partnerships they made. These partners included various departments on campus, primarily campus recreation and student groups.[14] Many of these partnerships hosted special programs during finals week. Lenstra conducted an "informal study during December 2018 to see how physical activity was being supported during academic finals."[15] He found that, "it seemed that yoga was being offered everywhere" and that though "we still do not know how common these types of special programs have become, we do have clear, if anecdotal evidence that these types of programs are being offered in a wide variety of academic libraries in many parts of the US and Canada, and beyond."[16]

Following Goucher College's example, many other academic libraries added spaces dedicated to meditation and yoga, including McGill University's Tranquility Zone and the

University of Toronto's Reflection Room.[17] Louisiana State University also recently provided space for a relaxation room.[18] Further, some Penn State campuses have provided prayer spaces.[19] The University of Oklahoma[20] and University of Massachusetts Amherst[21] added walking labyrinths as a form of moving meditation. Other libraries have added items and resources to their collections to support mindfulness and stress reduction, such as MIT's Calm Collection.[22]

Yoga programs supporting employee wellness in academic libraries have also been the topic of several articles. Many of these are case studies detailing how the author's library implemented yoga or meditation into their workday, including a program at Texas Medical Center Library which began in 2010.[23] Their approach to an unfunded wellness program included pay-as-you-go yoga classes and was considered a success.[24] Joyner Library's lunchtime yoga program for staff at East Carolina State University changed over time: after being led by an employee who was yoga certified for several years, they now watch free online yoga videos in an empty classroom.[25]

While nearly all articles focusing on yoga in academic libraries were supportive, there was at least one author who questioned yoga programming. Walton suggested that academic libraries that were considering the support of student mental health should review other examples of services and programming already offered on campus. This would "establish processes and systems of effective collaboration"; identify resources, either financial or staffing; and assess how the initiative met students' needs to determine if allocating resources is necessary or replicated work being done elsewhere on campus.[26]

Since the pandemic began, several studies have been published about the impact of the pandemic and libraries' responses to the mental health needs and concerns of their patrons. Cox and Brewster surveyed academic libraries in the United Kingdom about the support for student mental wellbeing before and during the pandemic.[27] They found pre-pandemic, yoga programming was mentioned specifically in 6 academic libraries, and mindfulness at 11.[28] Additionally, after the start of the pandemic, many of the activities that UK universities offered were based online. Yoga was not an option for this survey question but may have been included in the "offering webinars on well-being related topics" selection.

Bladek also wrote about academic library support for student wellness and the impact of the pandemic in libraries in the US. Many of the initiatives depended on in-person participation, which became impossible to provide during lockdowns. Some libraries were able to shift to virtual support in the form of blogs, social media posts, guides, virtual study rooms, online workshops, and yoga classes.[29] Jackson wrote about this shift to support her colleagues at the start of the pandemic.[30] She offered "Release and Reflect" weekly, a program divided into "12–15 minutes of breath work and gentle yoga and 12–15 minutes of writing." These practices were intended to help release stress in both the body and the mind. She concluded that supporting staff wellness does not have to be costly, in agreement with the previous articles, and that, "the Zoom space is a safe container that is easy to access and allow[s] for broader participation."[31]

Finally, while most of the literature provides examples and case studies of yoga and meditation in the library, there are gaps. As Lenstra pointed out, more research is needed on spaces and collections that are set aside for yoga and meditation in academic libraries, as well as the effect these services have on students and staff. Research on yoga programs for online sessions generally showed that these programs were being implemented asynchronously, so further research is needed into the specifics of the modality (synchronous vs asynchronous sessions).[32] Additionally, there are few articles that discuss accessibility of the programs.[33]

Accessibility in libraries typically involves making library websites accessible to screen readers. Some may add interpreters and signers for in-person programs or online closed captioning for videos and livestreamed sessions.[34] But in yoga specifically, "accessibility" has meant something different—that yoga is intended for "every body." And those bodies can be of different sizes, genders, or abilities. Accessibility within yoga circles has often in the past been referred to as "making the pose easier," and has typically involved demonstrating a simple pose and a more challenging expression, which has allowed for participants to choose the degree of difficulty they would like to attempt for that session.[35] The authors would like to broaden the definition of accessibility here to not only include pose modifications, but also consider the accessibility of these programs to those who might not otherwise try yoga or meditation, as well as to those populations who have been historically marginalized and ignored.

Methods

Specifically, this study aims to answer questions about both yoga and meditation program accessibility in academic libraries in the United States, while simultaneously gathering basic information about these programs. The authors see a gap in the literature about the availability of meditation programs at academic libraries, a lack of information regarding the accessibility of both types of programs, and an opportunity to see how these programs operated during the closures of the pandemic. These questions include the following:

- How many of these programs exist in academic libraries and has there been any growth (or shrinkage) in the number of the programs being offered?
- Who is conducting these programs (library staff or faculty, HR, other campus departments)?
- Who are they marketed to? Is it only students, the university/college community, or can a variety of people participate?
- Did these programs address accessibility before the pandemic?
- What are the changes that occurred during the pandemic with regards to these programs, participants, and accessibility options?

Our survey is based in part on Lenstra's 2017 survey of public libraries wellness programs to gather basic data about these programs, as well as his 2020 informal survey of academic libraries on yoga programs. We wanted to evaluate the demographic and geographic distribution of the libraries who participated in the surveys so that future comparisons might be made about the possible growth in popularity of such programs, where these programs might be popular, and the size and geographic dispersion of the university/colleges that provide them.[36] However, that is not the focus of this particular survey.

The survey was approved through the IRB at both institutions of the authors. It was designed for anonymous participation, and respondents could skip any question that they wished, apart from the first question seeking consent to take the survey. The survey was designed not to collect personal identifying information. It was created in Qualtrics, with a total of 30 questions, which was intended to take 10–15 minutes to complete.

Targeting academic librarians and to maximize response rate, the authors distributed the survey link to various ALA listservs and community postings, as well as state library listservs. It was open for responses from May 24, 2021 to July 1st, 2021 to accommodate vacation or other holidays that possible participants may have scheduled.

There were 139 total responses to the survey. Four responses were eliminated because they were from people who worked at public libraries, yielding 135 academic library responses. Questions 2–8 gathered demographic information about the respondents and the type of institution that they work for and the location of the institution. Not every person answered every question, so from here on, *n* will represent the number of answers per question. For the sake of brevity, not every question will be included here, but will be presented as a summary of main points of interest. Full question survey is Appendix 1. We have also included an OSF link for full data files minus any identifying information (https://osf.io/hfnmj/).

In terms of the academic status of the respondents, 58 were faculty, 62 were staff, 2 MLS/MLIS students, and 6 identified as other (options also included student workers and retirees). The geographic distribution of responses was largely from Southern States with 58, followed by 34 from the Mid-Atlantic region, 14 from New England states, and 14 from Western states (geographic regions defined in Appendix 1). There were a variety of responses (n=99) from small to large universities and colleges. The majority of respondents (45%) were at institutions with between 10,000–50,000 students, and 21% had 1,000–5,000 students. We did not target any individual type of institutional locale, but respondents came primarily from either suburban (26%) or urban (34%) community settings, with somewhat less coming from rural (36%) settings, and a few selecting Not Sure (3%) (n=99).

Limitations of the survey include the possibility that distributing it over the summer as the world was dealing with the second year of the pandemic could have resulted in survey fatigue. Recent changes in the way that ALA listservs have been distributed may have also contributed to a low response rate. The survey, while effective at gathering demographic data, had a few issues with the display of matrix options for the first 5 responses that were subsequently addressed, but these matrix options might have discouraged further participation in the survey if participants were on a mobile device.

Results and Discussion

When asked whether their institution (College/University) or academic library offered yoga and meditation program(s) before the pandemic, 36 indicated that their academic library did not offer a program, while 21 responded that it did. Among the academic libraries which offered programs, 7 indicated that their library offered only yoga, and 4 indicated that they offered only meditation. For programs from the College/University, 42 respondents reported that their institution offered at least one of the programs, and 5 responded that no programs

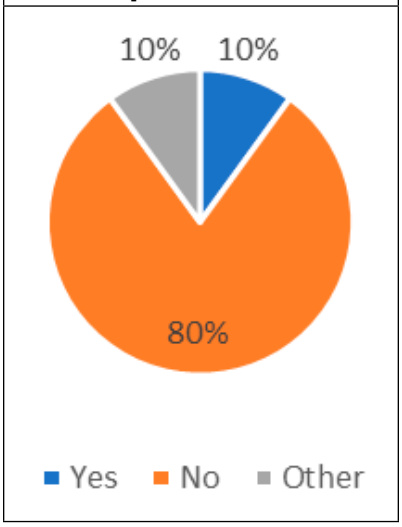
Question 9: Did your institution (College/University) or Academic Library offer yoga or meditation program(s) before the COVID-19 pandemic?											
	Yes these programs were offered		**No these programs were not offered**		**Offered yoga but not meditation**		**Offered meditation but not yoga**		**Maybe**		**Total Choice Count *(n)***
	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	**Total Count**
Academic Library	33.33%	21	87.80%	36	46.67%	7	80.00%	4	25.00%	1	**69**
College/ University	66.67%	42	12.20%	5	53.33%	8	20.00%	1	75.00%	3	**59**
	Total	63	Total	41	Total	15	Total	5	Total	4	**128**

were offered. Eight indicated that the College/University offered yoga but not meditation and 1 responded only meditation (Question 9). After the beginning of the pandemic in early spring of 2020 (Question 18), respondents indicated that programs were still offered with just 1 reported program in academic libraries offered virtually and 3 programs in institutions offered online. Even with the drop-in response rate for Question 18, there is a declining rate of libraries offering the programs. However, some of these programs were able to continue after a brief pause. Note: Tables are calculated by column.

Question 18: Did these yoga and/or meditation programs continue after the shutdowns in March 2020 due to the pandemic?

	Yes, without any interruption		Yes, after a brief pause		No		Maybe		Total
	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	**Total Count**
Academic Library	42.86%	3	33.33%	10	72.41%	21	33.33%	1	**35**
University/ College	57.14%	4	66.67%	20	27.59%	8	66.67%	2	**34**
Total	Total	7	Total	30	Total	29	Total	3	**69**

Question 10: If from the academic library, did the library's budget provide for any costs associated with the program (such as mat, blocks, paying the yoga/meditation teacher, space, etc.)?



For respondents that indicated that their academic library offered a yoga or meditation program, they were asked if the library provided for any costs associated with the program, such as mats, blocks, space, instructor fee, etc. A large majority (40) indicated no, with only 5 responding yes, and another 5 choosing "Other" as their response (n= 50).

Respondents were asked if yoga or meditation programs before the pandemic were accessible. Seventeen academic library programs indicated that they were accessible, and 17 at the College/University. Nineteen answered that programs at the academic library were not accessible, and 8 were not from the College/University. Five specified for both academic and College/University that these programs might have been accessible.

Modifications of poses was the most popular method of ensuring accessibility with 17 responses at the academic library and 16 from the College/University, followed by the use of props (11 and 13). Participants also reported that 1 had an in-person interpreter at both academic library and College/University; no one offered closed captioning at the academic library but 2 did for the College/University. Fourteen at the academic library were not sure, and 21 people indicated the same for the College/University programs. If a participant selected "Other," they could write about what made the program accessible. One participant wrote about the instructor consulting with each participant to be aware of any needs before a session. Another wrote about a chair yoga session. An additional participant mentioned closed captioning and modifications for the College/University.

Question 11: Were the yoga or meditation program(s) before COVID-19 accessible? (Accessibility can be: interpreters or translators, modifications for poses, inclusion of blankets and pillows, etc)							
	Yes		No		Maybe		Total Count
	Percentage	Count	Percentage	Count	Percentage	Count	Total
Academic Library	50.00%	17	70.37%	19	35.71%	5	**41**
College/University	50.00%	17	29.63%	8	64.29%	9	**34**
	Total	34	Total	27	Total	14	**75**

Question 21: Were the yoga or meditation program(s) AFTER COVID-19 accessible?							
	Yes		No		Maybe		Total
	Percentage	Count	Percentage	Count	Percentage	Count	Total
Academic library	56.25%	9	50.00%	4	33.33%	3	**16**
College/University	43.75%	7	50.00%	4	66.67%	6	**17**
Total	Total	16	Total	8	Total	9	**33**

Question 12: What made these programs before COVID-19 accessible?													
	In-person interpreter		Modifications for poses		Inclusion of blankets, pillows, blocks or other props		Not Sure		Closed Captioning		Other		Total
	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Total
Academic Library	50.00%	1	51.52%	17	45.83%	11	40.00%	14	0.00%	0	62.50%	5	**48**
College/ University	50.00%	1	48.48%	16	54.17%	13	60.00%	21	100.00%	2	37.50%	3	**56**
Total	Total	2	Total	33	Total	24	Total	35	Total	2	Total	8	**104**

Question 22: What made these programs after COVID-19 accessible?													
	In-person interpreter		Modifications for poses		Inclusion of blankets, pillows, blocks or other props		Not Sure		Closed Captioning		Other		Total
	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Total
Academic Library	50.00%	1	50.00%	8	60.00%	3	34.78%	8	16.67%	1	60.00%	6	**27**
College/ University	50.00%	1	50.00%	8	40.00%	2	65.22%	15	83.33%	5	40.00%	4	**35**
	Total	2	Total	16	Total	5	Total	23	Total	6	Total	10	**62**

After COVID began, 1 academic library started offering a program with closed captioning, while the College/University added 3 closed captioning. Other types of accessibility options with regards to the programs stayed approximately the same.

Question 14: Who offered/taught the program(s) before COVID-19? Select all that apply.									
	Outreach librarian		Other faculty or staff member		Human resources		Other Librarian		
	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	
Academic Library	100.00%	1	29.41%	5	0.00%	0	90.00%	9	
College/ University	0.00%	0	70.59%	12	100.00%	1	10.00%	1	
Total	Total	1	Total	17	Total	1	Total	10	
	Yoga instructor from campus recreation		Yoga instructor not affiliated with the institution		Not Listed		Not Sure		Total
	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Total
Academic Library	26.47%	9	43.75%	7	83.33%	5	36.84%	7	**43**
College/ University	73.53%	25	56.25%	9	16.67%	1	63.16%	12	**61**
Total	Total	34	Total	16	Total	6	Total	19	**104**

Regarding exactly who is teaching these programs, the most common answers were that they were taught by a yoga instructor from campus recreation. Academic libraries and institutions also utilized yoga instructors not affiliated with the institution. Other answers included an outreach librarian (1), another librarian (9), and another faculty or staff member (5 at academic libraries and 12 at institutions). Six respondents reported their yoga program was led by someone not represented by the answer choices and several were not sure (7 for academic libraries and 12 for their institution). Only one person reported that Human Resources offered or taught a program at their institution. (*n=43 for academic libraries and n=61 college/university)*

Question 19: Who offered/taught the program(s) AFTER COVID-19? Select all that apply.									
	Outreach librarian		Other faculty or staff member		Human resources		Other Librarian		
	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	
Academic Library	100.00%	1	27.27%	3	0.00%	0	100.00%	4	
College/University	0.00%	0	72.73%	8	100.00%	2	0.00%	0	
	Total	1	Total	11	Total	2	Total	4	
	Yoga instructor from campus recreation		Yoga instructor not affiliated with the institution		Not Listed		Not Sure		Total
	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Total
Academic Library	6.25%	1	41.67%	5	71.43%	5	36.84%	7	**26**
College/University	93.75%	15	58.33%	7	28.57%	2	63.16%	12	**46**
	Total	16	Total	12	Total	7	Total	19	**72**

To compare before COVID-19 answers with after COVID-19, we repeated the question. Answers were similar to those who taught before the shutdowns, except there was a decrease in the number who taught for most options. However, academic libraries worked with yoga instructors from campus recreation nearly 3% more than before the shutdowns. Colleges and universities partnered with Human Resources to offer 2 programs after the shutdowns. Other instructors included an Associate Dean and a well-being coordinator, demonstrating that other collaborators were aware of the benefits and stepped up to provide these sessions when the need indicated.

The authors would also like to recognize the comment from one survey participant that stated, "WHAT IS AFTER COVID?" (emphasis theirs) and agree this question could have been better explained by "after the pandemic started, the shutdowns ended, and people transitioned to working in office spaces again."

Thirty people responded to the open-ended question, "If you were able to participate in either a meditation or yoga session through the university/college or academic library, how did it make you feel?" Three people mentioned that the sessions made them feel "calmer," two specifically mentioned "relaxing." Others mentioned how helpful it was, and that they wished for more yoga and meditation spaces on campus. One mentioned that it was soothing, another said that it made them feel "better." A different participant mentioned that it was so great that they signed up for a mindfulness training course at their own expense. One even wrote that they felt more "connected to colleagues and felt cared for" because of these sessions. Others mentioned that being able to participate via Zoom or other online sessions helped their mental and physical health during the pandemic.

Question 24 was a follow-up, asking if any respondents had a chance to observe other participants' reactions to the sessions, and what their impressions were. This was to analyze perceptions of effectiveness.

There were 25 responses, and one "N/A." Three said that others found these sessions "enjoyable," and 4 mentioned "helpful." One wrote that their coworkers loved going in-person, and another that they saw how people enjoyed the online sessions. Other positive responses included: "Students enjoyed early morning yoga in front of the windows in the library with a great campus view during finals week pre-covid." Another appreciated the comments at the end of each meditation session, and that the sessions were recorded. Even with little attendance, people who attended several sessions appreciated them. Additionally, one respondent mentioned that yoga has been offered for many years at the library, so people seem to like it. Another participant commented:

> I teach yoga and I had the chance to teach at one of our library conferences a few years ago, it was well received by staff library members. At our university they rely only on instructors from the recreation dept in the gym. I do not hold a position to teach but I know that gentle practice for library workers is essential. Thank you!

With the growing interest in these types of programs, the survey asked the participants if their library planned to offer either yoga or meditation programs in the future. Ten indicated "Yes," 15 responded "No," and 6 said they didn't know or were unsure. Two said that they were unaware of any future options, one said that they "doubted" it, and one mentioned that they hoped that plans were in the works.

The second to last question was open-ended, and asked respondents "Is there anything you would like to let us know about yoga or meditation and your experiences during the pandemic?" Their answers provided some insight into how the participants in this survey felt about having access to these programs. One stated that chair yoga helped because of the stationary nature of their work position. Another revealed that they would "love to see more of an emphasis on yoga in our academic library. I would love to be able to get professional development funds to get Yoga Teacher Training certified." A third individual described how gentle and trauma- informed yoga is essential, and another that it is vital and essential for "navigating troubled times." Others expressed gratefulness for online yoga programs. One participant stated how important both yoga and meditation were to them, but that these programs were not being offered at their workplace, and that "yoga and meditation give me energy and a sense of peace and wellbeing."

Some did reveal obstacles to access, such as having a program that "took place around lunchtime and having a remote learner who was 6 years old made it a bit more difficult." Another commented that their mindfulness room was set to open just as everyone was sent home for remote work, and they were "looking forward to this being an individual space people can use once we open up again, though there will be questions about capacity and cleaning." One more mentioned that these options were offered online only after the pandemic hit and did not have any such program beforehand. They explained that this program was only offered to library faculty and staff, and a small group attended every week.

The last question offered a space for respondents to write in anything else that they wanted us to know about yoga and meditation programs, experiences, etc. There were 13 responses, several of which let the authors know that the survey was not allowing for participants to go back and change answers, so they wrote in what they felt were slight corrections to their answers. Others mentioned again how important that they felt the programs were and thanked us for the survey. One mentioned how they might not be able to offer their restorative program for a while because of cleaning protocols in the library. Another talked about how the yoga offerings had been irregular, which made it hard to participate.

One of the key findings of this survey was that many yoga and meditation programs were either discontinued or temporarily put on hold because of challenges related to teaching these practices face-to-face when confronted by a highly contagious virus. Another important finding was that some teachers and students adapted the practices by moving them online. Transitioning to teaching and practicing online had the unexpected effect of increasing accessibility via closed captioning and other means, which inadvertently expanded yoga and meditation to an audience that had avoided in-person sessions for various reasons.

Informing Academic Library Practice

Although this study has found that yoga and meditation programs are on the increase in academic libraries, not enough attention is being paid to issues of accessibility and inclusion. Many programs that are available in academic libraries are designed along the lines of conventional yoga and meditation programs. They do not make allowances for participants who may not be comfortable in a typical yoga or meditation class due to issues such as weight, disability, body image, ethnic or gender identity, age or other concerns.

Academic libraries need to think beyond the stereotypical yoga or meditation format and take advantage of some hard-learned instructional and pedagogical lessons of the pandemic.

Moving wellness initiatives online and taking advantage of instructional technologies such as Zoom can help introduce personal growth practices to a wider audience that had previously been marginalized or left out altogether. Programming along these lines can go a long way toward creating a safe, welcoming, inclusive environment in which body type, disability, or gender orientation are not a barrier. Providing participants with the option for a more individual, private, non-judgmental, and accepting practice environment that is available online will provide an option previously unavailable or underutilized by academic libraries.

Students, faculty, and staff who may have previously never considered trying a meditation or yoga class may be more likely to experiment with a new medium that honors their individuality and personal challenges. Real or perceived limitations may not seem insurmountable in a setting where one does not have to worry about being on display or subject to comparison or judgment because of the privacy options that the online environment provides. The unique experience of being part of a group participating in a wellness experience yet simultaneously being able to remain protected, private, and anonymous is something that academic libraries should strive for in their wellness initiatives.

Prioritizing accessibility in academic library wellness initiatives will entail thinking in a new way about wellness programming that includes not only modifying yoga poses and sequences, but the optimal use of information technology, including lighting, sound, camera angles, staging and transitions, as well as closed captioning. Wellness instructors will have to master the tricky art of establishing and maintaining an intimate and personal experience with their students remotely. The ability to do so is critical for yoga and meditation classes in which the proper setting and ambiance and especially teacher-student relationship and rapport is vital to successful personal growth and transformation. This is especially true for participants who may bring to the online environment a personal history and expectation that they will be overlooked, neglected, or marginalized based on previous group experiences.

Meditation, yoga, and related wellness initiatives in academic libraries must become less focused on simply positioning themselves as a place to practice wellness. Instead, librarians must reach out and meet users where they are and engage with them in their spaces of choice: their home, office, or classroom. This calls for a radical form of accessibility that goes beyond breaking down barriers to showing up for users and meeting with them on their own terms. It means meeting users where they are physically and psychologically and showing them that what they thought was unavailable or unattainable is now firmly within reach. The ability to provide this level of access will not only benefit users but help change the image of the academic library from being an intimidating place that is only for certain categories of users with appropriate abilities or levels of skill.

In addition to space, time is an important factor in accessibility. The creation of asynchronous instruction that makes wellness programs available anytime, anywhere, is something that has not been adequately addressed by academic libraries. Instead of relying solely on streaming live wellness programming, accessibility can be enhanced by recording yoga and meditation sessions for later viewing on demand. This will relieve users from having to be in attendance at scheduled class times or risk missing important content. It will require additional training in editing skills on the part of librarians to make sure the videos are skillfully produced and meet disability standards. It may also require changes in instruction evaluation from tracking student attendance and evaluations to indicators like views or downloads. Storage and preservation will need to be considered and digital repositories may offer promise in this regard

by ensuring that wellness content will be openly available without paywalls or institutional barriers to curtail access. Librarians may have to consider issues of privacy and protecting the identity of wellness program participants and whether they need to secure permission from those appearing in videos before making content openly accessible on the web.

Marketing strategies for library wellness programming need to be thoughtfully created. Advertising it as just another campus yoga and meditation program will not suffice. It is important to communicate that the library is offering a new and accessible approach to yoga and meditation practice that anyone can do, and the messaging must highlight the convenience of it over conventional programs. Students, faculty, and staff may not be accustomed to thinking of the library as a place that offers wellness programs, so this message needs to be reinforced. It may be possible to reach out and form partnerships with key stakeholders on campus such as Student Disability Services and organizations that represent historically marginalized groups such as LGBTQ or students of color.

Finally, academic library collections need to have adequate materials to support wellness programming. This involves more than purchasing mats, blocks, and straps and covering instructor costs. It means ensuring that students who want to deepen their understanding of these practices have sufficient materials to bolster their inquiry and conduct serious research if they so choose. Yoga and meditation need to be treated as serious academic subjects, each offering a distinctive disciplinary body of scholarship. A concerted effort to identify and select a collection of books, journals, and multimedia resources that provide not only information about yoga and meditation techniques and practices, but the historical, philosophical, and psychological foundations of these practices is needed, especially in accessible formats.

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From "Outside the Box" to "Out the Window": Teaching with Primary Sources through the Pandemic

Paula S. Kiser, Christina Larson, Kevin M. O'Sullivan, and Anne Peale

This study draws upon faculty interviews conducted in 2019 and 2021 to document dramatic shifts in primary source instruction of undergraduate students during the COVID-19 pandemic. Synthesizing these data, it analyzes how faculty cultivated pedagogical practice, developed practical approaches to teaching with primary sources, and adjusted goals for student learning outcomes. The study also identifies lessons that may be learned from the pivot to remote and hybrid instruction, including ways to support new and emerging instruction practices; developing instructor training programs; better showcasing collections of digital primary sources; and adopting a trauma-informed approach to outreach in the years to come.

Introduction[1]

The importance of teaching with primary sources is unquestioned in the disciplines of humanities and social sciences. Extolling the virtues of using primary sources with undergraduates to instructors in disciplines like history, English, and art history is preaching to the choir, and the move to virtual teaching due to the onset of the COVID-19 pandemic in 2020 did little to change this attitude. But as much as teaching faculty in the humanities and social sciences agree about primary sources being essential in their teaching, there is a high level of variability in how and why people incorporate them into the classroom. These variations beg the question of how staff can best support this work: as stewards[2] of primary resources in special collections, archives, galleries, and other unique collection areas; creators of digitized collections of primary sources; and purveyors of large databases of commercially digitized primary sources content, while also serving as pedagogical consultants and educators in their own right.

Origin of the Project

To address these issues, librarians, information specialists, and a museum educator from Texas A&M University, the University of Miami, Williams College, and Washington & Lee

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University participated in a multi-institutional research project organized by Ithaka S+R in 2019, which investigated how undergraduate instructors used primary sources in their classrooms and how librarians and museum professionals could support them.[3] The study included twenty-two additional research institutions which each produced an institutional report; Ithaka authored a bird's-eye-view report using data from all participating institutions. Upon conclusion of the project, four individuals from the research teams at Texas A&M, University of Miami, Williams, and W&L elected to continue this research to dig deeper into areas outside of the original scope of the project and to compare data, looking for patterns that fell along their Carnegie classification lines. Of particular interest were three core themes: how faculty learn to teach with primary sources; pedagogical approaches to teaching with primary sources; and faculty goals for student learning outcomes regarding primary source instruction.

Institutional Backgrounds

Texas A&M University and the University of Miami are large doctoral granting institutions with high research activity (R1 schools). Texas A&M is a public university in College Station, Texas with a total enrollment of 73,284 in Fall 2021, consisting of 53,876 undergraduates and 13,257 graduate and professional degree students across several branch campuses.[4] The University of Miami is a private university in Coral Gables, Florida with a total enrollment of 18,485 students in Fall 2021, 11,716 undergraduates and 6,692 graduate students (and 78 non-degree seeking students).[5] At the other end of the spectrum, Williams College and Washington & Lee are both small liberal arts schools with a Carnegie classification of Baccalaureate College - Arts and Sciences. The highest degree at Williams is a master's degree and it had 2,121 undergraduates and 50 graduate students in Fall 2021 for a total enrollment of 2,171 students.[6] Washington & Lee includes a law school; it had 1,859 undergraduates and 381 law students for a total enrollment of 2,240 in Fall 2021.[7]

Rescoping in Response to the Pandemic

In the spring of 2020, faculty and professionals overseeing primary source collections dramatically shifted their practices in response to the COVID-19 pandemic. As those working in higher education navigated remote and hybrid teaching, the range of "outside the box" thinking that had historically produced creative approaches to teaching with primary sources went, as one interviewee put it, "out the window."

This research study expands the scope of the initial Ithaka S+R study to investigate how the pandemic affected instructors' use of primary sources in their classrooms, their pedagogical goals, student learning outcomes, and to see if the way they learned to incorporate primary sources into their classroom assignments had an impact on their approach to adapting to new teaching environments. In the late summer and fall of 2021, the authors conducted additional interviews to collect data reflecting on how instructors taught with primary sources through the pandemic, which is an aspect that could not be fully addressed with interviews that preceded the outbreak of COVID-19 and the need for virtual classrooms. This study documents these adjustments, seeking to identify what lessons may be learned from the pivot to remote instruction and what strategies might be carried forward as librarians, archivists, and museum professionals continue to navigate new models for primary source instruction.

By taking advantage of the opportunity to interview the same cohort of instructors both before and after the onset of the COVID-19 pandemic, and by tailoring follow-up questions directly to the effect the pandemic had on instructor use of primary sources, this research stands to make a significant contribution to the professional literature supporting teaching with primary sources. The nature of the interview timing allows for responses that reflect both the instructors' initial reactions to the crisis and their longer-term adaptations to the ongoing pandemic. From these responses, it is possible to analyze feedback from constituents across departments and institutions to offer more generalizable suggestions for what lessons may be learned and what strategies adopted to better navigate the far-reaching effects of COVID's disruption of the classroom.

Literature Review

The original Ithaka S+R research study highlighted existing research that underscores the pedagogical value of primary sources.[8] Much of this literature provides models and methods for instructors interested in incorporating primary sources into their curriculum. This literature is a key means of knowledge sharing, as despite the widespread popularity of primary source instruction, there remains a scarcity of formal education opportunities for faculty and graduate instructors.[9] In recent years, several prominent edited volumes have offered strategies for teaching with primary sources: *Using Primary Sources: Hands-on Instructional Exercises* (2014); *Teaching With Primary Sources*, published in 2016 as part of the Society of American Archivists "Trends in Archival Practice" series; *Teaching Undergraduates with Archives* (2019); and *The Teaching with Primary Sources Cookbook* (2021).[10] Beyond these edited collections, the Teaching with Primary Sources Collective maintains an updated bibliography that touches on the use of primary sources in various educational settings.[11] Garcia, Lueck, and Yakel (2019) also provide a thorough survey of the professional literature pertaining to teaching with primary sources that includes 154 books and articles published on the topic since 1949.[12] Recent examples include a wide array of works considering how primary sources can enhance student engagement across academic disciplines, primary sources related to underrepresented groups and social movements, as well as those which focus specifically on digital themes.[13] Of particular note pertaining to this last topic is the work of Brianna Gormly, et al., who have thoughtfully explored the particular challenges and opportunities inherent in teaching with digital primary sources, a topic of increasing concern in undergraduate student education.[14]

A growing concern among this literature focuses on the importance of relationships between library, archives, and museum professionals, and their counterparts in the teaching faculty. Alyse Minter, Ashely Todd-Diaz, and La Shonda Mims share their experience embedding information literacy concepts into a required first year seminar course through "co-teaching and collaborative planning" between librarians and instructional faculty with an emphasis on primary source literacy.[15] Beginning in 2018, the Library of Congress implemented a program to help secondary social science student teachers learn historical thinking and plan how to incorporate it into their classroom, delivered through a program of mentorship/apprenticeship and a professional development program with on-site workshops and follow-up activities.[16] And it was the importance of collaboration and fostering relationships between information professionals and instructional faculty that prompted the Teaching with Primary Sources Ithaka S+R study.[17]

Building upon the general literature advocating for teaching with primary sources, a significant subset of this growing discourse has emerged, offering guidance for taking on this kind of work in specific academic settings. For example, whereas most authors would agree that primary source-based activities work best in a small- to midsize course section, Flynn (2021) advocates an approach that makes primary source instruction available even to large classes.[18] This subset of the broader literature supporting primary source instruction points to a growing awareness that unique teaching environments demand their own tailored approaches. These lessons would be made abundantly clear with the onset of the COVID-19 pandemic in spring 2020.[19] It is unsurprising, then, that with the arrival of the pandemic there emerged a new and urgent need to foster a dialogue with educators about what support they needed from libraries and museums to effectively teach with primary sources.[20] Articles such as these make up one facet of a much broader research trend to analyze and understand the effects of the COVID-19 pandemic on higher education.

Methods

The researchers conducted two rounds of semi-structured interviews with faculty members at their respective institutions. The first round, during the fall of 2019, was in conjunction with the Ithaka S+R Teaching with Primary Sources study. Teams at 26 institutions engaged with a cohort of approximately 15 faculty members at their university or college. Of the 59 interviewees from the four institutions featured here, 44 (74.6%) were from humanities departments, seven (11.9%) from social sciences, and eight (13.5%) from global languages. The researchers coded the interview transcripts using grounded theory methodology and used them as the basis for individual institutional reports, as well as for a summary report by Ithaka S+R.[21] The authors re-coded the transcripts during the summer of 2021 with a set of core themes and subcodes relevant to this subsequent inquiry. In particular, the authors sought to analyze what similarities or distinctions might appear by a comparison of answers from instructors from their four institutions. They combined the data into one dataset as they moved forward to focus on the out-of-scope issues that were not addressed in the earlier reports. Using one larger dataset proved beneficial once the study pivoted into an examination of how the pandemic may or may not have affected the same issues they were investigating.

Because the COVID-19 pandemic fundamentally altered the way faculty taught with sources, the authors decided to conduct follow-up interviews at each institution. If the 2019 interviews showed a pre-pandemic attitude towards primary sources in the physical classroom, a 2021 follow-up interview could specifically address how the pandemic impacted faculty use of primary sources in a virtual or hybrid classroom. During the fall of 2021, the team re-interviewed almost half of the instructors (26 people out of 59). Twenty-four (92.3%) of these instructors were from humanities departments, one (3.8%) from social sciences, and one (3.8%) from languages. The number of follow-up interviews was lower, because some faculty were on leave from teaching during the pandemic, had left their institutions for other positions, or did not respond to researchers' requests for a second interview. The researchers analyzed these interviews with revised subcodes and an additional core theme designed to capture the adjustments faculty made to their teaching with primary sources during the course of the pandemic across all four institutions (see appendix A). The dataset at each individual school was not large enough to be significant but by combining the data into one large dataset, taking care to notice if any patterns emerged more strongly at one location than another, the

study moved beyond a case study model to a large-scale investigation with implications at institutions of various sizes.

Results and Analysis

Learning to Teach with Primary Sources

One of the three central questions driving the original study was, "How do instructors develop approaches to teaching with primary sources?" Beyond the literature directly related to teaching with primary sources, there is also a significant amount of literature about the lack of formal pedagogical training in graduate programs that is relevant to the present study.[22] Many doctoral graduate programs operate on the model of prioritizing research skills over teaching skills.[23] To address this issue, the 2019 interview included the question, "How did you learn how to teach undergraduates with primary sources?" The answers presented a foundation for understanding the types of pedagogical training instructors received before they began teaching undergraduates. Stemming from their disciplinary training, there was significant variation in how faculty defined primary sources in the context of this research. For example, instructors in archeology, art history, and museum studies emphasized physical objects such as buildings, ceramics, and paintings as primary sources while faculty in literature and history mostly focused on the written word.[24] The interview prompts excluded discussion of sources gathered in anthologies and critical editions but were intended to include digitized as well as born-digital sources. Instructors tended to combine different types of computer-accessed sources, where a librarian might distinguish between digitized primary sources (e.g., images of book pages) and born-digital primary sources (e.g., the text of a book on a webpage). Even when interviewers knew that faculty engaged with digital and digitized sources, they gravitated more towards discussing physical sources.

Participants often discussed their general disciplinary training. Referencing experiences as early as their undergraduate coursework–whether as students, or as graduate assistants–most described learning by watching more senior faculty model primary source pedagogy. Mentions of formal training of any nature were infrequent, and those who described specific training in primary source pedagogy indicated that those opportunities were provided by museums and special collections, not their own graduate programs.[25]

Where formal training–whether offered through graduate programs or continuing education opportunities–has fallen short, informal approaches for developing methods of primary source instruction have filled a significant need. Respondents described being "thrown into teaching and told to just kind of do it," but benefiting greatly from the example of peer mentors. As one interviewee summed it up: "I didn't have any pedagogy training really whatsoever… I had excellent teachers and I tried to imitate them." As such, teaching assistantships doubled as apprenticeships. Nearly all respondents (46 interviewees) spoke to learning by observation and having mentors who provided an example to follow, suggesting these experiences are an integral facet of how strategies develop for teaching with primary sources. In a similar vein, many interviewees also spoke about gleaning ideas from syllabi and class assignments that had been shared by these mentors as well as members of their peer group.

In the absence of formal education, many faculty also noted the importance of trial and error in developing strategies for teaching with primary sources. As one respondent commented, "The way that I use [primary sources] changes based on the class, mostly because I learned through the practice of teaching what different classes are capable of." This experi-

mental approach used by so many of the instructors speaks to a perception of their teaching as something that could evolve and change depending on the course and the students. This spirit of experimentation proved vital after the onset of the pandemic, as instructors were forced to try new and different strategies in remote and hybrid classrooms.

The responses made it clear that the absence of formal training in teaching extends to primary source pedagogy. Rather, respondents pointed to informal methods, such as learning from their own experience as students, drawing on the experience of peers, and self-guided trial and error as the most prevalent ways to hone these pedagogical skills.

Challenges with Pedagogy during the Pandemic

The interviews conducted in 2019 included questions about course design that addressed pedagogical aims, how it evolved over time, and how they incorporated primary sources. These answers became a snapshot of how instructors approached their classes before the pandemic. In the second set of interviews, the question, "How did teaching remotely or to remote students during the pandemic change your approach to using primary source materials in class?" directly addressed the question of change. The authors then compared these responses to the earlier interviews to learn what did or did not change.

Faculty described guiding students' engagement with sources using a wide variety of pedagogical approaches and tools, many of which had to change when teaching moved online. The abrupt transition to online teaching during the pandemic highlighted the benefits and challenges of teaching with digitized and digital primary sources. Instructors' reasons for teaching with primary sources remained the same, but they adjusted source format and classroom activities to accommodate a virtual environment.[26] Despite the logistical challenges of delivering effective pedagogy in an online environment, faculty participants found engagement with primary sources a strongly positive and worthwhile aspect of their teaching, benefiting students' intellectual and emotional engagement with learning.

Faculty were highly motivated to continue teaching with primary sources during the pandemic, both to bring novelty to the online classroom and to maintain academic rigor. While a few faculty canceled their planned use of primary sources–especially during the initial move to remote teaching–more than twice that number described adapting existing engagements with primary sources to work within COVID-19 constraints. One participant who refused to work with digital facsimiles bewailed: "It doesn't have the magic; it doesn't cast the spell that it needs to. It doesn't inspire the right kinds of questions," but many faculty members rapidly adapted their teaching to a fully digital environment. Some faculty who sought new sources and platforms to best fit with virtual teaching reported a shift towards audiovisual formats and even augmented reality for content delivery, so that one participant explained how materials "would feel like [they] were still primary, even though they were remote in some way." Notably, few described creating entirely new sessions centered around primary sources; instructor comments overwhelmingly focused on adaptation rather than innovation.

The background in experimentation and self-reliance common to many instructors served them well in the pivot to online and hybrid teaching during the pandemic. The instructors talked about using digital primary sources–sometimes new to them and sometimes not–as well as digital tools that they began incorporating into their courses.[27] How instructors conceptualized using primary sources was often dependent upon their understanding of and approach to using various types of digital and digitized examples. For some, it was exciting

to find newly digitized items that allowed greater access to collections across the world. Instructors using films or scripts, art, photographs, and foreign language items appreciated the primary source materials they were able to share with their students. Others saw the shift to using digital primary sources as neither better nor worse than using physical items, while a few instructors had a complete lack of interest in finding digital materials or adapting their class in any way.

Bringing primary sources into a virtual environment required extra labor and planning on the part of faculty, minimizing opportunities for spontaneity when bringing primary sources into the online classroom. Many interviewees spoke about the preparation required for virtual teaching, beyond what had been required for in-person instruction. If instructors wanted to use high-resolution digital images of locally held material, it was necessary to ask library or museum staff to prepare those images before class. Instructors who wanted their students to explore new sets of digitized items first needed to become familiar with these resources themselves. Others described preparing videos, data sets, and linking to videos as organizational elements that were not as necessary when they were teaching in-person.

Several participants expressed gratitude for on-demand digitization that allowed online use of locally held collections. One interviewee described the multiple iterations of photographs necessary to capture the detail they wanted their students to see in the item and spoke highly of the staff members who were willing to do this extra work. However, library staff also invested time and energy into preparing virtual teaching methods and tools that were often not used by instructors. Only one interviewee described the use of a virtual reading room format in which a staff member taught with an object via document camera, despite the widespread availability of this assistance. This imbalance is notable in the context of the extensive professional training and conversations around virtual reading room practices that emerged among librarians, archivists, and museum professionals in the early months of the pandemic.

Interviewees who took advantage of digital tools expressed more enthusiasm for online sources than those who treated them as static facsimiles of the original. Several people acknowledged the versatility of using digital primary sources while still preferring physical versions, "Of course there's nothing like holding something in your hands and reading it and seeing it, smelling… And it's always better getting your eyes on something because there are things that aren't captured when you're digitizing a text (but the technology is catching up)." Some instructors vocally resented digital interactions with students and were looking forward to getting back to using physical objects as soon as possible: "Perhaps that experience of being in special collections, especially is heightened more by the fact that we've been doing all this digital stuff."

Adjusting Student Learning Outcomes

The third theme of student learning outcomes surfaced from Ithaka S+R's question in the 2019 study, "How do the ways in which you teach with primary sources relate to goals for student learning in your discipline?" The authors' 2021 question, "How did your goals for student learning outcomes—specifically those related to primary sources—change when you moved to remote teaching?" directly addressed changes in response to the pandemic. The answers to these questions provide a foundational understanding of student learning outcomes related to primary sources and if teaching online had any impact on those goals.

Faculty from all four institutions relayed in 2019 that one of their primary goals for student learning was awareness of the materiality of primary sources, using descriptors like "original" and "authentic" while emphasizing how students were often inspired by these experiences. One faculty member expressed, "They have to interact with the actual object. And that's where knowledge is built. And knowledge is also built on the materials, the way it's made, the indentations, the process, and you can't necessarily get any of that from an image." Indeed, this preference for physical primary sources *in situ* was prominent for those interviewed and has been central to scholarship on engaging the senses through object-based learning.[28]

Faculty also described introducing undergraduate students to campus resources as another fundamental purpose of working with primary sources. Physical visits additionally served as a way of building academic community. Interviewees mentioned a wide range of destinations relevant to primary sources: a campus arboretum, academic museum, academic library, special collections, archives, a working letterpress studio, and a campus public sculpture collection. During these visits, faculty introduced students to colleagues working with collections, such as librarians, archivists, curators, educators, and museum professionals. These types of inter-collegial partnerships enable connections between primary sources and a range of academic disciplines.[29]

No matter the format—physical or digital—instructors described how student learning benefited from primary sources in ways that might be unexpected to others. They relayed how primary sources exposed students to alternative narratives that challenge dominant ways of thinking, encouraged students' development and practice of close reading and analysis, and provided contextualization of course material. More than half of the participants of the initial interviews (38 interviewees) discussed the use of primary sources in developing students' critical thinking skills. They saw primary sources as "essential to get students to think for themselves." More than half of those interviewed (39 instructors) conveyed that primary sources improved students' understanding of research in their discipline, suggesting it is among the foremost student learning outcomes.[30] As one interviewee expressed, "I want them to catch that bug. It's contagious, the passion for research is something that I want them to experience firsthand."

But the pandemic posed a fundamental challenge: how can faculty and students learn with primary sources when they no longer have access to physical objects or the physical spaces that house them? Which approaches to primary source instruction can be kept and which ones need to be abandoned? What needs to be adjusted to ensure the success of student learning with primary sources during a global pandemic?

Despite the enormous shift in delivery of instruction as a result of the pandemic, the majority of faculty interviewed (16 out of 26) in the fall of 2021 reported zero to minimal changes to their student learning outcomes. Although they supplemented or replaced material objects with digital ones, they did not report a great amount of disruption in the content of their courses. For instance, one professor said, "I don't think that [my anticipated learning outcomes] changed at all. I just think that my methods for delivering an experience of analyzing primary materials changed." Notably, most faculty relayed that they plan to continue employing digital tools and resources when returning to in-person instruction.

For faculty in some specific disciplines, however, digital sources provided a fundamentally inadequate substitute for their pedagogical goals. About one fourth (6 out of 26) of the interviewees did substantially alter their learning outcomes during the pandemic. These indi-

viduals all came from the disciplines of history and art history, areas of study that emphasize physical objects and material culture. One faculty member described their frustration: "It's not fair… to have expectations and learning outcomes associated with the materials if they're simply not accessible. There's no opportunity."

Beyond prompting increased use of digitized sources, the pandemic required faculty to adopt the use of digital tools for accessing, interpreting, and curating those sources. While faculty had previously used digital tools mainly to provide access to sources, in follow-up interviews, faculty from all four institutions described a shift towards student learning outcomes focused on digital scholarship. In order to effectively maintain or enhance student learning, faculty employed a range of tools, including digital exhibitions; images of primary sources from around the world; ArcGIS Story Maps; digital access to primary texts; virtual collections; Zoom interviews with authors, artists, scholars, and colleagues who oversee primary source collections; and multimedia presentation platforms.

When asked about adjustments they made to learning outcomes during the pandemic, many faculty (11 of 26 interviewed) described emotional as well as practical reasons for the changes they made. They refocused priorities to ensure the emotional well-being of their students and themselves. One interviewee explained, "Well, I mean I lowered my expectations. I think my main goal was to keep all the students engaged and to keep them in the class." Such data reflect an important affective facet of faculty decisions to shift their practice in response to the challenges of a global pandemic and point to a broader emotional undercurrent of the 2021 interviews more generally.

Instructors described a wide range of student learning outcomes related to primary sources, and consistently indicated that engagement with primary sources was a core activity for learning. The interviews showed why instructors used primary sources in their classroom, what student learning outcomes they hoped to attain, and what changed (or did not change) during the pandemic and virtual teaching.[31] Responses reflected faculty concerns that students have tangible experiences, become familiar with local resources, and use sources to expand and challenge their thinking. The pandemic had less of an impact in this area than it did on many other aspects of teaching with primary sources, as faculty reported using new tools and methods, but fundamentally aspiring to the same or similar learning outcomes as they had before the shift to remote learning.

Affective Responses

A prevailing narrative among those who write and think about teaching with primary sources describes the emotional benefit to participants who come to a library or museum to experience materials first-hand. The professional literature abounds with examples describing the "magical awe" of engaging with collections materials.[32] While such literature often runs the risk of being overly sentimental about students' responses to primary source instruction, responses gathered in the course of this study firmly corroborate what may appear at first glance to be "library hyperbole." As the data from both sets of interviews confirmed, faculty who partner with librarians, archivists, and museum professionals in providing primary source instruction have overwhelmingly positive feelings about the intangible benefits of those experiences. Perhaps more surprising, however, were the affective responses of faculty during their follow-up interviews. These more personal statements offered important insight into instructors' emotions and their general attitude toward material sources during the pan-

demic. These responses reveal the personal investment on the part of many faculty in the use of primary source collections and suggest a sense of duty to advocate for them.

In response to questions asked during the initial phase of this study about why they incorporated primary sources into their classroom, respondents shared many of their own emotional responses (or those of students) to first-hand experiences of special collections, using words like "excitement," "connection," "sensory," and "visceral." The most frequently cited (32 out of 59 interviewees) benefit of engagement with primary sources was an impressionistic, emotional connection with a tangible material object. Especially when course content is foreign to students by virtue of temporal or physical distance, responses suggest that in-person engagement provides a sense of immediacy. One professor remarked, "I think it makes it become alive for the student or become more real." Another faculty member referred to this as "the aura of it, but also the possibility of it."

In the follow-up interviews, 16 out of 26 faculty voiced emotional responses when asked "How did teaching remotely or to remote students during the pandemic change your approach to using primary source materials in class?" and "How did teaching remotely or to remote students impact your attitude toward physical and digital primary sources? Was there anything that surprised you?" Their responses brought forward a compelling but otherwise concealed trend in the data, speaking in strong terms about their feelings of loss and isolation. Many described the move to remote education using phrases like "soul-crushing," "withdrawal," "separation anxiety," "disappointing," and "sad." During the pandemic, a faculty member who canceled planned hands-on use of material sources reported: "I just felt that everyone was so dispirited that it was really difficult to find hooks and ways of interjecting some excitement and interest in the material."

For even among those who pivoted to online instruction comfortably, there was a common nostalgic longing for the freedom to visit special collections not unlike homesickness. The separation from the physical space and the community supporting it was as significant as the loss of access to the collections themselves. Nevertheless, respondents spoke with hope about their renewed commitment to teaching with physical primary sources, citing the "talismanic quality" of such objects (especially after spending so much time interacting through screens), the ability to learn from objects through multi-sensory engagement, and preserving the personal encounter of connecting with something from the past. These experiences offer "a sense of creating community"—an antidote, in other words, for the feelings of isolation and joylessness many expressed regarding online instruction.

As one respondent suggested, libraries and museums are "just as fundamental [to students' university experience] as the dorms and the food court." This sentiment was echoed by faculty who reported the reactions of students fortunate enough to spend time with collection materials after a return to in-person instruction. Students were described as experiencing "gratefulness to be engaging with primary sources together live in the class," and exhibiting "real joy… to actually be in a space and looking at things and talking with one another." In general, there was a pervasive expression of recommitment among faculty respondents to teaching with primary sources. As one interviewee succinctly put it: "Physical sources remain incredibly important to me. They always worked before, and I think they always will."

Continuing Practices

As instructors experimented with new ways of teaching in a virtual environment, the researchers

saw value in learning what practices instructors planned to continue to use. Institutions cannot assume that as students and instructors return to the physical class, everything will return to the pre-pandemic normal. The final follow-up question in the 2021 interview, "Which practices of teaching virtually with primary sources will you carry forward as we return to in-person instruction?" addressed this issue. The responses to this question will help academic librarians, archivists, and museum professionals anticipate the continued level of support or provision of services that began during the pandemic that they may not have planned to continue.

Many faculty intend to maintain using pedagogical practices that they adopted during the pandemic. For example, multiple interviewees commented on the benefits of using high-resolution digital facsimiles of collections materials. In contrast to the classic in-person model whereby students hovered around a cradled book or squinted to see details presented by a document camera, digital surrogates allowed students to individually and simultaneously examine and appreciate the granular details of the captured image. As one respondent noted, this opened new possibilities of inquiry for students: "It was really cool thinking about the quality of those digital files and being able to manipulate those digital files in a different way than you would with gloves on in a library session." The digital facility that instructors and staff have gained in providing access to sources in more than one format, and over a longer period of time than a single class visit, can support a broader range of learning and accessibility needs than was possible pre-pandemic. Following the return to face-to-face primary source instruction, such exercises may be paired with hands-on experiences using material to offer an enriched approach to primary source instruction that accurately reflects the digital-analog convergence of twenty-first century academic research.

Remote learning during the pandemic also encouraged faculty to try new digital tools, access primary sources online, and experiment with a greater range of deliverables. While the first two responses might have been anticipated, interviewees emphasized how offering alternative options to the term paper (including student presentations, ArcGIS sites, virtual exhibitions, and creative projects) accommodated a more diverse range of academic strengths and learning styles. One interviewee mentioned that students even shared these types of term projects with family and friends.

The inclusion of virtual guest speakers in classes was another positive practice characterized by respondents as a "silver lining." Prior to the pandemic, many faculty incorporated sessions with primary sources as a "productive disruption" intended to augment the normal rhythm of the semester; virtual guests and virtual visits to collections were essential disruptions to the monotony of online teaching. Every interviewee who mentioned bringing guest speakers to their virtual classroom planned to continue that practice even after campuses have resumed welcoming guests on-site. They noted benefits such as cost savings, logistical ease, and accessibility for guests with disabilities. Having developed lectures, tutorials, and exercises for remote audiences during the pandemic, librarians, archivists, and museum professionals should continue to showcase their institutional collections and widen their impact by seeking out such opportunities for remote class visits. Virtual guest lecturers also open possibilities for inter-institutional collaboration and research in the classroom and beyond.

Discussion

Never has there been such a compelling case for the impact of digital primary sources on student success; most interviewees utilized digital primary sources in their remote classrooms,

either from their own institution or part of a digital collection from another museum, library, or archive. However, while the importance of digital surrogates for remote teaching has been increasingly acknowledged since the onset of the pandemic, the "invisible labor" that makes this possible has not. Even before the pandemic demanded that faculty rely on digital primary sources, the work of digitization was often overlooked or not understood by people using the digital surrogates.[33] The need to provide digital access to primary sources will continue to grow as instructors, students, and the general public expect libraries, archives, and museums to digitize their unique and rare materials. As institutions continue to create enhanced access to materials through digital collections, they should simultaneously advocate for additional resources to support these efforts. Likewise, as librarians, archivists, and museum professionals strive to ensure digitized surrogates are easily discoverable through the incorporation of robust metadata, so too should they advertise other online resources, such as licensed databases and born-digital materials, that are made available through their organization.

Librarians, archivists, and museum professionals will also be in a unique position to assist campus constituents in developing digital scholarship assignments as these innovative deliverables continue to populate course syllabi. In particular, they can support faculty as they design such projects by providing access to primary source content, guidance with technological tools, and pedagogical collaboration for scaffolded assignments; and they can support students as they navigate the tools and resources necessary to successfully complete their work.

Collaboration and mentorship are an essential part of how faculty learn to teach, especially since, as noted earlier, most graduate programs do not offer substantial pedagogical training.[34] As this study has revealed, faculty rely heavily on informal relationships among peers and mentors to develop their skill set supporting instruction with primary sources. However, such opportunities may not be universally available to all instructors. As Shiri Noy and Rashawn Ray have demonstrated, ad hoc mentorship relationships have historically been subject to discrimination along race and gender lines, with white men remaining a privileged group across academia.[35] An external teaching training program sponsored by a library or museum poses a more egalitarian alternative. Given their resources and extensive expertise with both collections and modes of outreach, institutional collections can serve as a hub for primary source instruction training. By being housed outside a specific academic department, such a program may foster a community of practice wherein instructors from across an organization can connect and share. In establishing such a program, it also behooves librarians, archivists, and museum professionals to reach out especially to potential partners from historically underrepresented groups—for example, through their institution's faculty of color network.

As important as it is to acknowledge shifts in teaching practices that occurred during the pandemic, so too must we recognize the emotional and psychological disturbance experienced by members of our community. According to research conducted by the Student Experience in the Research University (SERU) Consortium, "the prevalence of major depressive disorder among graduate and professional students is two times higher in 2020 compared to 2019 and the prevalence of generalized anxiety disorder is 1.5 times higher than in 2019."[36] Similarly, a study on faculty wellness conducted by CourseHero cites that while stress was high at the onset of the pandemic, faculty anxiety actually appears to be increasing as the health crisis continues.[37] Numerous studies have cited evidence pointing to a global mental health crisis following in the wake of the ongoing pandemic, which affects both students and instructors

alike. A multi-national study published in the *Journal of Public Health* suggests that this trend is a near-universal phenomenon, indicating a common post-traumatic response among students and faculty around the globe.[38] As people adjust to a "new normal" in the wake of the COVID-19 pandemic, it is essential to acknowledge the emotional toll this experience has taken and adopt a trauma-informed instructional practice. In their recent article on instruction during the COVID-19 pandemic, Katherine Nelsen et al., described this as being "focused on decreasing cognitive load and providing students with stability, a sense of agency, and connection."[39] Much in the way interviewees in the present study responded to the switch to remote instruction by adjusting learning outcomes and expectations, librarians, archivists, and museum professionals should seek to reinforce personal connections to the campus community and empower students with the self-construction of knowledge through personal encounters with collections materials.

Conclusion

With detailed datasets reflecting teaching practices before and during the COVID-19 pandemic, the present study documents an important shift in the development of primary source instruction.[40] While it is still too soon to know what the long-term effects of this disruption will be, there are strategies that may be carried forward as we continue to navigate new models for this work. Among these are ways to support new and emerging practices for teaching with primary sources; developing instructor training programs; better showcasing collections of digital primary sources; and adopting a trauma-informed approach to outreach in the years to come.

Following the conclusion of the 2019 Ithaka S+R study, several avenues for further research on the nature of teaching with primary sources were apparent to those involved. Perhaps unsurprisingly, the same is equally true for the present study, as interviewees' responses prompted as many new questions as they answered. As institutions bring faculty and students back on campus for more face-to-face interactions, will course and faculty engagement with collections return to or even increase from pre-pandemic levels? Will the emotional yearning to touch and smell physical objects described by many of the interviewees result in a rush at the gates of special collections, archives, and galleries? Or have people become accustomed to having online access to digitized items from their institutions' collections? Or both? It will be essential to continue listening to and learning from colleagues and students as we all navigate teaching with primary sources in response to the pandemic.

Appendix A. Follow-up Questionnaire

1. How did teaching remotely or to remote students during the pandemic change your approach to using primary source materials in class?
2. How did teaching remotely or to remote students impact your attitude toward physical and digital primary sources? Was there anything that surprised you?
   a. What did you think about using physical primary sources before the pandemic?
   b. What did you think about using digital primary sources?
   c. Did you have a preference for physical or digital? Did that change?
3. How did your goals for student learning outcomes–specifically those related to primary sources–change when you moved to remote teaching?
   a. Did you rein in any expectations related to teaching with primary sources?
   b. Did you change the requirements for any assessments or projects related to primary sources? Number of sources? Complexity of expectations?
   c. Did you alter the deliverables for the course?
4. Which practices of teaching virtually with primary sources will you carry forward as we return to in-person instruction?
   a. What practices did not work? Which will you not continue using?
   b. Did any new resources come available that you are glad exist? Are there any resources that you became aware of during the pandemic that were particularly helpful?

Notes

1. Authorship of this article was shared equally; attribution is thus listed alphabetically.

2. We use this term deliberately to acknowledge the intellectual and pedagogical support that non-faculty instructors, including librarians, archivists, curators, support staff, and other educators provide for primary source teaching.

3. Kurtis Tanaka, Daniel Abosso, Krystal Appiah, Katie Atkins, Peter Barr, Arantza Barrutia-Wood, Shatha Baydoun, et al., "Teaching with Primary Sources: Looking at the Support Needs of Instructors," *Ithaka S+R*, March 23, 2021, doi.org/10.18665/sr.314912.

4. Texas A&M University, "At a Glance," https://www.tamu.edu/about/at-a-glance.html.

5. University of Miami, "Fast Facts," https://irsa.miami.edu/fast-facts/.

6. Williams College, "Fast Facts," https://communications.williams.edu/media-relations/fast-facts/ .

7. Washington & Lee University, "Enrollment Report for Fall 2021," https://my.wlu.edu/prebuilt/fall-2021-enrollment-report.html.

8. Tanaka, et al., "Teaching with Primary Sources."

9. Patrick Garcia, Joseph Lueck, and Elizabeth Yakel, "The Pedagogical Promise of Primary Sources: Research Trends, Persistent Gaps, and New Directions," *Journal of Academic Librarianship* 45, no. 2 (2019): 95, https://doi.org/10.1016/j.acalib.2019.01.004. Garcia, Lueck, and Yakel cite primary source instruction using physical collections as "a key engagement strategy for those working with archival materials." See also: Meggan Press and Meg Meiman, "Comparing the Impact of Physical and Digitized Primary Sources on Student Engagement," *portal: Libraries and the Academy* 21, no.1 (2021): 99, https://doi.org/10.1353/pla.2021.0007. Press and Meiman claim teaching with primary sources to be "the most common outreach strategy of archives."

10. Anne Bahde, Heather Smedberg, and Mattie Taomina, eds., *Using Primary Sources: Hands-On Instructional Exercises* (Santa Barbara, CA: Libraries Unlimited, 2014); Christopher J. Prom and Lisa Janicke Hinchliffe, eds., *Teaching with Primary Sources* (Chicago: Society of American Archivists, 2016); Nancy Bartlett, Elizabeth Gadelha, and Cinda Nofziger, eds., *Teaching Undergraduates with Archives* (Ann Arbor, MI: Maize Books, 2019); Julie M. Porterfield, ed., *The Teaching with Primary Sources Cookbook* (Chicago: ACRL, 2021).

11. TPS Collective, "Teaching with Primary Sources Bibliography," TPS Collective, https://tpscollective.org/bibliography/.

12. Patricia Garcia, Joseph Lueck, and Elizabeth Yakel, "The Pedagogical Promise of Primary Sources: Research

Trends, Persistent Gaps, and New Directions," *Journal of Academic Librarianship* 45, no. 2 (2019): 94–101, https://doi.org/10.1016/j.acalib.2019.01.004. Additional surveys include Lijuan Xu, *Engaging Undergraduates in Primary Source Research* (Lanham, MD: Rowman & Littlefield, 2021) and Sonia Yaco, Arkalgud Ramaprasad, and Thant Syn, "Themes in Recent Research on Integrating Primary Source Collections and Instruction," *portal: Libraries and the Academy* 20, no. 3 (2020): 449–74, https://doi.org/10.1353/pla.2020.0025.

13. Bridget Draxler, "Designing Publicly Engaged First-Year Research Projects: Protest Art and Social Change." *Prompt: A Journal of Academic Writing Assignments* 5, no.1 (January 18, 2021): 7–14, https://doi.org/10.31719/pjaw.v5i1.74; Meggan Press and Meg Meiman, "Comparing the Impact of Physical and Digitized Primary Sources on Student Engagement," *portal: Libraries and the Academy* 21, no. 1 (2021): 99–112. https://doi.org/10.1353/pla.2021.0007; Lijuan Xu, *Engaging Undergraduates in Primary Source Research. Innovations in Information Literacy* (Lanham, MD: Rowman & Littlefield, 2021); Jen Hoyer, "Out of the Archives and into the Streets: Teaching with Primary Sources to Cultivate Civic Engagement," *Journal of Contemporary Archival Studies* 7, no.1 (2020), https://elischolar.library.yale.edu/jcas/vol7/iss1/9; Courtney Jacobs, Marcia McIntosh, and Kevin O'Sullivan, "Make-Ready: Fabricating a Bibliographic Community," *The Journal of Interactive Technology & Pedagogy* 18 (December 10, 2020), https://jitp.commons.gc.cuny.edu/make-ready-fabricating-a-bibliographic-community/.

14. Gormly, Brianna, Maura Seale, Hannah Alpert-Abrams, Andi Gustavson, Angie Kemp, Thea Lindquist, and Alexis Logsdon, "Teaching with Digital Primary Sources: Literacies, Finding and Evaluating, Citing, Ethics, and Existing Models," *#DLFteach* (October 7, 2019) https://doi.org/10.21428/65a6243c.6b419f2b.

15. Alyse Minter, Ashley Todd-Diaz, and La Shonda Mims, "Breaking Down Traditional Territory Lines: Building Instructional Relationships between Librarians, Archivists, and Discipline Faculty" *LOEX Conference Proceedings 2018* 15, (2022), https://commons.emich.edu/loexconf2018/15.

16. Stewart Waters, Anthony Pellegrino, Matt Hensley, and Joshua Kenna, "Forming School and University Partnerships to Learn and Teach with Primary Sources," *Journal of Social Studies Education Research* 12, no. 3 (2021): 47–78, https://jsser.org/index.php/jsser/article/view/3289/513https://jsser.org/index.php/jsser/article/view/3289/513.

17. Tanaka, et al., "Teaching with Primary Sources."

18. Kara Flynn, "Archives and Special Collections Instruction for Large Classes," *portal: Libraries and the Academy* 21, no.3 (2021): 573–602, https://doi.org/10.1353/pla.2021.0031. Another example of primary source pedagogy for large classes can be found in Jessica Blackwell and Trevor Holmes, "An Archive Assignment in Women's Studies 101: Designing Hands-on Learning in a Large Class," in *International Perspectives on Improving Student Engagement: Advances in Library Practices in Higher Education*, eds. Enakshi Sengupta, Patrick Blessinger, and Milton D. Cox, (Bingley, UK: Emerald Publishing Limited, 2020), 145–165, https://doi.org/10.1108/S2055-364120200000026009.

19. See, for example: Heidi Craig and Kevin O'Sullivan, "Primary Source Literacy in the Era of COVID-19 and Beyond," *portal: Libraries & the Academy* 22, no.1 (2022): 93–109; and Melinda McPeek, Jennifer Piegols, and Ian Post, "Reconceptualizing the Classroom: An Immersive Digital Primary Source Exercise During COVID-19," *Museum and Society* 18, no.3 (2020): 337–40, https://doi.org/10.29311/mas.v18i3.3534.

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21 A. Strauss and J. Corbin, *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory* (Thousand Oaks, CA: SAGE, 2014); Joel D. Kitchens, Kevin M. O'Sullivan, and Tina Budzise-Weaver, "Teaching with Primary Sources: Report from Texas A&M University for Ithaka S+R," (internal report, Texas A&M University, 2020), https://hdl.handle.net/1969.1/191016; Lisa Conathan, Lori DuBois, and Anne Peale, "Teaching with Primary Sources at Williams College: A Summary Report of the Ithaka S+R Teaching with Primary Sources Project," (internal report, Williams College, 2020), https://unbound.williams.edu/islandora/object/libraryannualreports%3A3?search=ithaka; Christina Larson, Shatha Baydoun, and Roxane V. Pickens, "Supporting Teaching with Primary Sources at the University of Miami," (internal report, University of Miami, 2020), https://scholarship.miami.edu/esploro/outputs/report/Supporting-Teaching-with-Primary-Sources-at/991031505389302976]; Paula Kiser and Emily Cook, "Teaching with Primary Sources at Washington & Lee University: Humanizing History and Engaging with the Topics of Today," (internal report, Washington & Lee University, 2020), http://hdl.handle.net/11021/34876 .

22. Terrell E. Robinson and Warren C. Hope, "Teaching in Higher Education: Is There a Need for Training in Pedagogy in Graduate Degree Programs?" *Research in Higher Education Journal* 21 (August 2013), https://eric.ed.gov/?id=EJ1064657; Jesse Stommel, "The Human Work of Higher Educational Pedagogy," *Academe: Bulletin of the American Association of University Professors* (Winter 2020), https://www.aaup.org/article/human-work-higher-education-pedagogy.

23. Leonard Cassuto, "Why Teaching Still Gets No Respect in Doctoral Training," *The Chronicle of Higher Education*, March 10, 2022, https://www.chronicle.com/article/why-teaching-still-gets-no-respect-in-doctoral-training.

24. While this may seem like a generalization, few exceptions from the interviews countered this trend.

While one Classics professor used Roman coins in their class, most of the other humanities professors only talked about texts.

25. The only group of respondents who consistently cited formal pedagogical training were instructors in languages.

26. Instructors used primary sources in the classroom to foster critical thinking skills, humanize the past, appreciate material objects as sources, provide contextualization for material within the course, spark excitement and interest, engage in experiential learning, and train students as researchers. These findings are discussed in the *Teaching with Primary Sources* reports from the four institutions cited above.

27. Instructors rarely distinguished between online collections of primary sources provided as text/html and digital surrogates of the original physical sources unless they were specifically interested in the physical nature of the item as part of their research.

28. See Helen J. Chatterjee and Leonie Hannan, eds., *Engaging the Senses: Object-Based Learning in Higher Education* (United Kingdom: Henry Ling Limited, at the Dorset Press, 2015); and Joanna Cobley, "Why Objects Matter in Higher Education," *College & Research Libraries* 83, no.1 (2022): 75–90, https://doi.org/10.5860/crl.83.1.75.

29. See Kristen Totleben and Lori Birrell, eds., *Collaborating for Impact: Special Collections and Liaison Librarian Partnerships* (Chicago: Association of College and Research Libraries, a division of the American Library Association, 2016).

30. Amy Barlow, "Beyond Object Lessons: Object-Based Learning in the Academic Library," in *The Experiential Library: Transforming Academic and Research Libraries through the Power of Experiential Learning*, ed. Pete McDonnell (New York: Chandos Publishing, 2017), 22–42.

31. ACRL, RBMS, SAA Joint Task Force on the Development of Guidelines for Primary Source Literacy, "Guidelines for Primary Source Literacy," *American Library Association* (2018), https://www.ala.org/acrl/sites/ala.org.acrl/files/content/standards/Primary%20Source%20Literacy2018.pdf. Instructors' desired outcomes adhered closely to many sections outlined in the Guidelines. Respondents mentioned learning objectives consistent with those described as Conceptualization; Reading, Understanding, and Summarizing; Interpreting, Analyzing, and Evaluating; and Using and Incorporating. However, there was a notable lack of evidence in the area of "Find and Access."

32. Garcia, Lueck, and Yakel, "The Pedagogical Promise of Primary Sources," 95.

33. Melissa Chalmers, "On a Mission to Scan: Visibility, Value(s), and Labor in Large-Scale Digitization," (master's thesis, University of Michigan, 2019), https://deepblue.lib.umich.edu/handle/2027.42/153473; Yoonhee Lee, "Towards Universal Access to Knowledge: The Invisible Labor of Digitizing," *Progressive Librarian* 47 (Winter 2019–2020): 118–27, http://www.progressivelibrariansguild.org/PL/PL47.pdf .

34. Cassuto, "Why Teaching Still Gets No Respect in Doctoral Training."

35. Shiri Noy and Rashawn Ray, "Graduate Students' Perceptions of Their Advisors: Is There Systematic Disadvantage in Mentorship?" *Journal of Higher Education* 83, no.6 (2012): 876–914, https://doi.org/10.1080/00221546.2012.11777273.

36. Igor Chirikov, Krista M. Soria, Bonnie Horgos, and Daniel Jones-White, "Undergraduate and Graduate Students' Mental Health During the COVID-19 Pandemic," *SERU Consortium Reports* (2020): 1–7, https://escholarship.org/uc/item/80k5d5hw. Significantly, the study reveals, "The prevalence of major depressive disorder and generalized anxiety disorder is higher among undergraduate and graduate students who did not adapt well to remote instruction."

37. "Faculty Wellness and Careers," *CourseHero* (November 18, 2020), https://www.coursehero.com/blog/faculty-wellness-research/. As this study reports, three quarters of faculty cite a loss of campus community as a facet of this stress.

38. Mohammad Nurunnabi, Norah Almusharraf, and Dalal Aldeghaither, "Mental health and well-being during the COVID-19 pandemic in higher education: Evidence from G20 countries," *Journal of Public Health Research* 9, no.1 (2020): 60–68, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7868774/.

39. Katherine Nelsen, Kate Peterson, Lacie McMillin, and Kimberly Clarke, "Imperfect and Flexible: Using Trauma-Informed Practice to Guide Instruction," *portal: Libraries and the Academy* 22, no.1 (2022): 178, https://doi.org/10.1353/pla.2022.0003.

40. Acknowledging that most data collected in the course of this study derived from the experience of faculty from humanities departments, the present conclusions are nevertheless applicable to teaching with primary sources across the curriculum.

Academic Librarians as Teachers and Faculty Developers: Exploring the Potential of the "Teach the Teachers" Model of Information Literacy

Jane Hammons

Proponents of the "teach the teachers" approach to information literacy, in which librarians concentrate on teaching the faculty to teach information literacy, have argued that it could potentially result in the increased integration of information literacy into the curriculum. However, more discussion of this model as a path forward for information literacy is needed. This essay explores the potential of the faculty-focused approach to information literacy through a critical analysis of the literature on librarians' experiences as teachers and faculty developers. Through this exploration, the essay provides valuable insight into the ongoing conversations about the future of information literacy instruction.

Introduction

Librarians have been expressing concerns over the one-shot model of information literacy instruction for years. In a recent editorial, Nicole Pagowsky outlined many of the concerns librarians have, referring to the one-shot as a "faux-innocuous activity" which has "no memory of where information literacy has been and no vision of where it is going."[1] Prior to Pagowsky, Melissa Bowles-Terry and Carrie Donovan also made a strong case against the one-shot, stating that the model lacks scalability and sustainability and limits the potential of information literacy as a movement and of librarians as educators.[2] For one alternative approach, a number of librarians have proposed that we concentrate more of our time on faculty development, or teaching the faculty to teach and integrate information literacy.[3] Some have gone as far as to state that librarians should eliminate most direct instruction to students in favor of working with faculty.[4] The faculty-focused approach has been referred to as the "teach the teacher"[5] or "train the trainer"[6] model or as "faculty-led information literacy instruction."[7]

In addition to specific arguments for the "teach the teachers" (TTT) approach, there have also been several recent articles calling for librarians to engage more with faculty development and increase collaboration with centers for teaching and learning.[8] These articles highlight the connections between the work of librarians and faculty developers and outline the potential benefits for librarians contributing to or leading faculty development initiatives, including raising the visibility of librarians as educators and campus leaders.

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There are many examples of librarians engaging in faculty development, which will be addressed later. However, in a previous literature review on information literacy-focused, library-led faculty development, it was noted that libraries tend to engage in faculty development in addition to, rather than in place of, student-focused instruction.[9] The faculty-focused model has not become the primary approach for academic libraries to support the integration of information literacy into the curriculum. Further, it was determined that "the wide-scale adoption of a dedicated TTT approach to information literacy, especially one in which librarians would give up most or all direct instruction with students, would require a significant change in perception and practice among many librarians and disciplinary faculty."[10] Here, a critical analysis of what this change in perception and practice might look like is provided through the consideration of librarians' experiences as teachers and faculty developers.[11] More specifically:

- What can research into librarians' teacher identities and experiences as instructors tell us about how they might respond to a faculty-focused model of information literacy?
- What have been librarians' experiences as faculty developers and what insights can this provide for understanding the potential of the TTT approach?
- What changes need to be made, at the personal, institutional, and professional levels, to support the adoption of the TTT model as a primary means of information literacy instruction?

By focusing on these questions, valuable perspective to the ongoing debates among librarians about the most appropriate, or effective models for teaching information literacy may arise.

The faculty-focused model is, of course, not the only alternative to the one-shot model that has been proposed. Librarians have employed, and continue to employ, other models of information literacy instruction, including various types of online tutorials or modules, embedded librarian programs, and credit courses, with varying degrees of success. While these other models are important to include in the broader discussions over the best path for teaching information literacy, considered here is the faculty-focused model primarily in comparison to the one-shot model, for two reasons. First, the one-shot continues to maintain a dominant place in many librarians' efforts to teach information literacy. Secondly, the faculty-focused model seems the most directly in contrast to the one-shot model. Although the adoption of a primarily TTT approach would not automatically mean that librarians would be required to stop offering all one-shots, if the faculty-focused model were to be adopted by librarians to the extent that has been proposed by some supporters, it could potentially result in a significant reduction in one-shots.

Definitions

To avoid confusion, the term *librarian* will refer to all those who work within a library, whether or not they have faculty status or the specific title of librarian. *Faculty* will refer to all of those outside of the library whose primary role is to teach or develop credit-bearing courses, including all ranks of tenure or non-tenure track faculty, instructors, lecturers, and graduate teaching assistants.

Faculty development can be defined as "activities and programs designed to improve instruction."[12] The hope of faculty development is that student learning will increase if faculty adopt more effective teaching practices.[13] Other terms used for faculty development include academic development, educational development, and instructional development, with the

specific term varying by location, institutional context, and individual preference.[14] In this essay, *faculty development* will be used, as it seems to be the term most commonly used by librarians when referring to this kind of work.[15]

As Pagowsky notes, there is not always agreement among librarians as to what constitutes as one-shot. She describes a one-shot as "a standalone session, superficially (or not at all) connected to course content, that is tacked onto a class."[16] For the purposes of this essay, a one-shot will be considered a virtual or in-person session in which a librarian provides course- or assignment-related instruction on research- or library-related topic(s). The librarian is considered a guest lecturer who generally has limited (or no) input into the design, course, or assignment, and does not have significant or sustained contact with the students before or after the session. Here, online tutorials or modules that are incorporated into a course as a replacement for face-to-face contact with a librarian are considered a form of one-shot. A one-shot model of library instruction is one in which librarians primarily, although not exclusively, teach in this capacity.

In contrast, in a "teach the teachers" or "faculty-focused" model of information literacy instruction, librarians would spend a significant amount of time providing strategic and sustained faculty development related to information literacy, with the intent that faculty will effectively incorporate information literacy-related goals, learning outcomes, assignments, activities, and assessments into their courses and programs. In this model, information literacy instruction could become so integrated into the course "that it becomes transparent to students" because they are learning about information literacy concepts and skills at the same time they are learning course content.[17] While the focus of a specific library-led faculty development initiative could be on a limited group of instructors such as every instructor in a specific department, the overall aim of a faculty-focused information literacy program would be to create program-level and institutional-level change in the teaching of information literacy.

Background

Librarians have identified a wide range of concerns about the one-shot approach, including scalability and sustainability, the questionable pedagogical effectiveness of one-shots, and the impact of one-shots on librarians' professional standing and mental health.[18] Information literacy programs centered on the one-shot can only grow so far before the number of requests moves beyond the limited staffing in most libraries. And, by focusing on one-shots, time is lost that could be spent on campus-wide initiatives that support information literacy. There are also concerns about what students are learning when they do attend a one-shot. Raising this issue is not meant as an insult toward librarians who devote significant time into developing effective teaching practices. But, as Pagowsky notes, "the one-shot—even if there is more than one—makes it difficult to reach deeper learning, critical thinking, and inclusive pedagogy."[19]

The difficulty of teaching higher level concepts within the one-shot context becomes even more significant when considering that one of the primary documents that many librarians use to guide their information literacy instruction programs, the *Framework for Information Literacy for Higher Education*, emphasizes a conceptual model of information literacy, highlighting key concepts and ways of thinking that students need to understand in order to navigate the information ecosystem.[20] The challenge of using the *Framework* in the one-shot context was anticipated by the authors, who clearly stated in the appendix that the *Framework* was "not designed to be implemented in a single information literacy session in a student's academic

career," but instead needs to "be developmentally and systematically integrated into the student's academic program at a variety of levels."[21] To accomplish this, changes would need to be made to integrate information literacy at the program and institutional level, rather than just the classroom level. The *Framework* authors highlight the need for faculty to develop curricula that supports students' "enhanced engagement with the core ideas about information and scholarship within their disciplines."[22] This, in turn, increases librarians' responsibility to collaborate and engage with faculty, instructional designers, and centers for teaching and learning in the development of such curricula. The one-shot model seems unsuited to support the types of changes that would need to take place to see the integration into the curriculum of information literacy as it is outlined in the *Framework*.

In addition to concerns about the pedagogical effectiveness of the one-shot and their relevance in relation to the *Framework for Information Literacy*, there are the concerns about how the one-shot format negatively impacts the perception of librarians, who may be seen as "reactive problem-solvers and guest lecturers" rather than educators,[23] and in worse case scenarios, little more than "baby-sitters."[24] The lack of agency, combined with the repetitive nature of many one-shot sessions, can have mental and emotional health impacts and lead to burnout.[25]

Proponents of the TTT model point out several potential benefits, including increased scalability and sustainability, expanded reach, and better integration of information literacy within the course and discipline.[26] Faculty represent a more reasonably-sized audience, and by teaching the faculty, librarians may expand their ability to reach students, as each faculty member who participates in faculty development likely teaches multiple courses or sections. In one example, librarians who trained teaching assistants to provide information literacy instruction were able to reach 78 sessions of a biology course over two semesters, although the liaison only taught or attended 14 of those sessions.[27] Additionally, students may be more inclined to take information literacy seriously, and to understand how it fits within the disciplinary context, if it is taught by their course instructor.[28] William Miller and Steven Bell point out that, by handing information literacy instruction over to a librarian, the faculty member could be creating the impression that information literacy is not part of the real content of the course.[29]

There is some evidence in support of the TTT approach. In the previous review on multiple examples of TTT initiatives, the author found indications that faculty teaching behaviors can change as a result of participating in such initiatives and that the TTT approach can have a positive impact on student learning.[30] In one example, librarians at Utah State University facilitated an assignment design workshop for faculty and found that participants made changes in their courses in several areas, including increased scaffolding and modeling of research skills.[31] It was also noted that the majority of their participants reported that their revisions resulted in positive changes in their courses, including increased student engagement.

Despite such positive signs, clear evidence that a faculty development approach would result in improved student information literacy is still needed. Even when positive changes were indicated in previous reviews, the findings were often limited because, in many cases, evidence of changes in faculty teaching practices were based on assessments conducted shortly after the end of the program. Additionally, most reports of these initiatives did not include any assessment of the impact on student learning. As a result, more research on and discussion of the TTT model is needed.

To further consider the faculty-focused approach as a path forward for information literacy, multiple strands of the library and information science (LIS) literature on librarians' experiences as teachers and faculty developers will be explored.

Librarians' Experiences as Teachers

What can research into librarians' teacher identities and experiences as instructors tell us about how they might respond to a faculty-focused model of information literacy?

In their essay on the limitations of the one-shot, Bowles-Terry and Donovan refer to one-shots as "fiercely protected" by many librarians and acknowledge that one-shots "provide both personal reward and professional capital, so it is no small feat for librarians to rethink one-shots as their preferred instructional strategy."[32] Those who have argued in favor of a faculty-focused approach, especially if this were to involve significantly limiting or eliminating one-shots, have acknowledged that it can be an unsettling idea. It has been described as a "radical recommendation"[33] and as running "counter to what most librarians have internalized from our graduate studies and professional lives."[34] At the same time, however, articles such as those by Bowles-Terry and Donovan, and by Pagowsky, demonstrate that some librarians are more than ready to embrace alternative approaches to information literacy instruction.

In order to more fully explore how librarians might respond to a shift to a primarily faculty-focused approach to information literacy, multiple factors need to be considered, including librarians' complicated relationship with teaching, the role of information literacy in providing professional legitimacy, librarians' perceptions of their status and relationship with faculty, and concerns over emotional labor and burnout in relation to one-shot instruction.

Librarians' Teaching Role and Teacher Identities

Librarians have been providing instruction for decades, but teaching has not always been considered a primary part of the librarian role.[35] For example, one study found that only a handful of job advertisements posted in 1973 emphasized instruction, but by the early 2000s, advertisements indicated that instruction had become an accepted and expected role for many librarians.[36] The expectations for librarians to teach have continued to grow. The Association of College and Research Libraries' *Roles and Strengths of Teaching Librarians* from 2017 outlines multiple roles for librarians including advocate, coordinator, instructional designer, leader, lifelong learner, teacher, and teaching partner.[37] While an individual instruction librarian is not necessarily expected to play all of these roles, the descriptions highlight the wide-range of skills and knowledge that many teaching librarians are expected to possess.

As teaching responsibilities have grown, there has also been increasing investigation into librarians' experiences and identities as teachers.[38] There is some evidence to support the idea that many librarians have embraced a teaching role and consider teaching to be a significant component of their professional identity. For example, in a recent survey of 87 instruction librarians, primarily from research, four-year, or comprehensive colleges or universities in the United States, Andrea Baer found that 71.26 percent (62) of the respondents identified as teachers and, furthermore, "many participants expressed great enthusiasm about their teacher roles and clearly saw those roles as central aspects of their professional identities and of their everyday work."[39] For librarians such as these, any recommendation that librarians should consider significantly limiting the predominant approach through which librarians teach may not be especially welcome.[40] While librarians would still be supporting information literacy

if they concentrated their efforts on teaching faculty, this could be seen as less visible and not "real" teaching.

Information Literacy and Professional Legitimacy

Librarians' role in the development of information literacy and beliefs about the value of information literacy may also make many reluctant to adopt a more faculty-focused model. As Bowles-Terry and Donovan have stated, "a shift in thinking about information literacy will be a monumental undertaking due to the simple fact that the very people who have worked so hard to create acceptance of information literacy instruction must be those who lead the change in its fundamental delivery format."[41]

Librarians have played the primary role in developing the concept of information literacy.[42] Lisa O'Connor has commented on information literacy's role in providing professional legitimacy for librarians, describing how information literacy developed at the time in which libraries' traditional role as access provider was being challenged by educational reform and technological developments.[43] O'Connor argues that there is evidence to support the claim that "regardless of what else IL might achieve, it was in part a professional response and an attempt to rearticulate and legitimate librarians' claim to an educational jurisdiction at a time their traditional access-oriented jurisdiction was threatened."[44]

Moreover, in teaching information literacy, we can argue that we are serving a higher purpose. Librarians have frequently described information literacy as vital, and not just to students' academic success, but to the functioning of an effective democratic society.[45] Susanna Cowan, in her essay "Information Literacy: The Battle We Won That We Lost," outlines the lofty way in which we have presented information literacy and our role in supporting it as follows: "librarians advocating information literacy are good citizens (devoted) whose calling is the democratization of information (populism)—and it is *through us* (librarians) and our ability to filter access (winnow, sift) that truth will be found. A high calling indeed!"[46] The descriptions of information literacy outlined in the guiding documents developed by the American Library Association and the Association of College and Research Libraries also provide evidence of the status that we have granted information literacy.

In making the point that information literacy has served as a means of professional legitimacy for librarians as educators, the intention is not to imply that librarians do not truly believe in the value of information literacy. However, because information literacy is now so closely associated with the educational mission of the academic library and is also endowed with such significant attributes, it is less likely that many librarians would be willing to let go of information literacy, as Cowan argues that they should,[47] let alone give up their role as the primary teachers of information literacy to concentrate on faculty development. Although librarians recognize the value of information literacy, they also recognize that it has not always been viewed in the same way, especially by those outside of the library.[48] In *Meeting the Challenge of Teaching Information Literacy*, Michelle Reale describes how, from the beginning, information literacy has been difficult to define and "difficult, at best, to articulate to others, particularly those with whom we aimed to work with."[49] The struggles that librarians have had in persuading faculty to pay attention to information literacy may create fear about what might happen if we were to try to make faculty the primary instructors of information literacy.

With this background, it is no wonder that the thought of trying to hand over the teaching of information literacy to faculty, even under the librarians' guidance, will likely not sit

well with many librarians. Librarians' personal attachment to teaching, the role of teaching as part of our professional identity, the connection between librarians and information literacy, including the way in which information literacy has elevated their role as educators, and their concerns over the future of information literacy if handed over to faculty, are all legitimate reasons why librarians may hesitate to fully embrace a primarily faculty-focused approach to information literacy. Librarians, who have struggled for years to be accepted as real teachers, could feel that adopting the "teach the teachers" model might undermine all of the efforts they have put into developing effective teaching practices and building their student-centered information literacy programs.

Ambivalence, Lack of Preparation, Imposter Syndrome and Deference

At the same time, however, it must be noted that the librarian teaching role has never had universal acceptance, and there is clear evidence that some librarians have a much more ambivalent relationship to teaching.[50] Summarizing the findings of several previous studies, Heidi Julien and Jen Pecoskie state that this earlier research indicates that "some librarians remain unconvinced of the value of information literacy instruction, some feel unprepared for instructional roles, and some express hostility towards the instructional expectations they feel towards the students they teach and towards the teaching faculty on campuses."[51] And although Baer's recent study found support for the idea that many librarians are enthusiastic about teaching, she also found that nearly 15 percent of the respondents indicated that they did not consider themselves to be teachers, while another nearly 14 percent were ambivalent about the teaching role.[52]

Librarians have frequently expressed concerns about their teaching abilities. Laura Saunders, for example, describes a "persistent lack of confidence shared by many librarians who take on instructional roles."[53] There is a significant thread within the literature that points to the disconnect between the preparation that librarians receive in their LIS programs and the expectations for teaching that many librarians encounter.[54] While recent studies have found that most LIS programs do offer at least one class related to instruction, it still appears that many librarians are entering the profession with minimal teaching-related training.[55] There are also concerns about what students are being taught in LIS instruction courses. In a study comparing course descriptions with the *Roles and Strengths of Teaching Librarians*, Sandra Valenti and Brady Lund found that although the "instructional designer" and "teacher" role were both fairly well aligned with the course descriptions, several of the roles, including "leader" and "advocate" were much less prevalent and that, overall, many of the course descriptions included "outdated concepts."[56]

The lack of preparation that LIS students receive may contribute to the teaching anxiety and imposter syndrome (or phenomenon) that has been highlighted in a few studies and essays.[57] In one recent study, for example, Kacy Lundstrom, Britt Fagerheim, and Stephen Van Geem found that 64.9 percent of 925 librarians indicated that they experienced teaching anxiety and that those who had no coursework in instruction or information literacy were more likely to experience anxiety.[58] If librarians are not getting preparation in instruction or pedagogy, and may experience anxiety or imposter syndrome related to their role in teaching students, it seems likely that teaching the faculty would represent an even bigger hurdle. Bowles-Terry and Donovan point out that, even when librarians may feel confident in their ability to teach undergraduates, there is no guarantee that this confidence would transfer into

activities such as instructional consultation or assignment design.[59] As activities such as these would be an important aspect of the TTT approach to information literacy, this represents a significant concern about the potential of this approach.

This contention that some librarians might be anxious or uncomfortable providing instruction or teaching-related consultations to a faculty audience is further supported by research into librarians' deference behavior toward faculty. In a study of librarians' teaching experiences and relationships with faculty, Heidi Julien and Jen Pecoskie found evidence of deference behavior throughout the participants' comments, such as when participants described being "gifted" with time by faculty or were careful to show respect for the expertise of the faculty member.[60] In another study, Lyda McCartin and Raquel Wright-Mair surveyed 139 teaching-focused academic librarians in the United States and found that about 35 percent indicated "high deference" behavior.[61] While they don't specifically use the term deference, in their 2013 article, "Not at Your Service: Building Genuine Faculty Librarian Partnerships," Yvonne Nalani Meulemans and Allison Carr argue "that librarians must cease being at the service of faculty."[62] In making such an argument, the authors provide evidence in support of the existence of such behavior among librarians.

Closely related, librarians have also raised significant concern about how they are treated by faculty and whether or not they are seen as real teachers. In the study by Julien and Pecoskie, librarians expressed feelings of being disrespected or exploited by faculty.[63] Reale describes the frustrations that librarians experience when it appears that faculty do not understand or value what they do, and how this, in turn, impacts the way that they think about themselves, asking: "So when we are not seen as equals, when we are seen as mere service providers instead of teachers, what happens to the quality of our work, not to mention our sense of what we can do, what we are doing, and what we hope to do in the future?"[64] How they are treated by faculty can thus contribute to a negative self-perception among librarians of their worth and abilities. Julien and Pecoskie, for example, suggest that the feelings of disrespect reported in their study appeared to be supported, at least in part, by "librarians' self-positioning as defeated, passive, dependent, and subordinate to teaching faculty."[65]

The combination of librarians' lack of preparation for teaching, deference behavior, and feelings of being disrespected by faculty are significant reasons why implementing a faculty-focused approach to information literacy could be challenging. Librarians may feel inadequate for the task of teaching the faculty, or fear that their efforts to do so will be dismissed just like their efforts to teach students so often seem to be. The TTT approach cannot work if librarians feel they are not capable of teaching and collaborating with faculty as fellow educators, rather than as service providers.

Emotional Labor and Burnout

Another factor that must be considered when thinking about the potential of the faculty-focused approach is the impact that teaching in the one-shot format may have on librarians' mental and emotional health. As noted by Pagowsky, "instruction programs run heavily on service through emotional labor and care work—which tend to be invisible."[66] Emotional labor is the awareness of the need to manage or regulate emotions in order to be effective at a job, and high levels of emotional labor have been associated with emotional exhaustion and burnout.[67] Librarianship has been described as a profession that includes a significant amount of emotional labor.[68]

In their study of the emotional labor involved in library instruction, Heidi Julien and Shelagh Genuis highlight some of the negative emotions associated with instruction.[69] While acknowledging that many of their respondents expressed positive emotions related to their instructional role, they also found that "other participants were not so enthusiastic; frustration, disappointment, and other negative emotions were reported by many."[70] Some participants expressed "emotional dissonance" related to their instructional work, indicating for example, that they had to hide their feelings in order to maintain appearances.[71]

As mentioned, high levels of emotional labor have been associated with dissatisfaction and burnout. Concerns over instruction librarian burnout are not new. For example, in 1993 Karen Becker considered the nature of bibliographic instruction (BI) in relation to research on the causes of burnout and concluded that there was a strong potential for burnout among instruction librarians.[72] Although information literacy has generally replaced the term bibliographic instruction, the burnout concerns highlighted by Becker have not disappeared.[73] In reality, they may have increased as librarians' teaching responsibilities have increased and the rhetoric around information literacy has expanded. The contrast between the high expectations that we have for information literacy, and the reality of teaching information literacy in the one-shot format may contribute to an increased potential for burnout. Pagowsky, for example, states plainly that "one-shots are transactional and keep us in cycles of ineffectiveness. They cause burnout."[74] David Brennan and Elizabeth Davidson point out that the expansion of instruction responsibilities usually comes without an increase in resources or a decrease in other tasks, which represents a "certain recipe for eventual burnout."[75]

Summary

What does this mean for the potential of the TTT approach as the path forward for information literacy instruction? Based on this review, if the TTT model were to become the primary approach to information literacy, some librarians would likely react with anxiety, dismay, or even hostility. Many librarians experience genuine satisfaction in providing instruction to students and have embraced teaching as part of their professional identities. They have a strong belief in the need for information literacy and, as a result, real concern that if they attempted to place primary responsibility for teaching information literacy into the hands of faculty, something of great value may be lost. For reasons such as these, there would likely be some pushback against any model in which librarians remove themselves from the classroom to concentrate primarily on faculty development.

It is also clear, however, that many librarians have a complex relationship with teaching, and that not all librarians have embraced the teaching role, nor do all librarians experience satisfaction in teaching one-shots. While they may have a great belief in the value of information literacy, for many librarians, teaching in the one-shot format has become a source of frustration. The concerns that have been expressed about the one-shot model, emotional labor, and burnout indicate that at least a significant component of the profession is ready to consider an alternative approach.

At the same time, however, librarians who feel unprepared for the teaching role with students may find the transition to faculty development work a big leap. The evidence for deference behavior among librarians toward faculty demonstrates that some librarians would be uncomfortable when tasked with teaching faculty. And many librarians would likely also

have significant concerns that their efforts to teach faculty would be dismissed by a group that has so often appeared to have little respect for librarians as educators.

Thus, considering librarians' experiences with teaching provides mixed indications about the prospects for the wide-scale adoption of a primarily TTT approach to information literacy. While there are certainly reasons why many librarians may be ready to abandon the one-shot, there are also reasons why some librarians might be reluctant to adopt a more faculty-focused approach as the primary means of teaching information literacy. Examining what we can learn from librarians' experiences as faculty developers may provide further insight.

Librarians' Experiences as Faculty Developers

What have been librarians' experiences as faculty developers and what insights can this provide for understanding the potential of the TTT approach to information literacy?

Librarians have been involved in efforts to support faculty development, in various forms, for decades.[76] Librarians have developed faculty-focused workshops and workshop series,[77] created online courses or modules,[78] led or participated in faculty communities of practice or faculty learning communities,[79] and led or engaged in course or assignment redesign programs.[80] Often, but not always, these efforts are focused on supporting instructors' ability to teach information literacy.[81] What can librarians' experiences with this work tell us about the potential of the faculty-focused approach to information literacy?

Librarians as Faculty Developers

There has not been a significant amount of research into librarians' experiences as faculty developers. The focus of articles describing library-led faculty development programs has typically been more on the implementation process or on the experience of the faculty participants, not the librarians.[82]

There are a couple of studies focused on librarians who participated in Purdue University's IMPACT program, in which librarians joined teams of course instructors and instructional designers to redesign courses with a student-centered focus.[83] In one of these studies, researchers highlight four categories of experiences for the librarians: Connector (the librarian connected the instructor with other experts in areas such as educational technology), Facilitator (the librarian helped the instructor through the course design process), Colleague (the librarian engaged with the instructor as a fellow educator), and Developer (the librarian supported the development of the instructor as a faculty member).[84] Overall, the findings of this study indicated that librarians can be effective in faculty developer roles, and that this need not center only on librarians' expertise related to information literacy. The second study used an action research methodology to outline several steps that librarians in the IMPACT program could take to improve their participation.[85] These included developing knowledge in areas such as the scholarship of teaching and learning (SoTL), framing information literacy in such a way that it would be practical for faculty, and connecting information literacy to other learning theories.

A broader survey of librarians' experiences leading or contributing to faculty development initiatives was recently conducted by Karla Fribley, Jason Vance, and Justin Gardner.[86] They surveyed more than 150 librarians about their experiences engaging in faculty development work. They found that respondents generally expressed positive opinions about their abilities, agreeing that librarians have the knowledge and expertise needed to contribute to

faculty development and that librarians should take leadership roles in faculty development initiatives. Respondents also highlighted perceived barriers for librarians to participate in this work, including a lack of recognition among faculty of librarians as real teachers, as well as lack of time. Overall, the authors find that librarians are well-positioned to engage in meaningful faculty development work.[87] They also suggest that some of the barriers that librarians perceive related to faculty development might be "self-imposed" and indicate that a shift in mindset might be needed for some librarians to embrace this new role.[88]

Additional insight into librarians' experiences and abilities as faculty developers can be gleaned from case studies and reflective essays in which librarians explore faculty development and discuss their work in this area. Rachel Fundator and Clarence Maybee reviewed the faculty development literature to identify the key responsibilities and activities of developers, highlighting the ways in which librarians can use these insights to move into faculty development.[89] They argue that librarians are well-positioned to take on a developer role. Misa Mi described the development and facilitation of a faculty learning community and the many benefits she gained from the experience.[90] Leading the faculty learning community helped her to "reinvent and grow herself as a faculty member by means of developing others."[91] Katelyn Handler and Lauren Hays also expressed the personal enjoyment they found in leading faculty communities of practice and highlighted the benefits they derived from their experiences, including the opportunity to move beyond the service provider role and the chance to explore new areas of interest.[92] In a recent article, Melissa Bowles-Terry and Karen Sobel reflect on their experiences as librarians who have moved into faculty development leadership roles. They highlight the overlap between the two roles and indicate that "faculty development is one way for librarians to be in a visible role, and to facilitate the integration of information literacy and critical thinking into the curriculum."[93]

Examples such as these provide evidence that librarians can effectively engage as faculty developers. However, it must be noted that the sources above appear to focus primarily on librarians who voluntarily took on faculty development work, and as a result, would likely already be favorably disposed toward it. It is less clear whether librarians would have the same response if they were required to move into faculty development, especially if this work were to limit their existing role of providing instruction to students.

This point is supported by the evidence that some librarians may be uncertain about the faculty developer role more generally. In one small study, Shannon Fay Johnson and Ludwika Goodson found that, when asked to define the role of a faculty developer, many of the librarians in their study "indicated a high level of confusion about the role of faculty developer or instructional designer with several respondents indicating that they could not answer the question."[94] Although this was only one study, it provides support for the idea that some librarians would act with uncertainty if asked to take on more of a faculty development role.

Summary

How does this evidence contribute to our understanding of the potential of the faculty-focused approach to information literacy? It's been shown here that librarians are clearly capable of being effective faculty developers and that some librarians may find significant satisfaction from leading or contributing to faculty development initiatives. Engaging in faculty development work has allowed librarians to expand their own knowledge and move beyond the confines of the one-shot to become fellow educators and campus leaders. The numerous examples of

library-led faculty development initiatives provide support for the idea that many librarians do already see value in using faculty development to support information literacy, even if the TTT model has not been adopted as the primary approach in most cases.

On the other hand, there is also evidence that some librarians may not be familiar with faculty development or may not recognize it as a potential path for librarians. The recent calls for librarians to engage in faculty development could be an indication that this role is one that has not yet gained significant traction among librarians. Librarians who are unfamiliar with faculty development in general, or who are not certain about the effectiveness of faculty development programs, would likely be opposed to a shift to a faculty-development approach to information literacy. And, since there is still limited research into the experiences of librarians as faculty developers, especially in the long-term, it is also not certain whether this path would allow librarians to avoid some of the problems associated with the one-shot, such as burnout.

Overall, then, while there is support for librarians engaging in faculty development, and indications that librarians can perform this role effectively, there are still impediments that would seem to make the wide-scale adoption of the TTT model as the primary approach to information literacy challenging at this time. In order to make a profession-wide shift to a faculty-focused approach more feasible, what would need to happen?

Moving Forward with Faculty-Focused Information Literacy

What changes need to be made, at the personal, institutional, and professional levels, to support the adoption of the TTT model as a primary means of information literacy instruction?

For the faculty-focused model to become a primary approach used in academic libraries, changes would be needed in several areas, including the preparation of librarians as teachers and pedagogy experts, the organizational structure in academic libraries, and librarians' perceptions of their role and status.

As noted, there is already significant concern within the profession about the preparation, or lack thereof, that librarians receive for their teaching roles. This gap would need to be addressed for the faculty-focused model to be more widely adopted. If librarians are not sure of their ability to teach students, asking librarians to teach faculty would likely be an even greater challenge, especially given what is known about librarians' deference behavior toward faculty. Even when librarians do receive instruction related to teaching, research indicates that this is often limited and centered around preparation for one-shots.[95] As others have pointed out, to effectively engage as developers, librarians would need more instruction on topics such as pedagogy, learning theory, instructional design and faculty development in general.[96] It would not be enough for librarians to teach faculty what information literacy is. Instead, they would need to be able to connect information literacy with other pedagogical strategies and provide practical guidance to show faculty how they can integrate information literacy into their course design process and teaching practices.[97]

In addition to increased instruction in pedagogy, librarians would also need support to develop into campus-wide advocates and leaders related to information literacy. However, in their study of LIS instruction courses in comparison to the *Roles and Strengths of Teaching Librarians*, Valenti and Lund found that the roles of "leader" and "advocate" were less represented than other roles.[98] This is another area that would need to be addressed if the TTT model were to be adopted.

Beyond the changes that would need to be made in LIS programs, librarians would also need ongoing support and training related to faculty development. Currently, the one-shot is the focus of a significant amount of the literature supporting librarians' instruction practices. Books such as *The One-Shot Library Instruction Survival Guide*, *The Fortuitous Teacher: A Guide to Successful One-Shot Library Instruction*, and *Creating the One-Shot Library Workshop: A Step-By-Step Guide,* as well as numerous articles, focus on supporting librarians' efforts to teach one-shots.[99] In place of these types of works, librarians would need comprehensive guides to the development and implementation of faculty development programs in academic libraries.

The faculty development approach would also likely require a revision in the organizational structure in many academic libraries. There is significant variation in how library instruction programs are organized. A recent publication, *Hidden Architectures of Information Literacy Programs: Structures, Practices, and Contexts*, highlights several different models, including a team-teaching model, in which instruction is provided by a department or team dedicated to teaching, a subject liaison model, in which instruction is distributed across subject liaisons, and a combined model.[100] No matter the specific organizational structure, however, most academic libraries have programs or departments, or at least a few individuals, who devote a significant amount of their time and effort to providing information literacy instruction directly to students. While a faculty-focused model would not necessarily mean that all student-focused instruction would need to completely halt, there would need to be dedicated space within these organizations for librarians who have specialized knowledge in faculty development. Some currently existing positions devoted to student-facing instruction might need to transition into faculty development or into other roles within the library.

Librarians focused on faculty development would need organizational support. Lack of time has been noted as one of the perceived barriers preventing librarians from contributing to faculty development.[101] In addition, Fribley, Vance, and Gardner's research suggest that librarians may be more willing to engage with faculty development when faculty development goals are clearly included as part of the library's mission.[102] For the faculty-focused approach to be successful, libraries would need to make faculty development one of their stated priorities and give librarians the time needed to implement or engage with development initiatives.

To implement a primarily TTT approach, librarians would likely also need to collaborate more extensively with their campus faculty development centers, or centers for teaching and learning (CTLs). The need for librarians to engage more with these centers has already been acknowledged by several authors.[103] While Johnson and Goodson's research highlight some of the challenges that the relationship between librarians and faculty developers may entail, including misunderstandings, uncertainty about each other's roles, and the potential for conflict over territory, there is also evidence that faculty developers would welcome increased collaboration with librarians.[104] Although it was a limited study, Johnson and Goodson found that most of the faculty developers had collaborated with the library as part of their work and tended to rate the value of these collaborations higher than librarians did (although it is unclear why librarians tended to see less value in these collaborations). In another study, Sharon Mader and Craig Gibson surveyed 92 CTL directors regarding their perceptions of libraries/librarians, and found that the significant majority of respondents viewed librarians as fellow educators and felt that it was beneficial for librarians to be involved in center activities.[105] Studies such as these demonstrate that increased collaboration between librarians and

faculty developers in support of a faculty-focused approach to information literacy is possible, but that more efforts to build these relationships would likely be needed.

Perhaps most importantly, for the TTT approach to be successful, there would need to be a change in how librarians think about themselves and their role as educators. In order for a faculty development approach to information literacy to be viable, librarians need to be confident in their ability not just to teach, but to teach faculty or to provide teaching-related consultations. While increases in coursework and training related to pedagogy might help to overcome some of these concerns, there would still be the ongoing challenge that many librarians struggle to see themselves as equal to faculty. Even when librarians think of themselves as teachers, or have faculty status themselves, this concern can still exist. For example, in one study of librarian teacher identities, researchers found that 83.3 percent of their respondents agreed or strongly agreed that they considered themselves to be teachers, but that only 56.9 percent agreed or strongly agreed that they were teachers in the same way as faculty who teach outside of the library.[106] And in their study of librarians' experiences of faculty development, Fribley, Vance, and Gardner noted that librarians' fears about not being accepted in a faculty development role did not appear to be impacted by faculty status.[107] Instead, the concern was shared by both non-faculty and faculty librarians. For the faculty development approach to be successful, librarians would need to find a way to overcome their tendency to defer to or think of themselves as being less than faculty.

To support this shift, more research into librarians' experiences as faculty developers is needed, especially considering the factors that have allowed some librarians to successfully adopt a faculty developer persona. In addition, more evidence demonstrating the effectiveness of librarian-led faculty development is needed to help convince librarians of the viability of this approach. Collecting this evidence would, of course, require organizational and institutional changes that would encourage more librarians to develop and assess faculty development initiatives. Also, while there may not yet be significant evidence to show that the faculty-focused model would be effective in improving students' information literacy, an examination of the faculty development literature provides indications of the effectiveness of faculty development in general. For example, in *Faculty Development and Student Learning: Assessing the Connections*, the authors discuss the results of a multi-year, mixed-method study across two institutions which found that faculty development does result in changes to faculty teaching practices and supports increased student learning.[108] Increased librarian engagement with the literature from the field of faculty development may provide additional support in favor of a faculty-focused model.[109]

Conclusion

This essay intended to provide a critical analysis of the potential of the TTT model of information literacy through an examination of librarians' experiences as teachers and faculty developers. It has demonstrated that librarians are capable of acting effectively as faculty developers and that some librarians would clearly find professional satisfaction in this role. Moreover, essays such as those by Bowles-Terry and Donovan, and Pagowsky, indicate that some librarians are ready to move beyond the one-shot approach and consider an alternative pathway. Taken together, this points to the viability of the faculty-focused model as a future path for information literacy. Many librarians already have some experience developing and implementing faculty-development initiatives focused on information literacy, which provide a foundation that other librarians interested in the approach can build on.

It also seems clear that the wide-scale implementation of the faculty-focused approach as the primary means of supporting information literacy would likely encounter significant roadblocks at this time, especially if it would mean that one-shot instruction would be reduced or eliminated. Many librarians would be understandably reluctant to abandon an approach that has brought them professional satisfaction in favor of taking on a role that they may be unfamiliar with, and in many cases, would probably feel unprepared for. Concerns about what information literacy might look like in the hands of faculty should also not be ignored. The success of this approach would, of course, require faculty to be willing to take on some responsibility for teaching information literacy, something which is by no means certain. In addition, librarians who are familiar with poorly designed library or research assignments developed by faculty may fear what could happen if they are no longer the primary teachers of information literacy. However, it is important to note that a faculty-focused model of information literacy instruction would not mean that librarians would be giving up all responsibility for information literacy to faculty and then standing aside with no additional role to play. Instead, librarians would continue to act as the guiding force in defining and promoting information literacy at their institutions.[110] And, if librarians are providing training and ongoing collaboration, it seems likely that the chances of faculty producing the types of unsatisfactory assignments that many librarians fear would be lessened, rather than increased. In the TTT model, faculty would have a better conceptual grasp on information literacy, would be more familiar with pedagogical strategies they can use to effectively teach information literacy in their courses, and would probably be more likely to view librarians as collaborative partners in assignment redesign.

While there are barriers to the wide-scale adoption of TTT approach, the existence of such impediments does not mean that librarians should stop exploring the potential of this model, or should not start taking steps that would allow them to make it a more realistic option for libraries in the future. Although the ultimate success of the TTT model is still up for debate, there are significant concerns with the one-shot approach—concerns which have only become more significant since the adoption of the *Framework for Information Literacy for Higher Education*. While not all librarians may be using the *Framework* to guide their instruction programs, it is problematic that the understanding of information literacy advocated by the major national organization for academic librarians is not really compatible with the one-shot instructional model. The *Framework* emphasizes the need for students to develop key understandings or ways of thinking that cannot be fully taught in a one-shot session but instead must be developed across a student's academic career, which is a goal that librarians cannot reasonably expect to achieve on their own. Although the authors of the *Framework* do not directly mention the "teach the teachers" approach, they do specifically advocate for increased collaboration among librarians, faculty, instructional designers, and centers for teaching and learning in the design of "holistic" information literacy programs.[111] This type of collaboration seems much more aligned with the TTT model of information literacy than the one-shot model, providing additional support for the notion that librarians need to give increased consideration to the TTT approach.

The "teach the teachers" approach does not have to be the only one used in academic libraries. There would likely still be a place for limited one-shots even within a model where focusing on faculty development takes precedent. Bowles-Terry and Donovan, for example, note that working with faculty on course and assignment design at their institution did often

lead to librarians continuing to work with the students in those classes, but they indicate that this was a more "targeted and sustainable" approach than responding to faculty requests for sessions.[112] Other models of instruction, such as credit courses taught by librarians, could also continue to be offered. Our institutional and instructional contexts are so varied that the notion that a single model of information literacy instruction would be effective at every institution is unrealistic. However, investing more time and attention on the faculty-focused approach could get librarians closer to their goal of seeing information literacy integrated into the curriculum.

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Notes

1.. Nicole Pagowsky, "The Contested One-Shot: Deconstructing Power Structures to Imagine New Futures," *College & Research Libraries* 82, no. 3 (2021): 300. Pagowsky's editorial also functioned as a call for proposals for a special issue of *College & Research Libraries* focused on the one-shot, which was published after the completion of the current essay. Readers are encouraged to review that issue (Volume 83, no. 5, 2022) for additional critical discussion related to the one-shot model of information literacy and potential alternatives. In one of the essays in that volume, Urszula Lechtenberg and Carrie Donovan envision a model of information literacy in which librarians act as facilitators of information literacy through faculty development, instructional consultations, and designing information literacy learning objects, a model which closely aligns with the "teach the teachers" approach outlined in the current essay. See: Urszula Lechtenberg and Carrie Donovan, "Undoing Our Instructional Past: Envisioning New Models for Information Literacy" *College & Research Libraries* 83, no. 5 (2022): 837–840.

2. Melissa Bowles-Terry and Carrie Donovan, "Serving Notice on the One-Shot: Changing Roles for Instruction Librarians," *International Information & Library Review* 48, no. 2 (2016): 137–142, https://doi.org/10.1080/10572317.2016.1176457.

3. Bowles-Terry and Donovan, "Serving Notice on the One-Shot"; Sandra Cowan and Nicole C. Eva, "Changing Our Aim: Infiltrating Faculty with Information Literacy," *Communications in Information Literacy* 10, no. 2 (2016): 163–177, https://doi.org/10.15760/comminfolit.2016.10.2.31 ; Barbara Fister, "Fostering Information Literacy through Faculty Development," *Library Issues: Briefings for Faculty and Administrators* 29, no. 4 (2009): 1–4; William Miller and Steven Bell, "A New Strategy for Enhancing Library Use: Faculty-Led Information Literacy Instruction," *Library Issues: Briefings for Faculty and Administrators* 25, no. 5 (2005): 1–4; Risë L. Smith, "Philosophical Shift: Teach the Faculty to Teach Information Literacy," *Paper presented at the 8th National Conference of the Association of College and Research Libraries* (1997), https://www.ala.org/acrl/publications/whitepapers/nashville/smith [accessed 28 March 2022].

4. Smith, "Philosophical Shift."

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Rethinking How We Build Communities: The Future of Flexible Work

Amy L. Allen and Lori Birrell

As most academic libraries closed in March 2020 to help slow the spread of COVID-19, practitioners started working from home for the first time. After observing impacts on their own work, the authors sought to study the broader effects of remote work on practitioners' professional and personal life by conducting a longitudinal study between July 2020 and June 2021. The authors identified successful and unsuccessful practices and, based on this data, developed recommendations for how employers can support their employees as whole persons to ensure more productive professional performance and healthier personal lives.

Introduction

When picturing the future of academic library work, for many the picture looks blurrier than ever. The period during the height of the Covid-19 pandemic when most employees in academic libraries were working remotely highlighted considerable inequities across the profession, amplified the positive and negative impact of particular organizational cultures, and provided a kind of flexibility and empowerment that many practitioners had never before experienced.

After examining how remote work was affecting their personal work and department, the authors wanted to examine how remote work was affecting the profession more broadly. They identified potential outcomes related to both work culture and life outside of work that might be affected by working remotely and what conditions were best suited for remote work. Through a longitudinal study the authors strove to understand the complexities and opportunities brought about from being forced to work remotely beginning in spring 2020. Survey questions included quantities of hours worked, communication, work/life balance, supervisor support, ability to concentrate, and desire to continue working remotely. This data can help inform supervisors going forward when making decisions about remote work and flexible work options while trying to navigate the changing landscape of work culture.[1]

Literature Review

The unprecedented context of a global pandemic sets this study apart from previous research in the remote work literature. According to Felstead and Henseke,[2] previous studies have almost exclusively focused on single companies or sectors of specific fields and their approach and decision to offer or ask for remote work opportunities. By contrast, the research presented

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here provides insight into the benefits and consequences of remote work in the library science profession when previously there were few, if any, alternative work arrangements. The authors limited the sources in this literature review to those written pre-pandemic to align with the data collection for this research project and expectations around remote work leading up to the pandemic. The literature review is divided into three parts: first, the personal and societal benefits and drawbacks of remote work; second, the impact of remote work on team and organizational dynamics; and third, the types of work assignments and work environments that best lend themselves to remote work opportunities.

In Kwon and Jeon's article "Why Permit Telework? Exploring the Determinants of California City Governments' Decisions to Permit Telework," the authors argue in favor of the climate benefits associated with reducing the number of commuting employees in California.[3] Lowering emissions served as the primary driver of Kwon and Jeon's analysis. They recommend offering or mandating remote work based on city-specific contextual factors. This framing could be applied to the context of libraries as well. Post-pandemic, library administrators should conduct needs assessments of their user populations and employees to better understand their expectations. Climate change could be one factor that resonates with users and employees alike and should be considered alongside other indicators such as financial constraints due to fluctuating gas prices, ease of access to and within the physical library space, and evolving service models.

Analyzing the effects of working from home on employees in Australia, Dockery and Bawa argue "working from home through formal agreement was found to be positive and significant… Voluntariness mediates impact upon family functioning as assessed by employees' partners."[4] The authors found no significant negative effect from non-voluntary work from home assignments. The research presented here offers a contribution to the literature that analyzes the impact of a global pandemic as a non-voluntary driver. The unique nature of working from home during the pandemic suggests the need for a broader analysis of the effects of remote work. Drilling down to look at other more specific effects, Dockery and Bawa examine the impact of work from home on division of household tasks. They found women experience satisfaction "with division of household tasks when male employee works substantial number of hours from home."[5] Given the female dominated nature of librarianship, the authors' discussion of satisfaction in the home with male/female partners is particularly relevant to this study. The heteronormative focus of Dockery and Bawa's work does limit its broader generalizability.

In Nakrosiené, Buciunienė, and Gostautaité's 2017 analysis of the remote work literature, they codify 10 positive factors of such arrangements, including: time skills, possibility to work during an individual's most productive time, possibility to access work documents, reduced time for communication with co-workers, suitability of working at home, possibility to work from home due to illness, possibility to care for family, supervisor's trust, supervisor's support, and possibility to save on travel expenses.[6] Similarly, in the weeks after the pandemic spread to the United States, *The New York Times* published an article outlining the benefits of working remotely, which included less time spent commuting, greater productivity, cleaner global environment, companies saving money on daily work-related expenses, increased job satisfaction, less illness, and more time spent on fitness.[7] The author of that article did not analyze the many factors that might have a negative impact on working remotely, namely maintaining childcare and family responsibilities while meeting job demands. The library science profession is widely understood to be a female-dominated field in all areas, with

the exception of administration. The productivity and time spent on fitness or other hobbies identified in the article as benefits of remote work may not ring as true for women, who bear the brunt of family and household responsibilities, pandemic or not.

Narrowing to the library science literature, Wendy Kasper's spring 2020 editorial in *College & Research Libraries,* predicts the benefits library users may experience as a result of the pandemic. She states: "This pandemic has impacted institutions similarly by forcing an identification of what is essential to the operations of the university and priorities with everyone hopefully moving in the same direction reorienting [to them]."[8] The concept of what is essential should compel library leaders to consider what tasks and services make their organizations valuable in their communities. As Kasper argues "When you strip all the extraneous busywork away to focus on what MUST happen, the core is exposed."[9] The idea of exposing the core necessitates saying no to certain opportunities and expectations, and embracing the specific impact each library can make.

In their 2015 book chapter, "Theoretical and Applied Approaches to Remote Work for Academic Reference and Instruction Librarians," authors Hickey and Tang present a one-person case study and SWOT analysis of remote work. The authors identify the strengths of the SWOT as talent retention, work/life balance, and cost savings. The primary threat they identified was social isolation. In the weakness category the authors note:

> Remote work is not for everyone. Successfully working from an off-site location requires a self-starter and manager, as well as strong communication skills for both the employee and the supervisor. If someone thrives on in-person office interactions, remote work may feel isolating. Burnout can also become an issue if the employee has trouble leaving work behind or the supervisor encourages being 'on' 24/7.[10]

The chapter ends with a helpful list of questions for employees and supervisors to ask when attempting to determine whether or not remote work is the right option.

Van Dyke, an Interlibrary Loan Librarian, notes pros and cons based on personal experience in a coauthored 2008 article with Smith.[11] Pros include the ability to retain skilled employees, saving time commuting, and saving money on gasoline and professional attire. The downsides listed include the inability to get away from work, family interruptions, and frustration with internet connections not working and internet service providers.

The second relevant body of literature includes studies of the impacts of remote work on work teams and organizations. When examining communication of distributed workers within the occupational health care field, Niyani, et al. identify a "Lack of physical proximity… which restricts the opportunity for face-to-face interaction that would otherwise facilitate leadership modelling"[12] as a main driver of how work culture develops. In addition, among those in the field, the authors found "Less frequent opportunity for informal… information exchange… [and] may be unable to communicate directly or seek advice."[13] As a result of these two drivers in particular, the authors conclude that, "lack of goal clarity, role clarity and unrealistic management expectations were all sources of stress for distributed workers."[14] Though outside the scope for their study, certainly workers can experience the same or similar lack of clarity when working onsite. Exploring the information sharing needs and communication styles of librarians will be important factors when determining the future of remote work in libraries. As the title of Niyani et al's article "Out of Sight and Out of Mind?"

suggests, librarians may feel disconnected from their colleagues and patrons when working some portion of their week offsite.

Pre-pandemic, Windeler, Chudoba, and Sundrup reported on two related studies they conducted. The first study included 51 IT workers and a subsequent study of 258 workers from various fields. The authors explored interpersonal interactions, interdependency on others to do work, and a comparison of external interactions with stakeholders between onsite employees as compared with those working remotely for all or part of their work week. Drawing on similar, previous studies, they found for an onsite worker that "Social interaction has a cost… collaboration overload… efficiency losses associated with open office layouts… reduced autonomy… accounts for nearly 60% of interruptions."[15] Furthermore, the authors found that providing the "opportunity to do work remotely served as a 'timeout' or mini-break from interpersonal interactions with colleagues."[16] Similarly, Müller and Niessen's self-leadership study of 700 part-time remote workers found that employees may save personal energy because they avoid more interpersonal conflicts and are "less confronted with hindering bureaucratic obstacles or onerous and distracting rumors."[17] The authors found the employees in their study experienced "Higher self-goal setting, self-rewards, and vision of high performance on home days than on office days."[18] Implementing a flexible work schedule for library practitioners may offer them similar benefits, resulting in productivity gains—provided schools and care facilities are open—as they work in an environment with fewer interruptions and can better accomplish tasks that require deep concentration or are high, personal priorities.

Library practitioners have begun to reflect on their experiences leading remote teams during the pandemic. Michalak and Rysvay discuss how the library team and the office of institutional research and training at Goldey-Beacom College used technology to stay connected during the early months of forced remote work in 2020.[19] The authors worked in an environment where nearly all services and collections were already virtual and dispersed schedules necessitated virtual communication before 2020. Once the pandemic began, they drastically increased their virtual communication with multiple tools, including using Slack all day, creating FlipGrid videos twice a day, and meeting on Zoom three times a week. In addition, the team used SharePoint to share files and the Notion app for project planning. As the study presented here argues, identifying and implementing specific communication tools enables remote or hybrid teams to remain connected to one another and to the workings of their organizations.

Types of work assignments and work environments that best lend themselves to remote work opportunities comprise a third facet of the literature. Kaplan, et al. explore the issue of managerial trust and found "managers who do not trust (particular employees) will tend not to allow telework, even when a) the task is seemingly suitable… (b) supportive technologies are in place, (c) there is a norm for allowing telework, (d) the employee has a more demanding commute."[20] Similarly, Thulin, Vilhelmson, and Johannson found in their study about time pressure that "qualified workers" or those who have autonomous and analytical jobs, do not experience the same increase in demands as "routine workers" or those who are not knowledge workers. It is this later group that experiences pressure to "meet deadlines and prepare for future work and meetings."[21] These demands appear to come from management as a way of structuring accountability into remote work assignments, perhaps as Kaplan, et al. found, at the expense of mutual trust. The global pandemic forced organizations, including libraries, to place trust in their employees as the health crisis prevented all but essential employees from working onsite. The authors state: "even those practices that organizations

implement to enhance teleworking frequency and productivity, such as having management and employees set daily performance goals, do not appear to offset concerns about conscientiousness and a lack of trust."[22] The practices Kaplan, et al. highlight to mitigate mistrust should be considered as employees seek positions and work arrangements that keep them engaged and motivated post-pandemic.

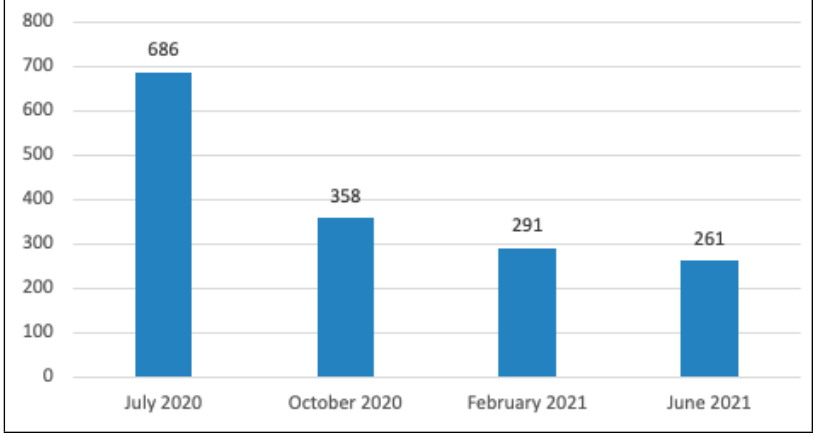
Job satisfaction drives many flexible work requests, as Neriotti, Raguseo, and Gastaldi examine in their study of blue and white-collar workers. The authors conclude that "superior job satisfaction occurs for employees that spend… [an] extent of time away from their office when their job is designed accordingly, and not because of the level of their skills or of their job position."[23] In the library literature, Hickey and Tang and Van Dyke all describe cases of employees transitioning to full time remote work in order to retain employees needing to move physical locations. During the height of the pandemic, it may not have been feasible to redesign or make substantive changes to library practitioners' job duties. However, to foster a professional culture that provides such flexibility going forward, when possible, managers should work with Human Resources and employees to fashion job duties and expectations—for those at various skill levels and positions within the organizational hierarchy—to meet the evolving expectations of employees, which may include time working offsite.

Pre-pandemic, the literature writ large reflected the choices individuals and companies made to take advantage of remote work or flexible schedules. The study presented here demonstrates the impact the lack of choice had on individuals, leaders, and organizations as all academic libraries closed to in-person work for some period of time. Once reopened, few organizations looked or operated exactly the same as they had previously. The results and analysis below seek to explore such impacts.

Methods

The authors used Qualtrics to create a survey which enabled them to capture participant responses and to conduct an initial analysis after data collection. They piloted the 30-question survey instrument by emailing it to four people who completed the survey and provided feedback. After receiving approval from the Institutional Review Board at the University of Arkansas, the authors recruited participants by posting the survey to two library listservs and one e-newsletter beginning in June 2020.[24] (See Appendix.) The survey remained open for four weeks. The authors sent two follow-up messages to the listservs to encourage participation; 807 practitioners began the survey and 696 completed it for a total completion rate of 85%. The participants had the option of including their email address if they wished to be contacted to participate in three subsequent surveys emailed in October 2020, February 2021, and June 2021.

FIGURE 1
Total Number of Participants



The surveys asked participants to reflect on their level

FIGURE 2
Area of Librarianship

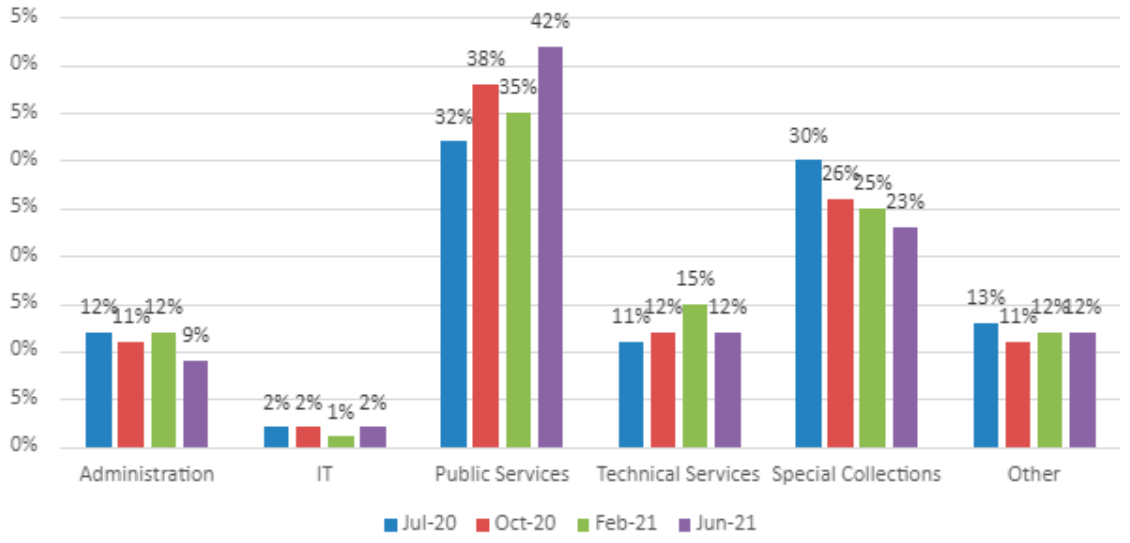


FIGURE 3
Institution Type

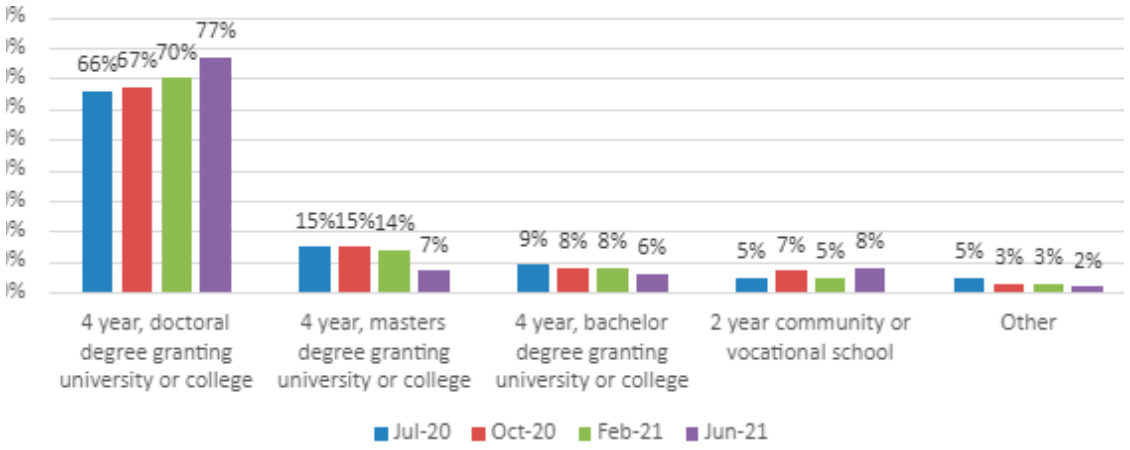


FIGURE 4
Years Worked in Profession

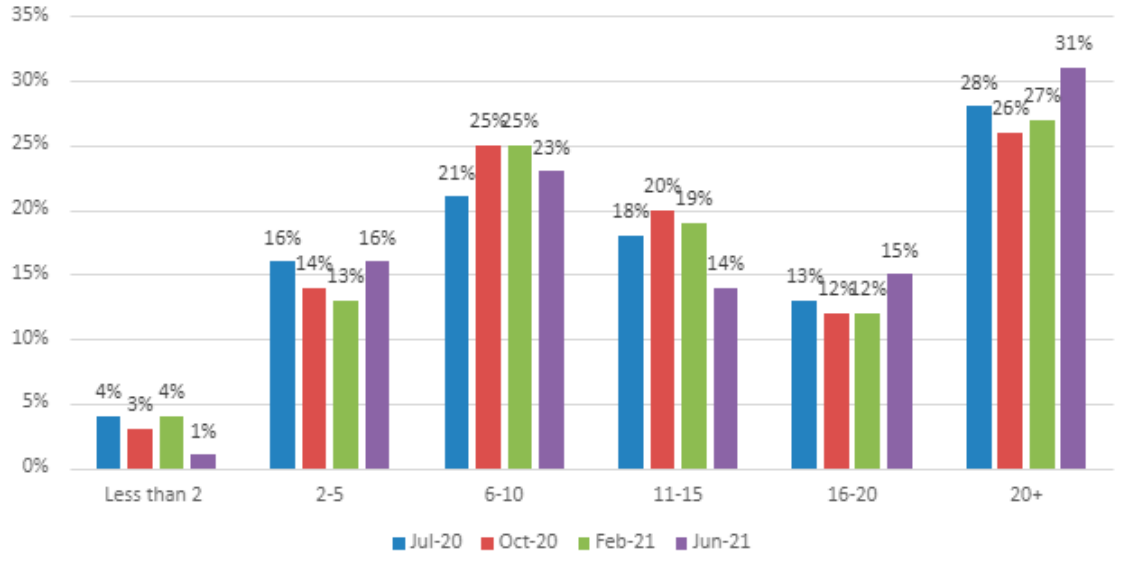


FIGURE 5
Age of Participants[25]

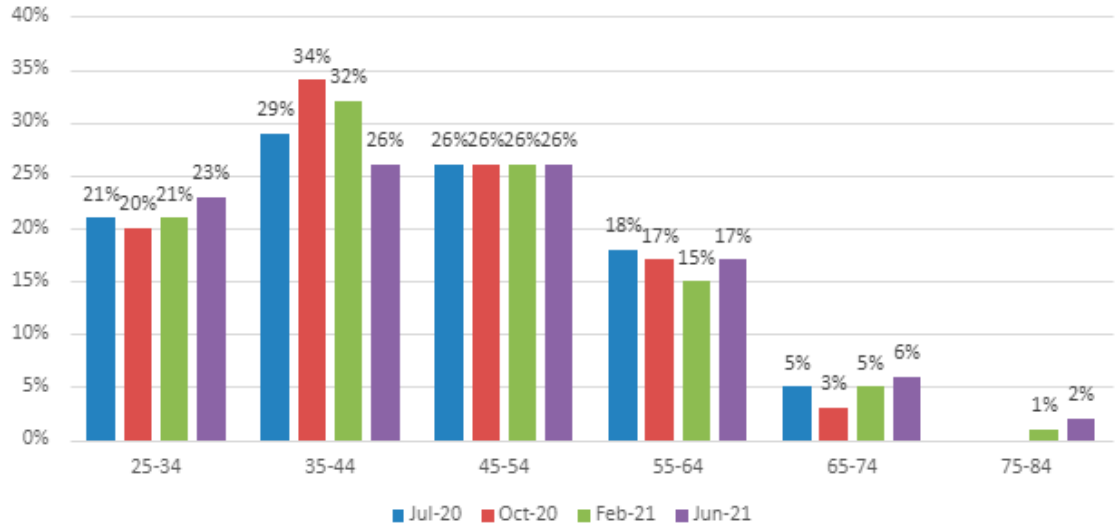
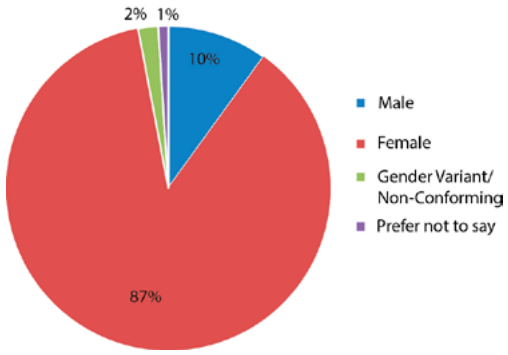


FIGURE 6
Gender of Participants



of concentration at home and in the office, the level of support they felt from their supervisor, their use of sick time, and the benefits and downsides of remote work on work/life balance. After each survey closed, the authors exported initial statistics from Qualtrics. They reviewed the demographic data and charts Qualtrics generated. Most participants worked in an area of public services (32%–42%) or special collections/ archives (23%–30%). An average of 70% of all participants were working at a doctoral degree granting institution. The largest cohorts of respondents had worked in the profession 6–10 years (23.5%) and 20 or more years (28%). The vast majority (87%) of all respondents identified as female.

The authors used an open coding method to analyze the qualitative responses to open ended questions included in the survey.[26] First, they read through those responses. They identified common words, phrases, and ideas, which became initial codes. Then the authors reviewed the codes and determined themes common in the data. The authors divided up the questions and each analyzed the same questions in each of the four surveys. They discussed the codes and themes they identified through the data analysis phase of the project as a validity check on their work and potential biases. Those themes then informed the discussion and recommendations shared below.

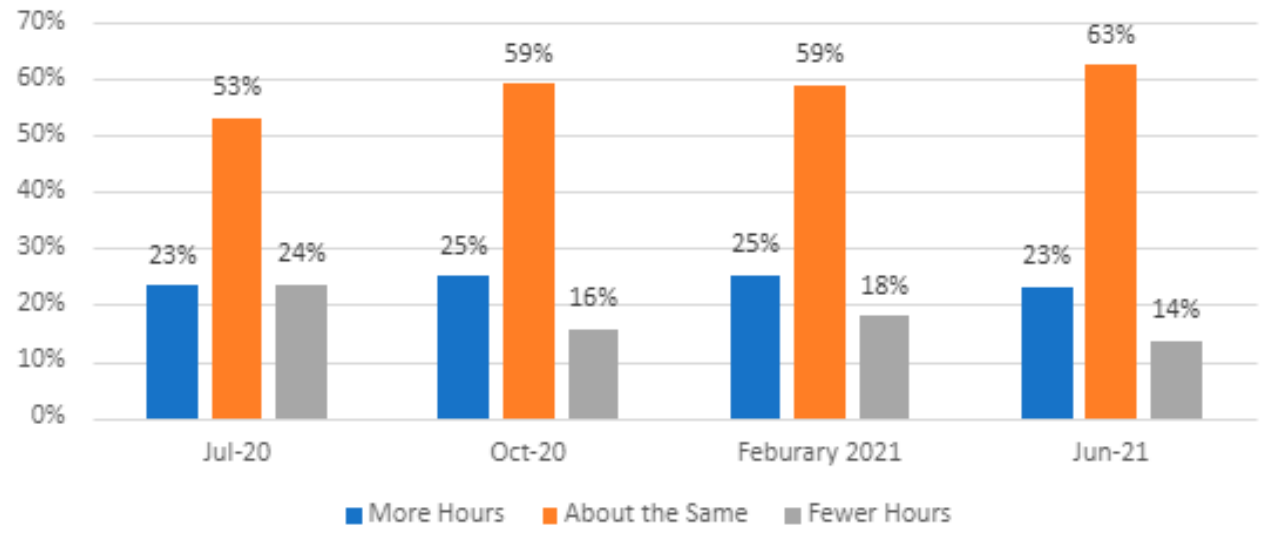
Results

The authors' findings are divided into five sub-sections: a comparison of hours worked before and during the pandemic, participants' ability to concentrate, the benefits and negative impacts of remote work on work/life balance, perceived support from their supervisor, and practitioners' interest in continuing to work remotely beyond June 2021.

Hours Worked

When participants were asked to determine whether they work approximately more, about the same, or fewer hours per week when remote, over 50% of respondents in each survey throughout the year indicated they worked about the same number of hours. An average of 24% of respondents felt they worked more hours and an average of 18% felt they worked fewer hours over the course of the year.

FIGURE 7
Comparing Approximate Number of Hours Worked Pre-Pandemic and Remotely



The findings above echo the comments participants wrote in the open response question that followed. From those responses several themes emerged such as establishing flexibility, being able to set boundaries or not when it comes to completing tasks, and determining one's work schedule and being in a state of flow or productivity. A smaller subset of respondents shared experiences related to performative aspects of work that for some diminished or became amplified during the pandemic. Performative work included remaining onsite or—once remote—keeping email or a chat window open to appear available despite having finished one's work for the day.

Ability to Concentrate

In the July 2020 survey, respondents were asked to rank onsite interruptions from a list of eight options. All eight options were chosen as the greatest source of interruption for at least one respondent.[27] Meetings was chosen as the most frequent and respondents selected email as the second more frequent disruption. The percentages for respondents choosing each option are listed below.

In free text response, participants were asked to comment on their ability to concentrate on complex tasks. In the first surveys distributed in 2020, many respondents reported a lack of concentration due to worry, anxiety, depression, and fear for safety due to the COVID-19 pandemic and political and social unrest. While these issues still exist for some, these factors were mentioned less in later surveys. For reasons affecting ability to concentrate not specific to the pandemic frequently mentioned in free text responses, see Table 1.

FIGURE 8
Number One Ranked Disruptions Onsite

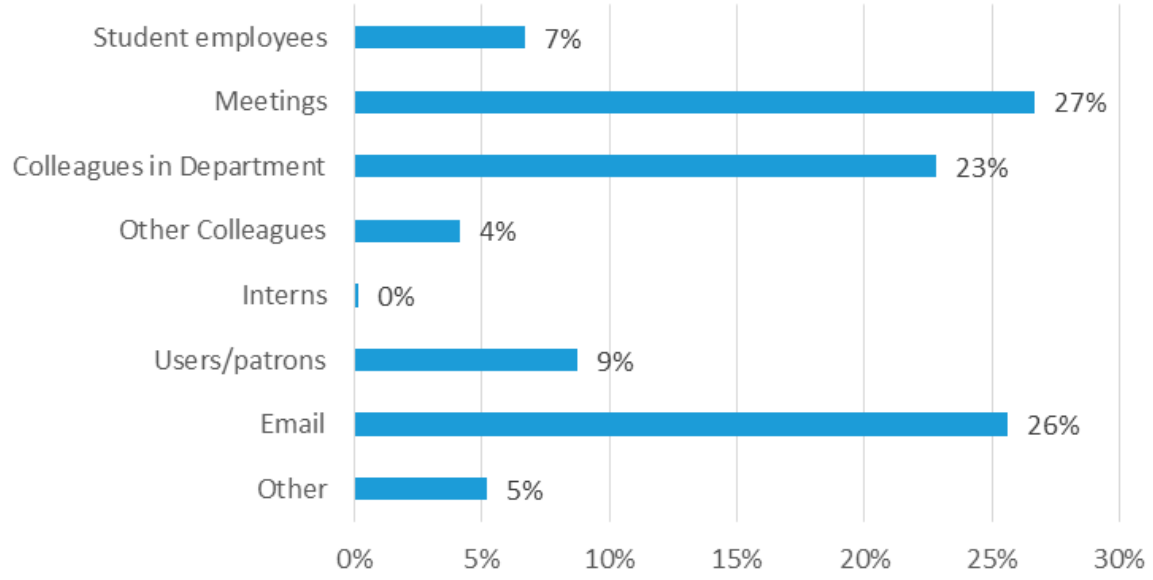


TABLE 1
Factors Affecting Concentration While Working on Campus and Working Remotely

On campus	Remote work
Meetings	Meetings
Co-workers	Insufficient resources
Student employees	Insufficient technology
Shifts on public service desks	Childcare needs
Noise (especially for those without offices)	Elder care needs
	Spouses
	Pets
	Noise

As the year went on, respondents were able to improve remote spaces and to mitigate a number, but certainly not all, of the interruptions that negatively impacted their ability to concentrate while working remotely. One person shared: "After almost a year of working from home, I've gotten better workspaces and workflows in place that allow me to concentrate. Consistent childcare is a large part of that, and hopefully our daycare will remain safely open through the next several months." Whether a person was able to concentrate better onsite or remotely was highly dependent on individual circumstances and the expectations of their employer. For either place, finding space and time free of interruptions was key. Onsite, an office with a door and without interruptions from colleagues and patrons was important when doing concentrated work. Remotely, a separate, comfortable space free of family distractions was key for concentrated work.

Effects on Work Experience and Work/Life Balance: Benefits

Respondents were asked to consider the effects of remote work on their work/life balance and overall work experience. Key phrases from the open coded responses, included: time

management, ability to focus, ability to spend more time with family or pursuing hobbies, attend to self-care needs, and lack of commute. Many reported that the "life" part of work/life balance was easier to manage. They missed less work for issues such as doctor appointments and home repairs. As one respondent commented: "Working from home, I can work on my health, family, and wellness needs way better and still be productive, work all my hours (and more), and get my work done." Others were more easily able to incorporate tasks into their day, including household chores, errands, meal prep, or taking children to school. As one person said: "I am able to handle issues like appointments without taking leave. I am also able to work during the hours that I focus best and take breaks when I need to." Overall, respondents stated that they had fewer absences from work and greater productivity while working.

The most frequently mentioned benefit of improved work/life balance was the ability to spend more time with family. One practitioner shared: "I'm able to do more at home with my family because I am not commuting and because I am available for spur of the moment needs."

Effects on Work Experience and Work/Life Balance: Downsides

For others working from home had specific negative impacts on themselves and their work/life balance. Several noted that working remotely during the pandemic introduced significant challenges not necessarily reflective of working remotely. Key phrases from the open coded responses included communication, collaboration, and work relationships, lack of work/life boundaries and the negative impact of care responsibilities, and physical health and well-being. One respondent who had worked part of their pre-pandemic schedule remotely reported: "Before I was alone, able to work without having to attend meetings, or hear others working. Now I am expected to be in meetings, sometimes most of the day, and I share my 'workspace' with family members who are also working from home."

In the free text responses, several practitioners reported a general decline in mental health and some reported specific conditions worsening, such as increased bouts of depression due to either increased isolation or lack of structure. In the first two surveys, a number of respondents reported feelings of pandemic anxiety. Zoom fatigue was common and in some cases carried over into participants' personal lives during lockdown periods when all social interaction had to take place online. As one person shared: "Living alone… most communication is texting or emailing with the occasional phone call. Sometimes I don't call friends and family or skip a leisure zoom meeting because I am worn from being online all day for work… so I want a break from engaging with others."

A frequently reported issue was the impact of daycare and school closures that resulted in parents juggling childcare and/or home schooling and work at the same time. As one caretaker commented: "I'm constantly interrupted and torn between childcare and work (doing poorly at each and feeling bad about it)."

Support from Supervisor

The majority of the responses indicated that supervisors who were supportive while onsite continued to be supportive when they began working remotely, while supervisors that were not supportive onsite continued to be unsupportive working remotely. One respondent shared: "I am constantly micromanaged whether working in-person or remotely and have never at any point in my job felt like this person values me on a professional or personal level."

Respondents listed the following behaviors and traits of unsupportive supervisors:

Micromanaging	Poor communication	Appears uninterested
Unavailable	Doesn't provide or advocate for resources	Not empathetic

Others experienced very supportive supervisors, such as this respondent who said: "My supervisor is the most supportive supervisor I have ever had. The location that I work doesn't change her character." Behaviors and traits listed for supportive supervisors were:

Regularly communicates	Provides equipment and resources	Listens to employees
Makes employees feel valued	Shows interest without micromanaging	Empathetic

While support (or lack of support) remained consistent for many respondents, there were some that reported communication problems grew worse while working remotely. One respondent reported: "…because I was working on familiar tasks on-site, I needed less support. Off-site, I just didn't receive the feedback I wanted. I've often felt as though my submitted work was going into a black hole."

Interest in Continued Remote Work

Throughout the year, respondents were asked to indicate their level of interest in continuing to work remotely on a permanent basis after their libraries had reopened (see figure 9). Those responding "Definitely Interested" rose from 45% in July 2020 to 61% six months later. Similarly, those who responded "Definitely Not" decreased from 11% to 3%.

Recognizing that by July 2021 the majority of academic libraries had resumed many of their in-person services and work schedules, respondents were asked on the final survey distributed in July 2021, to indicate whether they would be interested in working some part

FIGURE 9
Interest in Working Remotely: Permanently After Reopening

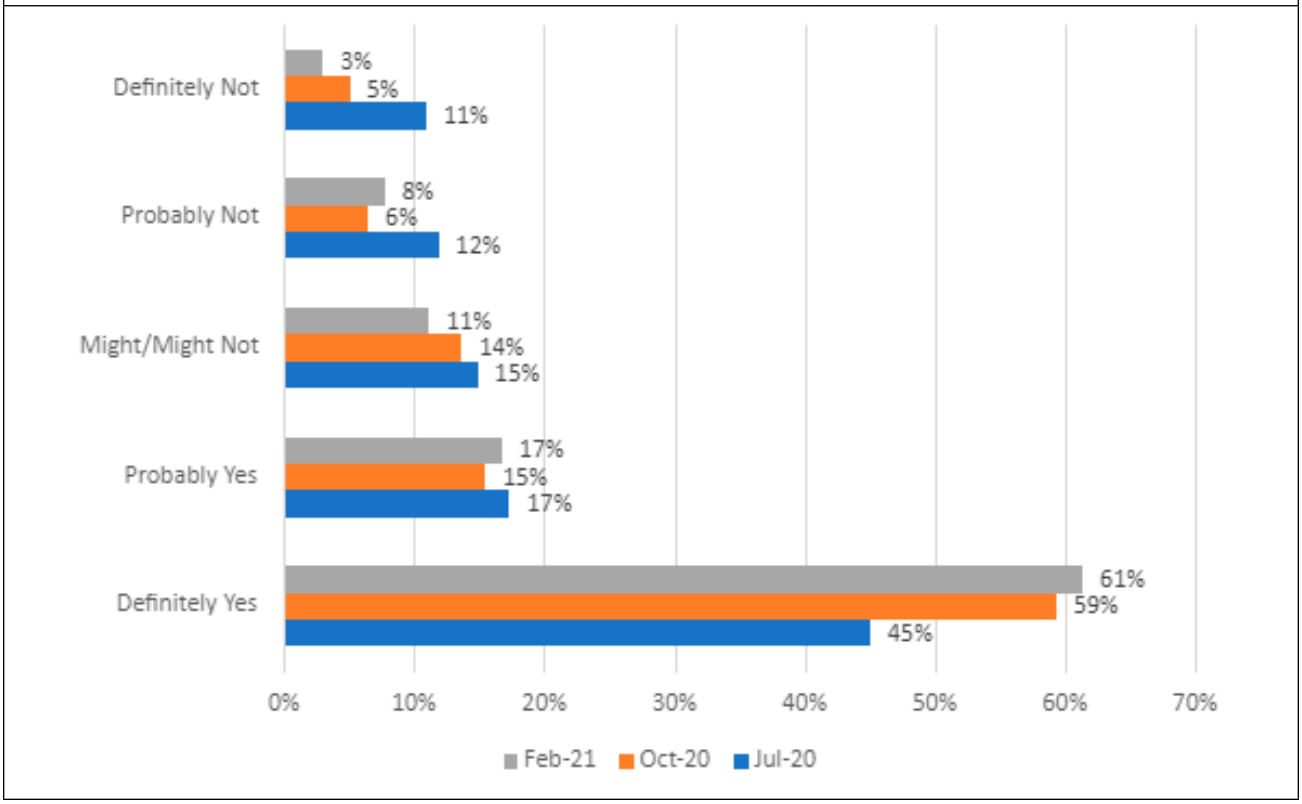
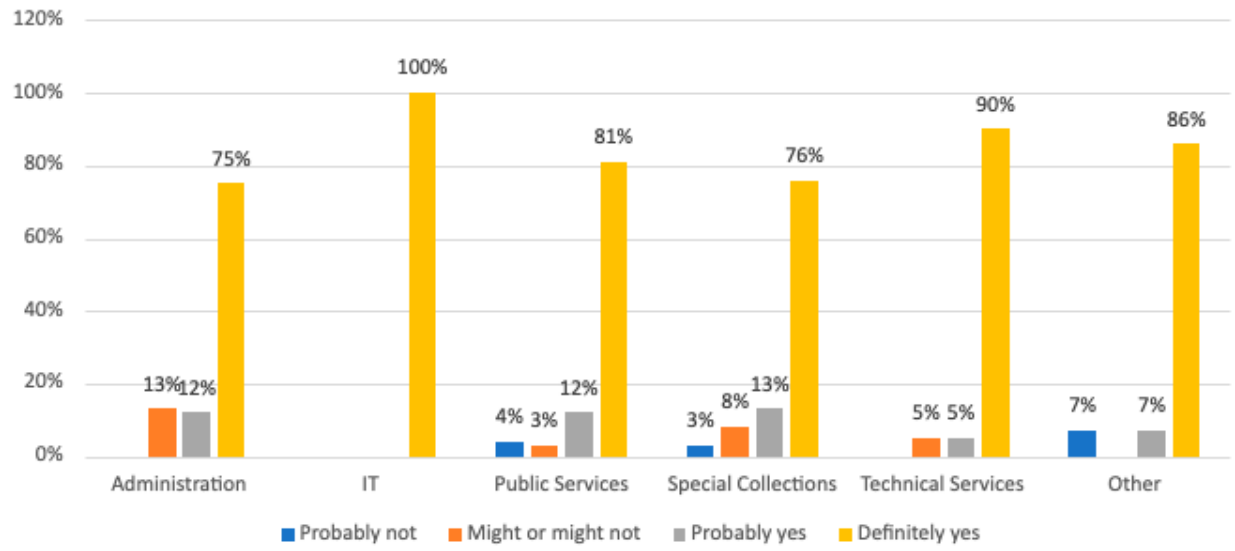


FIGURE 10
Respondents Interested in Working Some Part of Their Work Week Remotely[28]



of their work week remotely. Across all areas of librarianship, 81% of respondents selected "Definitely Yes" with fewer than 10% responding negatively (see figure 10 for a breakdown of responses by area of the profession).

Discussion

Looking ahead to what the future of work in academic libraries may look like, library leaders must consider how the expectations and needs of their employees have changed as a result of their remote work experience. Above all, participants articulated the need for a high degree of flexibility when determining their schedules. Whether an individual is more productive onsite or working remotely is highly individualized depending on job duties, personal preferences, and their onsite and remote environments. As such, managers should work with their employees to develop strategies that meet those individual needs, while ensuring that core tasks get done. Finally, library leaders must consider how frequency and types of communication and opportunities for collaboration (whether in-person or virtual) signal characteristics of organizational culture that contribute to employees' sense of well-being and belonging.

Desire for Flexibility

Those respondents who reported considerable improvements to their experiences while working from home had an increased degree of control over how they managed their time and greater flexibility when determining their schedules. Flexibility included where, how, and when tasks got accomplished and allowed practitioners to follow their bodies' natural habits for sleep and the ability to work during times of the day best for their body and mind, which had a positive effect on overall health. As one respondent shared: "I am able to work how and when I am most effective without the stifling confines of traditional work environments." Such experiences speak to how aspects of flexibility fed a practitioner's ability to focus and be productive. For example, one participant commented: "Working remotely has therefore allowed me to divide my activities based on the environment in which they can

best be accomplished, and I find I am better able to prioritize what can be worked on each day." Flexible work schedules and arrangements may not be possible for all positions in academic libraries. Some tasks that will not adapt readily to remote work include working with physical materials, staffing public service desks, teaching in-person classes, and supervising employees who want more in-person support, especially new or less experienced employees. Managers should have candid conversations with their employees as part of the hiring and onboarding process so such opportunities become clear and are transparently communicated.

Reducing or eliminating one's commute to campus was a critical aspect of desired flexibility. One respondent reported: "The main benefit is that I saved money on gas and didn't use up free time with the commute." At the time of writing this article, gas prices across the country had risen significantly and heavily impacted the finances of those driving to work. In addition to the financial impact, participants sought to begin and end their day according to their own needs. As one person reflected: "My morning[s] are more relaxed and I'm arriving to my at-home desk more relaxed and ready. Versus sitting down at work a tad frantic after a morning. It sets a better tone for the day." Offering flexible schedules and remote work options, particularly for those in high population density areas would provide an employee benefit that could attract a broader candidate pool and aid in an organization's retention efforts.

Individualized Strategies for Work

As managers discuss desired aspects of flexibility with their employees, they should also be listening to their employees to best understand their needs and the conditions in which they can do their best work. Some practitioners strongly preferred a nearly 100% onsite work schedule, like this participant who explained: "I am able to close my office door, silence my phone, and ignore my email for periods of time." Some needed a physical separation between work and home as this respondent stated: "Home is my refuge and place of rest and relaxation. I don't like mixing the two at all." Others are more easily able to concentrate at home and reported: "I feel like I am able to focus more on the task at hand because I don't have as many 'fires' to put out that come up on daily basis at the library." There can be no single strategy to support employees. Rather, managers must invest the time needed to get to know their employees and to support them as they explore options.

Managers and employees must also acknowledge that some office environments are not conducive to all types of work tasks that practitioners may be charged with. Many participants thrived when working remotely due to a newfound ability to accomplish deep work assignments that required significant concentration and blocks of uninterrupted time. When reflecting on their ability to focus, one practitioner shared: "I love that if I'm working on something very taxing, I simply close my email & Teams so no one can interrupt me. Even when I closed my office door on campus, people would knock and press their faces against the glass in the door to see if I were there." As academic librarians continue to analyze use of physical spaces to best respond to student and faculty needs, they must also consider what kinds of spaces to create for employees to do their best work. Those spaces are likely to look very different than they did pre-pandemic with a design focus on creating intentionality to support collaboration and in-person teamwork.

In addition to working with employees to best meet their needs for both preferred work locations and overall office environments, managers should create work cultures where employees feel empowered to think of work as part of their day that hopefully supports their non-work goals and needs. Physical health and well-being should not need to be sacrificed to meet the demands

of any job. Thinking of and treating their employees as human beings first recognizes that work is but one part of their lives. During the height of the pandemic practitioners found they were able to spend more time on personal care needs, which provided many with a greater feeling of control and improved personal health outcomes. One respondent reported: "After work I am able to do yoga, rest, read or talk with friends. I no longer arrive home at 930 PM as limp as a wet rag." Not all employees will want to incorporate exercise into their workday. A number of respondents indicated that remote work allowed them to manage chronic medical conditions more easily and as one person explained: "I am healthier and have more energy working from home, even while dealing with a chronic condition." Organizations that provide flexible options signal to their employees that they value their personal health; and for those who may be managing chronic conditions or disabilities, such flexibility signals that supervisors recognize the challenges associated with in-person work and therefore are providing structures of support.

Communication and Collaboration

Moving forward, managers and employees will need to carefully consider how modes of communication and opportunities to collaborate shape organizational culture. As managers strive to create flexible schedules and work arrangements for their employees, what impact will those changes have on organizational culture? How will managers allocate their time to best support their employees? Managing hybrid teams requires intentionality and raises a myriad of complications for both employees and managers. Employees quickly pick up on style differences when working such a schedule. For example, one participant commented: "My boss, the library director, is much more attentive to my requests for info and questions about procedures when I am working from home. She is less attentive when we are working in the building because more people are clamoring for her attention." To effectively manage hybrid teams, managers must consider how they allocate their own time and what tools they use to support employees when they work in-person and remotely. Furthermore, managers must consider their own skill development needs to effectively lead a hybrid team. Providing managers with trainings and research about managing hybrid work forces will be critical to an organization's success in the future.

In addition to the importance of maintaining equitable relationships between managers and employees, employees must consider how they will work together and collaborate moving forward. Whereas communication tools were the key hinderance early on in the pandemic, working remotely eventually drew attention to cultural limitations instead, as practitioners got more used to their work arrangements. One participant shared:

> While I can work with the team remotely and get things done, there is an ineffable quality of relationship building that is more difficult remotely and I notice that my work relationships with those whom I might have had casual conversations in halls in passing have not grown like they otherwise might have and the loss is most notable in colleagues who joined us during the pandemic who I have not gotten to meet in person.

It behooves organizations to consider the place of in-person collaboration and connection. Many practitioners thrived while working remotely as they did not engage with colleagues in-person. Others actively sought out opportunities for such connections. Managers must think carefully about what kinds of work and non-work events can or perhaps should take place

in-person, and which can occur in a virtual space. Piloting different approaches for different projects or events will be an important part of creating an overarching strategy.

Maintaining a vibrant and engaged workforce demands that library leaders and managers create structures and systems for thoughtful and transparent communication. During the height of the pandemic, many felt as though management was not doing enough to keep them in the loop of current priorities, projects, and impacts on their work. One practitioner commented: "The communication went from bad to worse. The days I was onsite, I felt out of the loop as decisions were being made on weekdays when I wasn't present. I had to rely on students sometimes to understand the new policies/procedures which was disheartening." However, managers should balance the desire to foster open and frequent communication with clear signals that they respect individuals' boundaries. One respondent reported, "my supervisor considers working from home to mean that I am on call 24 hours every day. Getting them to understand or accept boundaries can be frustrating." As many academic libraries experience a high rate of turn over due to the Great Resignation, managers must be more cognizant than ever for signs of burnout and discontent.[29]

Limitations

The gender breakdown of participants is the principal limitation of this study; 87% of the sample identified as female. Therefore, the analysis and recommendations presented here may not be generalizable to those practitioners who identify as male or gender variant/non-conforming. The authors also acknowledge that they did not collect data on race, ethnicity, sexual orientation, disabilities, or other identity-related categorizations that could have provided further data on the social hierarchies inherent in libraries. The authors did not ask respondents to indicate their position rank or classification, job title, or salary, all of which may impact their remote work experiences and their ongoing interest in such work schedules. The authors suggest that further research be conducted to identify long-term impacts on organizational culture and employee satisfaction for those working hybrid or flexible schedules.

Conclusion

For leaders in academic libraries to chart an effective course going forward, they must bring intentionality to their leadership practice, organization's policies, and expectations in order to keep their employees engaged and to best support them. Managers can face a tough balancing act to satisfy employees and administration and keep a physical building staffed. Whether an employee thrives best in a remote or in-person environment is highly individualized. Specifically, leaders should strive to work with each employee to determine what kind of work experience and environment is best for them, given their personal preferences and their particular role and try to adjust schedules accordingly. Second, leaders must provide employees with flexibility; whether that results in flexible schedules or hybrid work to maintain an engaged and motivated workforce. Finally, and perhaps most importantly, leaders must create systems and structures for clear and frequent communication to foster transparency and collaboration as they work with their staffs to create the kinds of organizational culture that works for everyone and not just those at the top of the organizational hierarchy.

Working remotely during the height of the pandemic and adjusting to new ways of working as libraries reopened and began to assume more in-person operations has impacted all practitioners. Looking ahead, employees and managers alike should leverage these experiences—the good, the bad, and in-between—to establish new norms that prioritizes the needs of individuals and recognizes that work will not and should not look the same as it did in February 2020.

Appendix. Survey Questions

What is the New Normal? Changing Nature of Academic Library Work in a post-COVID World

Start of Block: Block 2

Many, if not most, employees working in academic libraries transitioned to working remotely for the first time in their career in March 2020. Employees have been working remotely within the context of a global pandemic in which many of us juggle childcare, work duties, and possibly family or personal illness, in the midst of economic uncertainty.

If you decide to take part in this study, you will be asked to complete one survey that will take about 15 minutes. This survey seeks to understand what that experience has been like for practitioners. The survey will ask questions about your experiences and/or feelings concerning your experience working remotely. It's estimated that approximately 1,000 practitioners will take part in this study. You will also be given the option at the end of the survey to give your email address if you're interested in participating in future surveys, to be sent out in 3, 6, and 12 months after the first survey period ends. It's anticipated that 1,000 practitioners will take part in this phase of the study.

Some of the survey questions may be upsetting or make you feel uncomfortable. You can skip any of the questions you do not want to answer. All of the information we collect will be stored in a secure manner and only study team members will have access to it. There are no other expected risks. There are also no expected benefits. You will not be paid for participating in this study. There will be no cost to you to participate in this study.

The University of Arkansas makes every effort to keep the information collected from you private. All the information received from you will be kept confidential to the extent allowed by law and University policy, and will be stored on a password protected local (non-networked) hard drive. You will not be identified nor will any information that would make it possible for anyone to identify you be used in any presentation or written reports concerning this project. Only summarized data will be presented in any oral or written reports. Your participation in this study is completely voluntary. You are free not to participate or to withdraw at any time, for whatever reason. No matter what decision you make, there will be no penalty or loss of benefits to which you are otherwise entitled.

The survey will remain open until July 13th. For more information or questions about this research you may contact Lori Birrell at 479-575-8443, lbirrell@uark.edu or Amy Allen at 479-575-6370, ala005@uark.edu. If you have questions or concerns about your rights as a research participant, please contact Ro Windwalker, the IRB Compliance Coordinator at the University of Arkansas, at 479-575-2208 or irb@uark.edu.

By clicking on the red arrow below, you are agreeing to participate in this survey.

End of Block: Block 2

Start of Block: Block 3

At any point between **January 1–February 29, 2020** (pre-COVID-19) did you experience any of the following:

- □ Furloughed
- □ Fired
- □ Laid off
- □ Job reduced
- □ Job eliminated
- □ Received a new job outside of academic libraries
- □ No, I did not have any of the experiences listed above

Skip To: End of Survey If At any point between January 1–February 29, 2020 (pre-COVID-19) did you experience any of the fol… = Furloughed

Skip To: End of Survey If At any point between January 1–February 29, 2020 (pre-COVID-19) did you experience any of the fol… = Fired

Skip To: End of Survey If At any point between January 1–February 29, 2020 (pre-COVID-19) did you experience any of the fol… = Job reduced

Skip To: End of Survey If At any point between January 1–February 29, 2020 (pre-COVID-19) did you experience any of the fol… = Job eliminated

Skip To: End of Survey If At any point between January 1–February 29, 2020 (pre-COVID-19) did you experience any of the fol… = Received a new job outside of academic libraries

End of Block: Block 3

Start of Block: Default Question Block

At any point during the COVID-19 pandemic have you worked remotely?

- □ Yes
- □ No

Skip To: Q24 If At any point during the COVID-19 pandemic have you worked remotely? = Yes

Skip To: End of Survey If At any point during the COVID-19 pandemic have you worked remotely? = No

Are you currently working remotely?

- □ Yes
- □ No

Did your job responsibilities change in any way when you began working remotely?

- □ Yes
- □ Maybe
- □ No

What percentage of tasks in your job description could you accomplish while working remotely?

- □ 0%
- □ 1–20%
- □ 21–40%
- □ 41–60%
- □ 61–80%
- □ 81–100%

Please indicate your overall ability to concentrate on complex tasks.

For this question, complex tasks refer to tasks such as: metadata creation or clean-up, responding to researchers' questions, creating digital content, managing systems, analyzing statistics, budgeting, grant writing, doing research/writing.

	Always	Most of the time	About half the time	Sometimes	Never
When working remotely					
When working onsite					

Please share any additional details to explain your response to the previous question.

_____

_____

Please indicate how well the following statement describes your overall experience: I receive the desired level of support from my supervisor.

For this question, support refers to frequency of communication, responsiveness to communication, and overall feeling of being valued.

	Describes me extremely well	Describes me very well	Describes me moderately well	Describes me slightly well	Does not describe me
Received desired support when working remotely					
Received desired support when working onsite					

Please share any additional details to explain your response to the previous question.

_____

_____

When working onsite, what are the greatest disruptions to your ability to concentrate on projects and goals?

Please rank the responses based on which most impacts your ability to concentrate and do work on a daily basis, with 1 being the most impacted and 8 being the least impacted. To rank your selections, please drag each response into the correct order.

_____ Student employees
_____ Meetings
_____ Colleagues in department/unit
_____ Colleagues outside of department/unit
_____ Interns
_____ Users/patrons
_____ Email
_____ Other

When working onsite, what are the greatest disruptions to your ability to concentrate on projects and goals?

Please rank the responses based on which most impacts your ability to concentrate and do work on a daily basis, with 1 being the most impacted and 8 being the least impacted. To rank your selections, please drag each response into the correct order.

_____ Student employees
_____ Meetings
_____ Colleagues in department/unit
_____ Colleagues outside of department/unit
_____ Interns
_____ Users/patrons
_____ Email
_____ Other

If you responded "Other" in the previous question, please explain below.

_____
_____
_____

Consider your use of sick time while working remotely during this pandemic. Which of the following statements best describes your experience?

- □ I've taken sick time.
- □ I haven't taken sick time.

Skip To: Q42 If Consider your use of sick time while working remotely during this pandemic. Which of the followin… = I've taken sick time.

Skip To: Q43 If Consider your use of sick time while working remotely during this pandemic. Which of the followin… = I haven't taken sick time.

Please select the statement that best describes the reason you've taken sick time.

- □ I've been sick.
- □ I've been caring for someone else.
- □ I've been doing something to prevent health problems.
- □ I've been dealing with a medical issue.

Please select the statement that best describes the reason you haven't taken sick time.

- □ I haven't been sick.
- □ I've been sick, but have been able to work from home even if I'm not feeling well.
- □ Tele-medicine has enabled me to work without taking time.
- □ Routine healthcare appointments have been cancelled/rescheduled.
- □ My day is more flexible; I'm able to compensate for time I need during another part of the day.

Do you find while working remotely, you work:

- □ More hours
- □ About the same
- □ Fewer hours

Please explain your answer.

_____
_____

How does working from home impact your work/life balance? Please explain any benefits below.

_____
_____

How does working from home impact your work/life balance? Please explain any downsides below.

_____
_____

For lifestyle or productivity reasons, would you be interested in working remotely for any part of your work week:

	Definitely yes	Probably yes	Might or might not	Probably not	Definitely not
Within 1 month after the library has reopened?					
Within 2–3 months after the library has reopened?					

Within 4–6 months after the library has reopened?					
Within 1 year after the library has reopened?					
On a permanent basis after the library has reopened?					

In a typical week, how often would you like to have the option of working remotely, for some part of your workday?

- □ Every day
- □ 3–4 times a week
- □ 2–3 times a week
- □ 1–2 times a week
- □ Once a week
- □ Never

Has your library implemented furloughs for any library employees at this time?

- □ Yes
- □ No
- □ Not yet, but there's been discussions

Please share any other comments you have about the ways working remotely enhances your ability to do your work.

_____

_____

Please share any other comments you have about the ways working remotely hinders your ability to do your work.

_____

_____

End of Block: Default Question Block

Start of Block: Block 1

The following are demographic questions: What kind of library do you currently work in?

- □ 4 year, doctoral degree granting university or college
- □ 4 year, masters degree granting university or college
- □ 4 year, bachelor degree granting university or college
- □ 2 year, community or vocational school
- □ Other (please describe below) _____

What area of librarianship do you currently work in? (For this question, we're asking about your primary job duty. Department heads, please indicate the functional area you work in)

- □ Administration
- □ IT
- □ Public Services
- □ Technical Services
- □ Special collections/archives
- □ Other (Please enter your area of librarianship in the text box.) _____

How many years have you worked in the library science profession?

- □ Less than 2 years
- □ 2–5 years
- □ 6–10 years
- □ 11–15 years
- □ 16–20 years
- □ 20+ years

Please select your age range.

- □ 18–24
- □ 25–34
- □ 35–44
- □ 45–54
- □ 55–64
- □ 65–74
- □ 75–84
- □ 85 or older

Please identify your gender.

- □ Male
- □ Female
- □ Gender Variant/Non-Conforming
- □ Other
- □ Prefer not to answer

This survey is part of a longitudinal study. If you would like to participate in subsequent surveys (sent to you 3, 6, and 12 months from now), please enter your email address below. Please note, survey responses will be stored separately and anonymously from your email address.

_____

End of Block: Block 1

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Notes

1. The authors did not ask their participants to specify their work arrangements when responding to study questions. To remain eligible throughout the study, participants had to be working at least some of their time remotely. Since conducting this study, the landscape of work arrangements in academic libraries has changed dramatically. As such, the authors refer to: "remote," flexible," and "hybrid" work arrangements throughout the article to best describe their participants' experiences and when making recommendations for employees and managers about the future of work arrangements.

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24. The survey was posted to the American Library Association's Academic College and Research Library section, the former Library Leadership and Management section (now part of CORE), and the *In the Loop* e-newsletter published by the Society of American Archivists.
25. Due to the longitudinal nature of this study, all participants turned one year older as the survey period continued over the course of the year.
26. For further reading about the use of open coding in qualitative research, please refer to Kathy Charmaz, *Constructing Grounded Theory: A Practical Guide through Qualitative Analysis* (London: Sage, 2006).
27. Please note: only one respondent (0.15%) of the sample selected the response "interns".
28. Please note that the use of the term "special collections" refers to both the areas of special collections and archives.
29. Laura Ewin, "Quitting Time: The Pandemic is Exacerbating Attrition Among Library Workers," *American Libraries*, June 2, 2022, (accessed October 30, 2022): https://americanlibrariesmagazine.org/2022/06/01/quitting-time/.

Academic Librarians' Contribution to Information Literacy Instruction and Learning

Kimberly Mullins and Mary-Kate Boyd-Byrnes

Using data from a learning module embedded in all first-year seminars, researchers found evidence suggesting that librarians are uniquely qualified to deliver information literacy instruction compared to campus faculty. The study analyzes writing assignments from first-year modules taught by either librarians or campus faculty for two academic years. The data indicate that students met the learning objectives more often in modules taught by librarians. The outcome demonstrates the centrality of the librarian's role in information literacy instruction and student learning and helps substantiate the value of academic libraries.

Introduction

In keeping with Ranganathan's theory that the library is a growing organism, library instruction continues to evolve, adjusting to a changing environment that conserves its survival.[1] To that end, there has been a shift from teaching bibliographic sessions about library resources and services to facilitating student learning focused on thinking critically about information and engaging in reasoned processes to evaluate its reliability. Moreover, in response to an era marred by social, political, and economic upheavals, the discipline of information literacy is no longer a library-centric topic but a critical competency that applies to all academic content areas.

Higher education often views academic librarians as subject matter experts within the information literacy landscape. Historically, they have been at the forefront as teachers and curricular consultants who work with campus faculty on all issues related to information literacy.[2] However, despite these endeavors, there appears to be a lack of sufficient research to substantiate the academic librarian's contribution to student learning in the classroom.

The research reported here strongly indicates that librarians are distinctively qualified to deliver information literacy in the classroom compared to other campus faculty. The study is unique because it reports on information that surfaced when working with data from two different cohorts enrolled in the same program over two different academic years. It expands on what is known about librarians leading information literacy instruction.

The study utilizes qualitative assessments, including constructivist grounded theory, to report on information derived from direct measures of student learning from a module em-

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bedded in every section of a required first-year seminar class over two years. The module addresses the importance of evaluating information sources on the Internet and the role fake news plays in the rights of news consumers in a democratic society.

Initially, the researchers focused on assessing whether students met the learning objectives, while remaining open to any other outcomes that surfaced. After a close review of emerging information, the results indicate the librarians' positive impact on student learning when measured against similar instruction delivered by campus faculty. The results contribute to the steadily increasing research on the impact of academic libraries over the past decade and further substantiate the value librarians bring to information literacy instruction and the colleges and universities they serve.

Literature Review

The Value of Academic Libraries

Doomsday discussions about the demise of libraries are nothing new. Over the years, shrinking budgets, evolving technology, and ubiquitous access to information have threatened their existence. While academic libraries assumed protection by the infrastructure of higher education, Sullivan's *Academic Library Autopsy Report: 2050* sardonically projected the bleak mortality of academic libraries.[3] Sullivan's piece triggered alarms, skepticism, and mobilization.

Too often, stakeholders fail to see the merit of academic libraries beyond "underutilized, expensive storehouses."[4] As colleges and universities viewed other academic units as more impactful, they began shifting their resources. As a result, libraries experienced reduced brick-and-mortar real estate, declining budgets, and a shrinking workforce.[5] During this time, the Association of College and Research Libraries' (ACRL) 2010 *Value of Academic Libraries: A Comprehensive Research Review and Report* responded by explaining the plight of academic libraries. *The Value of Academic Libraries* report suggested recovery required libraries to move beyond defending "knowledge for knowledge's sake" and instead prove their value.[6] ACRL, along with accrediting agencies and academic stakeholders, petitioned academic libraries to define their contributions to institutional worth with supporting evidence explicitly linking libraries and librarians to student learning and academic success, as well as to enrollment and retention improvements and graduation rates.

In 2017, ACRL issued the report *Academic Library Impact: Improving Practice and Essential Areas to Research*, addressing the lack of consensus on how academic libraries could best demonstrate their value. The document was the product of an extensive review of the library and information science and higher education literature, focus group interviews with library administrators, and interviews with campus provosts. As a result, *Academic Library Impact* identified six "priority areas" for research and practice, including "quantifying the library's impact on student success" and "enhancing teaching and learning" as two of the "action-oriented" ways that "libraries could increase student learning and success while communicating their value to higher education stakeholders."[7] The report also identified actions for developing programs, collections, and spaces, further specifying that campus provosts expressed particular interest in libraries establishing value through quantification rather than qualification, mission alignment, and strategy.

A subsequent paper by Cheng and Hoffman amplified the range of perspectives represented in the *Academic Library Impact* report. Their study involved practicing academic librarians, researchers, administrators, and others, investigating the library's impact on student

success. It found that the librarian's views differed vastly from those of library administrators and provosts. Remarking that professional librarians valued "practical, action-oriented results" over a desire to "quantitatively communicate value" to external audiences, Cheng and Hoffman also felt that library deans and provosts were data-driven and less receptive to qualitative inquiries on the library's impact and the significance of associated research to prove value and persuade campus administrators on a myriad of issues, including budgeting.[8]

Doucette performed a content analysis of 2006–2014 library papers on assessment, published as part of the biennial Library Assessment Conference proceedings. This work sought to uncover the factors influencing the push for library assessment and identify which stakeholders values these assessments represented.[9] Doucette analyzed 39 assessment papers noting that 92 percent of these studies contained at least one motivation for improving the library.[10] In contrast, 46 percent of these papers identified that they were explicitly driven by requirements to strategically prove or demonstrate value by justifying, establishing, or illustrating something to higher-level stakeholders.[11]

Taken altogether, the *Academic Library Impact* report, Cheng and Hoffman, and Doucette's work emphasize that tensions exist when library values are juxtaposed with institutional aims and where the inquiry rests on 'proving' rather than 'improving.' Additionally, these papers reveal that libraries and librarians have difficulty adopting business-driven practices in a service-based, not-for-profit environment. Understanding the motivation behind the need to link academic libraries with student learning is essential because provosts and other upper-level administrators make the critical financial decisions that affect library operations.

Demonstrating value and contributing to student success is increasingly essential for academic libraries. They are now required to participate in the push to provide quantitative evidence on their role in student learning and success. Moreover, establishing a library's influence on learning gives the library an edge in institutional decision-making, particularly when vying for resources, personnel, and funding.

As early as 2007, Lynch et al. reported that the library had been displaced in its symbolic role as the "heart of an academic institution."[12] The authors found that university leaders were less inclined to reduce library budgets when library administrators employed strategies that connected the "functional role of the library in service to the university's [values and] mission," observing that this was the information they were looking for to provide ongoing levels of budgetary support.[13] Then, some ten years later, Murray and Ireland's 2018 study surveyed provosts and chief academic officers about their perceptions of academic libraries and value. Their findings echoed much of Lynch et al.'s earlier work. They reported that 72 percent of their respondents looked favorably on continuing library budgetary support when accompanied by data that demonstrated correlations linking the use of library resources and services with student academic success.[14] The research reported here confirms one of the primary ways librarians can quantitatively communicate value to the institutions they serve is by documenting how information literacy instruction and other collaborative work impact student success and learning.

Academic libraries continue to build evidence correlating information literacy instruction to student research and learning.[15] Much of the literature suggests a relationship between library instruction and student success indicators, such as GPA, retention, and campus course grade.[16] While formal assessments of information literacy learning objectives are crucial, student success measures are a starting point for proving the value of information literacy instruc-

tion. One study found a statistically significant increase in GPA among graduating students who took library classes (n = 1,265) over students who received no library instruction (n = 115).[17] Often, research focuses on collaborations between libraries and first-year programs as a means to instill early opportunities for impacting student success.[18] However, more studies indicate that a scaffolded approach to increasingly difficult information literacy instruction throughout students' academic careers significantly impacts learning and success.[19]

Constructivist Grounded Theory

The current study employs a constructivist grounded theory approach, described by its originator, Charmaz, as a more "contemporary version" of Glaser and Strauss's initial grounded theory work.[20] The researchers employed this theory because it more closely aligns with their philosophical views that one cannot escape prior knowledge and that one should examine and understand how this knowledge might influence their perspectives. In agreement with Charmaz, the constructivist version also "fosters asking probing questions about the data and scrutinizing the researcher and the research process."[21]

Grounded theory seeks to develop principles grounded in data rather than hypotheses. Established in 1967 by Glaser and Strauss, it has become a well-known method of inquiry in social research. Grounded theory is an inductive research methodology that bridges the gap between research and theory development by "discovering theory from data that has been systematically obtained."[22] However, grounded theory has evolved and now includes several distinct "genres" from within the larger framework.[23]

Charmaz further states that constructivist grounded theory allows one to position theory based on "historical, social, and situational conditions."[24] Such is the case in this current initiative, where the researchers wanted to understand disproportions to various outcomes associated with administering these modules. Consequently, the constructivist grounded theory lends visibility and gives voice to data that may otherwise have gone undetected. The approach provides opportunities for learning, which would expand efforts on how best to support the information literacy needs of students enrolled in the First-Year Seminar program, given the specific circumstances. Priya submitted in 2016 that constructivist grounded theory is instrumental in building middle-range theories, or those that help people describe, understand, and construct meaning from problems or phenomena that occur in everyday practice[25]—very much like those experienced here in the first-year seminar modules.

Background

In 2016, the director of first-year seminars at a private university in New York State asked librarians to replace a standardized information literacy exam with a one-session learning module embedded in all first-year seminar classes. The director requested that the learning module provide an information literacy foundation by incorporating the first-year seminar reading chosen annually for all incoming classes. While the intention was to have librarians teach the information literacy module, first-year seminar instructors representing campus faculty had the academic freedom to teach the information literacy module personally.

An instructional design librarian (IDL) worked with other librarians to create the information literacy module that evaluated resources in the context of fake news related to the themes of the first-year reading. In general, the module's purpose was to teach students who "remain unprepared to navigate the digital landscape"[26] to distinguish between alternative facts and

legitimate online information sources. The librarians also hoped that this essential aspect of information literacy would become a foundational springboard for future collaborations with faculty in subsequent academic years.

The IDL designed the one-shot module using a flipped-classroom approach requiring students to interact with materials before attending an in-person class session. The librarians believed that this pedagogical method led to more efficient use of class time during the quintessential one-shot library class.[27] The learning management system (LMS) embedded the module's materials including activities, readings, videos, and assignments, within the forty-five sections of first-year seminar course.

During the in-person class session, the students worked in small groups to assess the validity of online news and information sources centered on the first-year reading themes. After the activity, the groups shared their findings with the class. The instructor's role, whether it was campus faculty or a librarian, was to guide and amplify this discussion to reinforce best practices for managing fake news within the context of the assignment's objectives. After the session, the course's first-year instructor was expected to assign the following short reflective writing assignment graded on a pass/fail basis:

- What best practices and media literacy tools do you plan to use when consuming news and Internet information?
- What issues concern you the most moving forward as a news consumer with the right to be informed of the truth?

Data about learning outcomes was collected for 2017 and 2019. The instructional module for both years was identical except for framing the assignments around the different first-year seminar readings and the role academic librarians played in its implementation. In 2017, librarians offered to teach the in-person class at the instructor's request and provide any additional support. As a result, librarians taught 84 percent of the fake news modules in first-year seminar classes. The library also facilitated teach-the-teacher instruction and a lesson plan outlining the best pedagogical approaches to teaching the module. By 2019, the departure of seven full-time librarians due to attrition made it impossible to provide the same level of support. However, the library did offer limited assistance when it was available. Librarians were not tapped to deliver any information literacy modules or provide teach-the-teacher instruction to first-year instructors delivering the module in 2019.

Methodology

Overview

The study involved analyzing reflective writing assignments related to a fake news module. While the assessment focused on whether the students met the learning objectives, the researchers were open to what other information might be unearthed. In this type of inductive approach, the investigators do not seek to prove any hypothesis when analyzing the data but instead let concepts and patterns emerge from the data itself. As the analysis progressed, the researchers constructed tentative ideas about the data. They contextualized them further by looking at the data's properties, such as the year, the instructor's qualifications, library involvement, and the reading choice. In the context of this study, assigned reflective writing scores representing how well students met the objectives were mapped to whether a librarian or other faculty taught the module. The data suggest a relationship between the improved student learning and instruction taught by librarians versus other instructors.

Data collection and analysis occurred from spring 2019 to winter 2020. To ensure the manageable size of the writing samples, the researchers randomly chose one writing sample per class for 2017 (n = 31) and 2019 (n = 28). To note, writing samples were unavailable for analysis from 16 percent of the 2017 sections and 30 percent of the 2019 sections due to either not being assigned by the first-year instructor or not electronically submitted via the LMS. In addition, the sample size proved large enough to reach data saturation as no new data emerged to warrant additional thematic codes during the analysis. The investigators randomly assigned alphanumeric labels to each sample to ensure a blind review and separately recorded the label, year, section, and module's instructor in a spreadsheet for future reference.

In general, the analysis included 1) an initial coding phase of deconstructing and coding the written samples, 2) a focused coding phase of inductively organizing the codes into themes as they relate to the objectives, 3) an objective assessment phase of revisiting and scoring each sample using a rubric representing how well the student responses met the module's learning objectives, and 4) comparing the objective scores to whether a librarian or other instructor taught the module. Throughout the initial and focused coding phases, the IDL applied Charmaz's grounded theory phases described below in more detail. The analysis was iterative within and among the phases; when new information emerged during coding and categorizing, the investigator revisited, reviewed, and revised previous codes and themes.

The researchers decided that as the course developer, the IDL was best suited to analyze and rate the students' written responses. They used this approach because they believed the IDL's intimacy with the content would elicit greater insight into the open-ended writing prompts. Glaser refers to this tactic as furthering "theoretical sensitivity,"[28] because it brings "analytic precision to the work."[29] This study also used an analytic rubric and Cronbach's alpha to measure a single observer's reliability.

Initial Coding Phase

The initial coding phase aimed to deconstruct student responses into distinct descriptions to dig deeper into their meaning. During this phase, the IDL read each response line-by-line and assigned short descriptions in the form of actions using gerunds, not topics. This tactic allowed movement through the data to answer the question, "What is the student trying to communicate here?" The answer was applied in conjunction with the iterative process of reviewing prior codes as new data and patterns emerge. Coordinating these strategies ensured that the coding remained organic and unforced. Examples of initial codes during this phase included "verifying information using a secondary source," "using skepticism when reading news," "believing that news media greatly affects personal ideals," and "recognizing the right to be informed with the truth."

Focused Coding Phase

Focused coding further defined emerging themes and subthemes from the initial coding. This is where the information is organized into logical buckets—with some buckets fractured further into more nuanced subcategories that ensure greater consistency among the codes. For instance, the theme "trustworthy/authoritative sources" contained subthemes naming specific sources students identified as trustworthy (e.g., CNN, research databases, Google Scholar, peer-review journals). Next, the themes were organized according to the module's learning objectives to form a codebook (Appendix A). Finally, the IDL used the codebook to re-analyze the samples and assign the objectives and themes to the written content (Appendix B).

Objective Assessment Phase

Because writing assessments are subjective and more prone to reliability issues, the researchers developed an analytical rubric to assess the samples according to the learning objectives because "any assessment without a scale is based on subjective judgments and general impressions."[30] Educators and researchers commonly accept that rubrics add to the consistency of single raters.[31]

The rubric explicitly defined the criteria for assessing how well the writing sample met the module's learning objectives:

> Objective One: Discuss objectivity, fairness, and balance in the context of fake news, disinformation, and misinformation.
>
> Objective Two: Identify personal concerns as news consumers with the right to be informed.
>
> Objective Three: Define the best practices and tools for evaluating news and information.

The ratings included proficient (3 pts), emerging (2 pts), beginning (1 pt), and not met (0 pts) (Appendix C). Before applying the rubric, the researchers agreed on how to apply the categories, then scored the same set of writings and discussed the outcome of these scores until they reached a consensus. The IDL used the consensus as a framework to score each writing sample.

Intra-rater Reliability

This study verified intra-rater reliability using Cronbach's alpha as a measure of internal consistency, that is, how closely the single rater re-assessed the same writing samples. Measuring alpha, technically not a statistical test but a coefficient of reliability, was vital because it evaluated the accuracy of the interpretation of the writing samples by the IDL.[32]

While intra-rater reliability is reported most in the medical literature, it is seldom reported in social sciences or educational research despite its importance.[33] Ideally, intra-rater reliability is estimated by having the rater read and evaluate each paper more than once. In practice, this approach is infrequently used due to time factors and because two readings of the same essay by the same rater are not considered genuinely independent.[34]

To measure alpha, the researchers randomly selected ten writing samples, assigned new identification numbers, and mixed them into the existing data. The rater blindly assessed the samples a second time using all analysis phases—coding the responses, mapping the course objectives, and scoring the samples according to the rubric. Next, SPSS was used to calculate the internal consistency of the rubric scores assigned to identical writing samples. Consistency measures of 0.70 or greater are deemed acceptable in the literature.[35] This study showed acceptable levels of consistency with alpha reliability coefficients ranging from .853 to .942 (table 1).

TABLE 1
Consistency Measures

Objective	Cronbach's alpha (n = 10)
1	.853
2	.875
3	.942

Comparing Objective Ratings to Instructor

During this phase, researchers investigated whether the student writing samples met the module's objectives when taught by a librarian versus campus faculty. This was done in two steps. First, they recorded each student's objective ratings of *not met (0)*, *beginning (1)*, *emerging (2)*, or *proficient (3)* and whether a librarian taught the module (Appendix D). Next, the researchers calculated the rating percentage for each objective according to whether the module was librarian-taught versus campus faculty-taught (Appendix E).

Results

For objective one, about 29 percent of the writing samples from librarian-taught modules received ratings of *emerging (2)* or *proficient (3)*, and 7 percent of the writing samples from campus faculty-taught modules received the same ratings. In addition, about 71 percent of the writing samples from librarian-taught modules received ratings of *not met (0)* or *beginning (1)*, and 93 percent of the writing samples from campus faculty-taught modules received the same rating.

Regarding objective two, approximately 51 percent of the writing samples from librarian-taught modules received a rating of *emerging (2)* or *proficient (3),* and 18 percent of the writing samples from campus faculty-taught modules received a similar rating. About 48 percent of the writing samples from librarian-taught modules received a rating of *not met (0)* or *beginning (1)*, whereas 82 percent of the writing samples from campus faculty-taught modules received the same rating.

For objective three, roughly 80 percent of the writing samples from librarian-taught modules received a rating of *emerging (2)* or *proficient (3)*, and 43 percent of the writing samples from campus faculty-taught modules received the same rating. Also, about 19 percent of the writing samples from librarian-taught modules received a rating of *not met (0)* or *beginning (1)*, whereas 57 percent of the writing samples from campus faculty-taught modules were rated the same.

Finally, the cumulative calculations for all three objectives showed that 53 percent of the writing samples from librarian-taught modules received a rating of *emerging (2)* or *proficient (3)*, and 23 percent of the writing samples from campus faculty-taught modules were rated the same. Also, about 46 percent of the writing samples from librarian-taught modules received an overall rating of *not met (0)* or *beginning (1)*, whereas 77 percent of the writing samples from campus faculty modules received the same rating. The results indicate that 30 percent more reflective writing samples taught by librarians received an overall rating of *emerging* or *proficient*. In addition, 31 percent more samples from modules taught by campus faculty received an overall rating of *not met* or *beginning*.

Discussion

The data shows a causal relationship between information literacy modules taught by librarians and improved student learning. That said, a discussion of the factors that may have affected student learning outcomes other than the instructor's knowledge or background provides essential insight.

The module's content was consistent across the years and sections. The flipped-class approach helped level the knowledge playing field before students participated in the class activities. During class, students accessed almost identical content and assignments. The minor

difference between the two years was that the class examples aligned with the first-year reading titles chosen for each year. In addition, all instructors used the same content to teach the module as prescribed by the IDL. Finally, the reflective assignments were essentially identical.

There are variables between the modules to consider. A notable difference was the involvement of the library and librarians in 2017 and 2019. In 2017, librarians played a significant role in the module's implementation, delivered the majority of instruction, and provided training to faculty instructors who chose to deliver the module independently. Whereas in 2019, the library was not involved. Not coincidentally, the LMS statistics from 2019 also reflected a decrease in student engagement with the materials and assignments. The decline in engagement may also have affected the learning outcomes.

Limitations

Unaddressed contributing factors may also affect the differences between student performance in 2017 and 2019. First, the researchers speculate that the content of each first-year reading may affect student engagement and perspective on evaluating sources and recognizing fake news. Classroom instructors' anecdotal feedback indicated that students seemed more motivated to learn about the 2017 first-year reading because of numerous campus events, including the author's visit, than the 2019 novel, which had no associated events. A second potential factor could be the cognitive capabilities of the students themselves. As the institution's recruitment and enrollment were relatively stable during this period, it is unlikely a contributing factor. It is also essential to recognize that the data reflects a sample of student work, and there must be caution when generalizing the results across the larger population. Finally, the instructors administering the course could also potentially affect outcomes. There were some differences in who taught the course; however, most instructors remained the same.

Conclusions

Academic librarianship is changing. Higher education is increasingly asking libraries to prove their value. Librarians are increasingly playing a more significant role in facilitating student learning, particularly in evaluating resources. However, measuring and assessing the outcome of this work continues to be the Achilles heel within this discipline. This insufficiency is often the most significant reason teaching librarians and library faculty cannot quantitatively demonstrate their significance in student learning.

This study used data from a learning module embedded in a required first-year seminar to posit that librarians are uniquely qualified to deliver information literacy in classroom settings compared to other campus faculty. The analysis of student written work demonstrated that learning improved when librarians taught information literacy classes. While a causal relationship is inferred, the reasoning substantiates academic librarians' role in student performance. Future research should, and must, find ways to explicitly link libraries to student learning and academic success.

A vital lesson learned from this project was the importance of gaining campus faculty buy-in when implementing a large-scale library instruction module. While most first-year instructors understood the value of information literacy instruction early in students' academic careers, some campus faculty viewed the module as "extra work." Faculty who supported information literacy in informal follow-up discussions had more students complete the pre- and post-class assignments. Conversely, a few campus faculty members who stated that the

library module was too work-intensive for a first-year seminar class chose not to assign the pre-class work. As a result, the librarians who taught the module's in-class portions indicated that they could not complete the instruction because of the time dedicated to bringing students "up to speed."

Librarians reflected on ways to promote the value of information literacy instruction to campus faculty. One librarian suggested explaining how to explicitly build upon and scaffold the module into other classes. Another suggested discussing how librarians can support campus faculty, already burdened by classroom demands, in future information literacy endeavors. Finally, all librarians agreed that they must remind faculty that information literacy is not just a "library" topic but manifests itself in all content disciplines and is critical to lifelong learning.

The strategies used here should be a call to other librarians to develop ways to meaningfully and measurably position and advocate for themselves within their universities. Using their institution's LMS as a frame for devising content, modules, and other learning objects that include opportunities for authentic assessment will take ingenuity and planning but will almost certainly help garner quantitative mechanisms to document their worth according to administrative standards. Such validation is crucial to offset Sullivan's doomsday predictions of libraries' demise, particularly in the higher education landscape.[36]

Appendix A. Sample Codebook

Objective 3: Define the best practices and tools for evaluating news and information.	
Theme	**Subtheme**
Corroboration	finds two or more agreeing sources, lateral reading, using reliable/primary sources, lateral reading
Trustworthy/authoritative sources	uses journals, science, mainstream news sources, avoids unknown/uncredible sites
Sourcing	checks links, verifies original sources
Sniff Test	sounds too good to be true, why do I want it to be true,
Reliable URLs	.org, .edu, .com, .gov, other
Grammar/spelling/punctuation	all caps, misspellings, poor grammar
Mechanical errors	dead links, site not loading
Clickbait	ads, selling something, persuasion
Author credibility	background check,
Verify images	Google image search, Tineye

Appendix B. Sample Initial and Focused Coding

Student Writing Sample	Initial Coding	Focused Coding
In order to be sure that the content that I read on the Internet is reliable there are multiple precautions I can choose to take. The first step I can take is to research the author and the article to see whether or not the author himself has a credible knowledge base on whatever subject it is that I am researching. Secondly, I would look through the authors cited works to make sure that he or she is using sources that are credible and up to date. If the sources are not up to date or if the article itself is not up to date the article and\or sources may have information that has since been proven to be false. Finally, I can look for skewed information within the article I am reading that the author may have used to sway to readers to think a certain way that is bias and opinionated rather than factual. My main concern in regards to being a news consumer is that it is especially evident today that authors journalist etc… often put their own opinions into their writing. This makes it difficult to find information that is credible and without bias. Society as a whole is negatively impacted by this because not only is there many examples of bias in news and reporting but the topics that are reported in a bias way are often topics that need facts and honest reporting the most. This also makes it especially hard for individuals to make their own conclusions and educate themselves on particular topics. In today's society, it is essential that individuals have access to non-bias information so that they may create their own their own ideas without them being disrupted by the bias of another individual.	Researching the author to verify they have credible knowledge on a subject. Looking at authors' cited works to be sure they are credible and up to date. Recognizing that if sources are not up to date that current information may discredit the sources. Looking for skewed information that may sway readers toward bias and opinionated rather than factual information. Worrying that as a news consumer authors and journalists often include personal opinions in their writing. Making it difficult to find credible information. Identifying the negative impact bias news reporting has on society because such topics need facts and honest reporting. Referencing the difficulties individuals have in drawing conclusions and educating themselves on topics. Stating that it is essential for individuals to access unbiased information so they can create their own opinions.	**Obj1: Discuss objectivity, fairness, and balance** Biases/subjective reporting Education and awareness are important to inform public **Obj2: Identify personal concerns** Expresses personal concern **Obj3: Define the best practices and tools** Author credibility Currency Looks for bias Seek facts/stats over opinions

Appendix C. Rubric

Objective Criteria	Proficient (3)	Emerging (2)	Beginning (1)	Not Met (0)
Obj1: Discuss objectivity, fairness, and balance in the context of fake news, disinformation, and misinformation. The argument should include obstacles such as the spreadability of content for own purpose, bias reporting through agenda setting, monetary incentives through clickbait and advertisements, news algorithms, drawing readership through slander, sensationalism, and rush to report, and the public's lack of awareness and education on the subject. The discussion should reflect the importance of verifying information, neutral and unbiased reporting, and freedom of speech.	The response reflects a sophisticated, analytical understanding of what impedes and promotes objective, fair, and balanced news and information. The discussion includes clear and varied examples and evidence, as well as the importance of objective, fair, and balanced news and information.	The response reflects an adequate analytical understanding of what impedes and promotes objective, fair, and balanced news and information. The discussion includes some examples and evidence regarding the importance of objective, fair, and balanced news and information.	The response reflects a minimally adequate analytical understanding of what impedes and promotes objective, fair, and balanced news and information. The discussion includes few examples and lacks insight and a high level of sophistication regarding the importance of objective, fair, and balanced news and information.	The response fails to recognize the obstacles to objective, fair, balanced news and information. The discussion is unsupported by examples or evidence, nor does it reflect the importance of objective, fair, and balanced news and information.

Obj2: Identify personal concerns The argument should reflect personal awareness and concerns about how fake news affects the self or individuals and the importance of questioning or validating information we use in our daily lives. The discussion should reflect the negative repercussions fake news may have on one's personal (deciding where to live, who to vote for, reputation among friends and family), academic (disseminating misinformation as fact), or professional lives (career choices, professional standing, or performance).	The response reflects a sophisticated, analytical awareness of how fake news affects the self or individuals. The response also includes a discussion about the importance of validating information. The discussion includes clear examples of how fake news may negatively affect one's personal, academic, or professional lives.	The response reflects an adequate analytical awareness of how fake news affects the self or individuals and the importance of validating information. The discussion includes some examples and critical regarding how fake news may negatively affect one's personal, academic, or professional lives.	The response reflects a minimally adequate analytical awareness of how fake news affects the self or individuals and the importance of validating information. The discussion includes few examples and lacks insight into how fake news may negatively affect one's personal, academic, or professional lives.	The response fails to recognize how fake news affects the self or individuals and the importance of validating information. The discussion is unsupported by examples or evidence nor reflects how fake news may negatively affect one's personal, academic, or professional lives.

Obj3: Define the best practices and tools. The response focuses on the specific ways in which students will verify information going forward. The discussion may include the following practices and tools: 1) Performing lateral reading using fact-checking sites (i.e., factcheck.org), corroboration using authoritative resources (peer-review journals, mainstream news outlets, science-based resources), "going upstream" by verifying the original source where the data or information originated, verifying the credibility of the author/ organization, images or graphics (i.e., Tineye, Google reverse image search). 2) Attending to elements internal to the information source, including the URL, mechanical errors/functional links, about/contact/author sections, monetary incentives such as clickbait/ads, trigger words (rumor, donate), site purpose (entertain, persuade, sell, inform), close reading for bias or agendas 3) Applying general approaches including using intuition or applying the "sniff test" (if it sounds too good to be true, then it probably is), becoming knowledgeable on a subject before reading (such as gathering background information of seeking multiple viewpoints), and recognizing personal beliefs/bias/ motivations.	The response includes clear and varied best practices (5+) for verifying information (i.e., lateral reading, internal elements, general approaches) The discussion includes examples of specific tools (i.e., Tineye).	The response includes adequate best practices (3–4) for verifying information. The discussion may include examples of specific tools (i.e., Tineye).	The response includes minimally adequate best practices (1–2) for verifying information. The discussion may include examples of specific tools (i.e., Tineye).	The response lacks best practices for verifying information or examples of specific tools (i.e., Tineye).

Appendix D. Objective Ratings and Instructor Per Student (Sample)*

Student Identifier	OBJ 1 Rating	OBJ 2 Rating	OBJ 3 Rating	Librarian-taught Module? (Y/N)
a38	2	3	2	N
b42	1	2	2	N
c37	1	2	2	Y
d34	1	1	1	N
e35	0	1	0	N
e47	1	1	1	N
f38	0	1	1	N
f45	1	1	1	N
g39	1	1	3	N
g44	0	1	0	N
j33	0	0	0	N
j37	1	1	2	N
k33	1	1	3	N
k35	1	2	2	Y
k39	0	1	1	N
k47	1	2	3	Y
l35	1	1	3	N
l46	1	1	2	Y
m40	1	3	3	Y
m44	2	1	0	Y
m45	0	0	1	N
n44	1	1	3	Y
n45	3	2	3	Y
o35	1	1	3	N
o44	2	2	2	Y
p37	0	0	1	Y
p39	1	1	1	N

**ratings = not met (0), beginning (1), emerging (2), or proficient (3)*

Appendix E. Overall Objective Percentage Ratings by Instructor Type

OBJECTIVE 1		
Rating Scale	**Module Taught by Librarian**	**Module Taught by Campus Faculty**
not met (0)	9.67%	32.14%
beginning (1)	61.29%	60.71%
emerging (2)	16.13%	7.14%
proficient (3)	12.90%	0%
OBJECTIVE 2		
Rating Scale	**Module Taught by Librarian**	**Module Taught by Campus Faculty**
not met (0)	3.22%	14.28%
beginning (1)	45.16%	67.85%
emerging (2)	38.70%	14.28%
proficient (3)	12.90%	3.57%
OBJECTIVE 3		
Rating Scale	**% Module Taught by Librarian**	**Module Taught by Campus Faculty**
not met (0)	6.45%	14.28%
beginning (1)	12.90%	42.85%
emerging (2)	32.25%	21.42%
proficient (3)	48.38%	21.42%

OVERALL FOR ALL OBJECTIVES (1, 2, 3)		
Rating Scale	**% Module Taught by Librarian**	**Module Taught by Campus Faculty**
not met (0)	6.45%	14.28%
beginning (1)	12.90%	42.85%
emerging (2)	32.25%	21.42%
proficient (3)	48.38%	21.42%

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Faculty Publication Patterns over 25 Years at a Large Public University: Correlations with Literature Use

Sandra L. De Groote, Jung Mi Scoulas, Paula R. Dempsey, and Felicia Barrett

As libraries succeed in making journal literature seamlessly available through internet searches, faculty may be less aware of the library's role in their intellectual output. This research project explores how publication patterns of faculty at a public research university changed over time in relation to collection size, literature use, productivity, co-authorship, grant funding, and faculty demographics. Correlations among data points demonstrate how the availability and use of the literature is associated with faculty productivity. Use of the literature varies by discipline, co-authorship, and grant funding.

Introduction

The University Library at the University of Illinois Chicago (UIC), like all academic libraries, develops collections to enable teaching, learning, and research. Because we are accountable to our users and want to ensure that our investment in resources is utilized, we sought evidence that the resources provided by the library for research purposes demonstrate use and have an impact in terms of productivity and impact. As noted in the Association of Research Libraries (ARL) Research Library Impact Framework, it is important to explore how the library may influence the lifecycle of research and scholarship by exploring how it enables, fosters, and promotes relevant and unique research, increases productivity, and enables research collaborations.[1] Academic libraries are often challenged to demonstrate the need for greater funding for resources, particularly when universities are facing budget challenges. The challenges are compounded because library impact on faculty research productivity and impact often cannot be directly measured. Online databases and journals dominate the information landscape of most disciplines, and yet there are no recent in-depth studies exploring the impact or use

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of these online journals in faculty publications. This research seeks to demonstrate how the availability and use of literature influences faculty productivity.

Literature Review

The early 2000s saw a major shift in the journal collections of academic libraries. Libraries gained access to greater numbers of journals through "Big Deal" journal licenses.[2] In addition to the increase in journals available to researchers, the method of accessing journals was transforming. No longer did users have to enter the physical library to access journals, but instead they could do so remotely online in their home or office. The availability of online journals in turn reduced the use of the print collections. In one study examining the use of references in health sciences faculty journal articles, the use of journals only available in print decreased in several disciplines (dentistry and nursing), while the use of journals available in an online format increased.[3] Eventually, libraries began to reduce the print journal collections in favor of online journal collections.[4]

In addition to the online journals, the number of indexing and abstracting tools available remotely was also increasing. As databases and journals moved online, the number of references included in journal articles increased.[5] Through interviews with faculty, a study by Martin Brennan, et al. reported that online journals and databases have allowed faculty easier access to the literature and a greater number of articles.[6]

Relationships between the behaviors of researchers and library use have also been reported. Carol Tenopir, et al., asked faculty to recall how many scholarly articles they had read in the past 30 days and the sources of the articles they read. Faculty members in research-oriented positions reported reading articles more for research purposes (62%) compared to teaching-oriented faculty (49%).[7] Faculty members engaged in research also reported a greater amount of their reading materials (58%) were from the library compared to teaching-oriented faculty (38%). In a survey of health sciences faculty, 91 percent reported their primary reason for searching for articles was for research purposes, followed by keeping current (63.8%), preparing instruction (57.7%), and caring for patients (37.2%).[8] In a later study by Tenopir, et al., most articles read were from online journals, which were primarily accessed through library or departmental descriptions.[9] A 2019 study found researchers read about 20 articles a month, primarily related to research purposes.[10]

Libraries have also attempted to demonstrate the impact of the library on research. In 1981, J. Phillipe Rushton and Sari Meltzer found a positive correlation between the number of current journal subscriptions (among other variables) and total publications, and concluded that revenue was the primary factor that could predict the result of other examined variables, including productivity.[11] More than 30 years later, Michael Rawls used ARL library expenditure data and other metrics including faculty publications and research expenditures to conclude that research productivity was positively correlated with electronic library resource expenditures.[12] A more recent study compared ARL expenditures data, grant expenditures, and faculty articles in journal publications.[13] The authors found a correlation between the number of research publications produced at an institution and library expenditures, collection size, and the use of collections including full-text article requests and total number of references included in articles. This study also found a weak but negative correlation between the number of publications at an institution and the number of references included in the publications, suggesting the more articles published, the fewer references that were included in publications.

As the above literature demonstrates, multiple changes have impacted researchers and the academic library. Changes include increased journal holdings, move to online journals and online databases, increased numbers of databases, access to free databases, remote access to information once only accessible within the library, and computer technology. While the number of journals available to researchers through the libraries increased over the years, so did the ease at which articles could be accessed remotely online. The causal logic connecting availability of resources and their use in research and scholarship also leaves room for additional variables that are not accounted for, which may result in a hidden effect on those relationships. It is likely that several of these changes influenced use of the literature and faculty productivity. While it may not be possible to identify or control for all these potential variables, previous studies have shown that several additional variables are known to influence faculty productivity, including grant funding and co-authorship.

Many grant recipients disseminate research findings and knowledge gained through publications.[14] Most of the studies found in the literature found a positive relationship between grant funding and faculty productivity of scholarly articles. Ashkan Ebadi and Andrea Schiffauerova "confirmed the significant positive impact of funding on the productivity of the researchers."[15] Several other studies also found a positive relationship.[16] Not all evidence suggests that grant funding increases the amount of productivity. Brian Jacob and Lars Lefgren found that receipt of a standard NIH grant has "at most a relatively small effect on the number of publications and citations of the marginal applicants."[17] Studies have also observed that co-authorship is also associated with greater productivity.[18]

Ascertaining the contribution of library collections to intellectual life on campus is crucial for assuring continued funding. Yet no recent study has examined in depth the connection between the availability of online journals and online databases and its influence on literature use (measured by references in publications) and faculty productivity (measured by published articles), and no study has taken a long-term perspective since the dawn of online journals through to the present. This study fills the gap with a 25-year data set from a research university addressing the following research questions:

- In what ways do faculty publication patterns change as library collections change over time?
- To what degree do faculty publication patterns differ by discipline?
- To what degree do faculty publication patterns differ by rank?
- Are there correlations among faculty's literature use and their productivity?
- In what ways do patterns of faculty productivity vary over time?
- In what ways does faculty's use of literature in publications vary over time?
- What other variables (e.g., faculty's demographics, co-authorship, and grant funding) influence faculty productivity?

Methods and Data

Setting

This exploratory study examined factors affecting publication patterns of faculty at a public research university over 25 years. The University of Illinois Chicago is a large urban Research 1 institution with regional health sciences campuses in Peoria, Rockford, and Urbana. The University Library consists of a multi-disciplinary library and a health sciences library in Chicago, and several regional health sciences libraries. During the time period of this study (1995–2019), a smaller science library located on the main campus closed. Between 1995 and 1999 (prior to

the library's licensing of online journals), the UIC Library had approximately 15,948 active print journal subscriptions (all locations). In the late 1990s, the library began to license online journals, starting with a package of 15 biomedical journals in 1998.[19] In 1999, there were 204 online journals and by 2000, the library had more than 3,000 online journals. By 2008, close to 25,000 online journals were available remotely through the UIC library through big deals and as part of licensed databases offering full-text. This means at least 9,000 journals not previously in the collection had become available for UIC students and faculty through online journals. In addition to this, to increase space for users in the library and because the separate science library had been closed, the back files of many journal subscriptions were also licensed or purchased, facilitating online access to older material that had previously only been available in print through the UIC library.

At the time that access to online journals was increasing at UIC, the number of databases was also increasing, which made identifying articles to read and include in publications easier to find, compared to relying on print indexes and abstracts or electronic database that could only be accessed at the physical library.[20] In some cases, the databases also contained the full-text of journal articles, making discovery and access even easier. Databases such as MEDLINE became publicly available through Internet Grateful Med in 1996 and PubMed in 1998, and new multi-disciplinary databases also emerged such as the freely available Google Scholar (2004) and the subscription-based Scopus (available 2004; licensed by UIC in 2012). In addition, open access journals began their launch, which made these scholarly articles available for free to all who had access to the Internet.

Data Collection

To explore the impact of library collections and additional online resources on faculty literature use and productivity, the following information was captured: collection size (measured by journal holdings), literature use (measured by number of references in the publications), grant funding (measured by whether the article was funded), co-authorship size (measured by number of co-authors), faculty productivity (measured by number of publications per faculty member), and faculty demographics (e.g., status and years at the institution). Retrospective journal publication data was collected to determine how publication patterns of faculty have changed over time, as access to journal articles and databases increased. Table 1 provides further details on the study variables, indicators (how variables were measured), and source of the data.

TABLE 1
Study Variables, Indicators, and Data Source

Variables	Indicators	Data Source
Collection size	• Number of journals available to faculty, reported in 5-year time periods	• ARL statistics • Internal collections data
All variables at the author level		
Literature Use	• Number of references included in publications by author in 5-year increments • Average number of references per article by author in 5-year increments • Number of total references used	• Scopus
Productivity	• Number of articles published in 5-year time periods	• Scopus
Co-authorship	• Average number of co-authors per article in 5-year increments	• Scopus

TABLE 1
Study Variables, Indicators, and Data Source

Variables	Indicators	Data Source
Demographics	• Discipline • Rank • Years at UIC • Author ID	• OIR
All variables at the publication article level		
Publication Info	• Journal title; Year of publication; page count	• Scopus
Literature Use	• Number of references in the article	
Co-authorship	• Number of co-authors	
Grant funding	• If article was funded (yes/no)	
Demographics	• Author ID • Discipline	• OIR

Faculty Data

The authors asked the Office of Institutional Research (OIR) for a list of tenure system faculty members who had been at the institution for at least 5 years. The records included faculty discipline (college and department), rank, and number of years at UIC. Several criteria were used to select the list of the faculty. Disciplines included in the study were: applied health sciences, business administration, dentistry, education, engineering, library, medicine, natural sciences, nursing, pharmacy, public health, social sciences (communication, psychology, sociology, gender and women's studies, economics, anthropology, criminology, political science, African American studies, and Latino studies), social work, and urban planning & public affairs. Given that the focus of this study was on active researchers and how their publication patterns had changed over time, some faculty data were excluded from the study. Faculty members in the humanities were excluded from the study because their productivity is more appropriately measured by book publication, rather than journal articles. Faculty who were appointed to UIC after 2015 were also excluded because they did not have five years in which to publish articles. Authors who did not have a consistent publication record (i.e., there were no publications in the last 5 years of the study and thus no longer actively engaged in research) were removed from the study. Faculty who did not have any publications were removed from the study.

Faculty were sorted into sets based on how long they had been at UIC; the authors did not consider any older publications by that author, to avoid confounding with publications written when faculty were at another institution (see Table 2).

TABLE 2
Faculty Productivity Explored Based on Years at UIC

Years at UIC	Cut-off for publications explored
5 years	No older than 2015
10 years	No older than 2010
15 years	No older than 2005
20 years	No older than 2000
25 years	No older than 1995

Faculty Publication Data

Each member of the research team received a list of the faculty members they were assigned. The research team used Scopus to retrieve the publications of each faculty member in the study. To retrieve the data from Scopus, the team member selected the author search tab and

entered the last name and first name of the faculty member. The team member would select the result(s) where the author's name displayed UIC as the affiliation. If more than one result was retrieved for an author by the same name and institution, then all were selected to obtain the full list of faculty publications. On the left side of the screen, the Year facet was used to exclude publications outside of the date range predetermined for the faculty member (Table 2). The Document Type facet was used to limit results to "articles" to eliminate most review articles, editorials, and conference papers. Review articles were excluded as they tend to include more references than research articles.[21] While this method did not completely exclude non-research articles, it did limit their inclusion.

Next, the team member selected all publications in the remaining list and exported the list of articles, including the citation information (authors, title, journal name, volume, issue, pages, DOI) and "funding details." The team member then copied the file contents and pasted them into a master file. An additional column was added to the spreadsheet for an assigned UIC author ID for author being searched, so publications by that author could be counted. To determine whether an article was grant funded, the disclosure made in the Scopus database were utilized. If funding information was provided in the Funding Details output, then the article was coded to be funded. Finally, the team member went back to the results in Scopus to harvest the number of references for each publication, entering the number manually into the spreadsheet. A second spreadsheet was created to summarize the publication data of each author into 5-year intervals. This spreadsheet included: author ID, rank, discipline, total articles in 5-year time periods, average references used in publications in 5-year time periods, average authors included on the authors' publications in 5-year time periods.

Data Analysis

The data in the Excel spreadsheets were entered and coded into SPSS 28. Both Excel and SPSS 28 were used to analyze and visualize the data. Descriptive statistics were employed to describe overall faculty publication patterns and faculty demographics. Correlations were used to examine the relationships between collection size, literature use, co-authorship size and faculty productivity. Partial correlation was used to explore the relationship between the library collection size (measured by number of journal holdings) and faculty's literature use (measured by number of references used in the publications) while controlling for number of authors involved in the publications. A one-way repeated measures Analysis of Variance (ANOVA) was conducted to compare the differences in literature use and productivity over time. A two-way between groups ANOVA was also conducted to examine difference in the effect of faculty's literature use on their research productivity for funded articles and unfunded articles. Prior to conducting multiple statistical analyses, tests of assumptions for each statistical analysis (e.g., homogeneity of variance) were checked.

Results

Publication Patterns and Library Collection Size

The overall publication patterns of all faculty included in the study were examined in relation to the number of journals held in the collection/licensed by UIC. The average number of publications per author has increased over the 25 years studied except for 2000–2004. As the number of journals available to faculty increased, the number of references included in their publications have also increased, suggesting that collection size might be related to collection

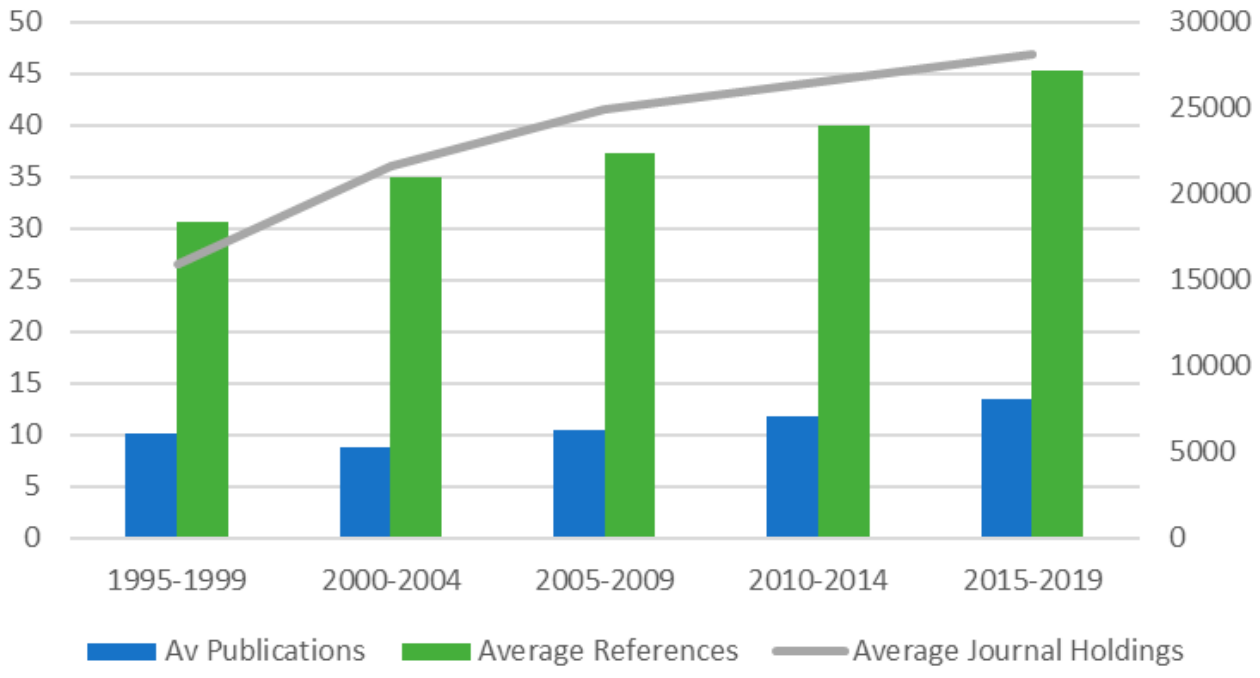
use (see Table 3 and Figure 1). It is important to acknowledge that in addition to library collections, faculty also had access to open access journals, interlibrary loan, and other means to gain access to the literature, so the actual influence of library collections growth can not be independently assessed.

TABLE 3
Productivity, Literature Use, and Collection Size—All Faculty Included in the Study (1995–2019)

	1995–1999	2000–2004	2005–2009	2010–2014	2015–2019
Productivity (Average publications per author)	10.05	8.86	10.49	11.79	13.45
Literature use (Average references per article)	30.56	34.94	37.24	39.90	45.28
Collection size (Average journal holdings)	15,947.40	21,683.20	24,921.60*	26,540.80*	28,160.00
N	117	223	375	581	802

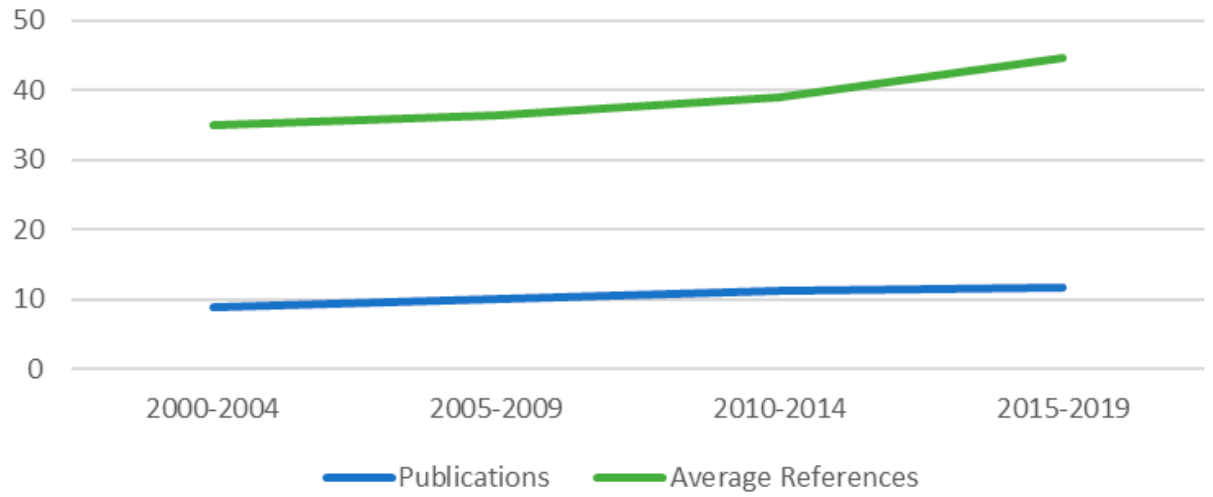
*2005–2009 and 2010–2014 data are estimates for journal holdings.

FIGURE 1
Publication Data and Journal Holdings — All Faculty Included in the Study (1995–2019)



Since the above analysis considers additional authors in each grouping of years, only the authors who had been at UIC since 2000 (n = 223) were examined. This approach kept the number of authors constant and eliminated the possibility that individuals new to the institution had different publishing habits, such as citing more journals and publishing more articles, which would impact the means. An increase in both productivity and use of references in publications was observed in the same faculty over time (Figure 2).

FIGURE 2
Publication Patterns of Faculty at UIC since 2000 (*n*=223)



A one-way repeated measures ANOVA was conducted to compare literature use (measured by the average number of references) and productivity (measured by the number of publications), respectively at Time 1 (2000–2004), Time 2 (2005–2009), Time 3 (2010–2014) and Time 4 (2015–2019). The means and standard deviations are presented in Table 4. There was a significant effect for time on the literature use (Wilks' Lambda = .67, F (3, 220) = 35.78, p <.001, multivariate partial eta squared = .33) and a moderate effect on the productivity (Wilks' Lambda = .92, F (3, 220) = 6.72, p <.001, multivariate partial eta squared = .08) using guidelines by Jacob Cohen.[22] This finding suggests that the number of articles written by faculty over the years has increased significantly over time, as has the average number of references that are included in the articles (see Table 4).

TABLE 4
One-Way Repeated Measures ANOVA Comparing Average Number of References (Literature Use) and Publications (Productivity) across Four Time Points (*n* = 223)

Variables	Time 1 (2000–2004)		Time 2 (2005–2009)		Time 3 (2010–2014)		Time 4 (2015–2019)					
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*df*	*F*	*p*	Partial Eta squared
References	34.94	15.15	36.50	14.67	39.06	15.98	44.74	17.74	3, 220	35.78	<.001	.33
Publications	8.86	6.83	10.16	8.30	11.36	9.87	11.71	13.20	3, 220	6.72	<.001	.08

*.01 small effect, **06 = moderate effect, ***.14 = large effect

Publication Patterns by Discipline

The publication data was also explored by discipline to determine whether journal article publication patterns varied among different disciplines. On average, most colleges have increased in their publications over time (see Table 5, Figures 3). However, several colleges declined in the number of publications from 2010–2014 to 2015–2019 (Dentistry, Social Sciences, Social Work, and Urban Planning and Public Affairs). Except for Nursing, all disciplines increased the number of references in their publications over time (see Table 6, Figure 3). Differences in the number of references included in the publications also varied by discipline.

TABLE 5
Average Publications of Faculty at UIC since 2000 by Discipline

Discipline		2000–2004	2005–2009	2010–2014	2015–2019
Applied Health Sciences	Mean	9.80	14.64	16.40	20.93
	N	5	11	20	28
Business Administration	Mean	3.33	3.08	4.05	4.32
	N	9	13	19	28
Coll Medicine at Chicago	Mean	10.02	11.40	12.43	14.57
	N	82	136	228	322
Dentistry	Mean	8.00	7.87	15.08	12.57
	N	10	15	25	35
Education	Mean	3.67	5.56	3.59	5.30
	N	3	9	17	23
Engineering	Mean	9.86	13.30	14.82	18.61
	N	28	50	61	80
Library	Mean	5.00	3.00	3.17	4.75
	N	1	3	6	12
Sciences	Mean	10.66	10.79	10.38	12.35
	N	29	43	68	92
Nursing	Mean	11.00	9.83	13.77	15.85
	N	1	6	13	20
Pharmacy	Mean	11.89	14.17	18.19	19.58
	N	9	18	26	36
School of Public Health	Mean	6.33	10.42	13.06	14.88
	N	15	24	31	34
Social Sciences	Mean	5.95	7.72	7.46	6.97
	N	21	32	46	64
Social Work	Mean	5.67	5.40	8.00	6.88
	N	3	5	6	8
Urban Planning & Public Affairs	Mean	5.43	4.00	6.20	5.75
	N	7	10	15	20
Total	Mean	8.86	10.49	11.79	13.45
	N	223	375	581	802

FIGURE 3
Average Publications and Average References Included in Publications by Rank

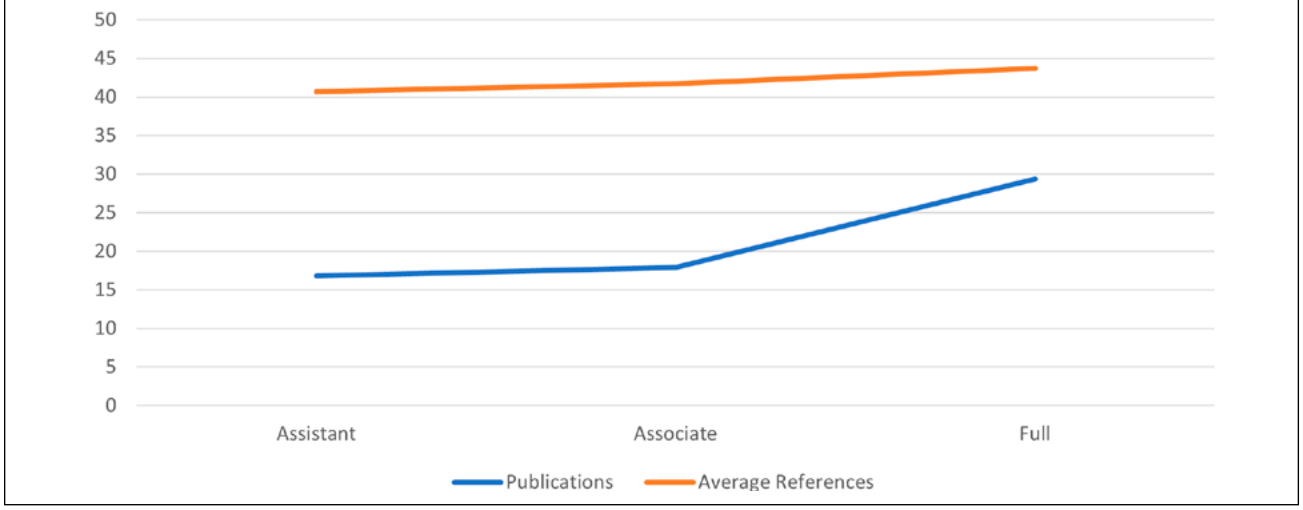


TABLE 6
Average References per Publication of Faculty at UIC since 2000 by Discipline

Discipline		2000–2004	2005–2009	2010–2014	2015–2019
Applied Health Sciences	Mean	35.27	39.75	41.17	42.90
	N	5	11	20	28
Business Administration	Mean	34.97	43.13	52.11	61.96
	N	9	13	19	28
Coll Medicine at Chicago	Mean	33.62	35.25	36.74	41.59
	N	82	136	228	322
Dentistry	Mean	36.40	36.13	38.03	41.36
	N	10	15	25	35
Education	Mean	40.93	58.35	46.37	52.12
	N	3	9	17	23
Engineering	Mean	25.03	30.71	32.09	43.38
	N	28	50	61	80
Library	Mean	17.60	12.44	16.76	35.06
	N	1	3	6	12
Sciences	Mean	39.65	40.57	41.62	46.99
	N	29	43	68	92
Nursing	Mean	42.82	47.07	48.69	47.36
	N	1	6	13	20
Pharmacy	Mean	26.81	36.55	44.70	46.01
	N	9	18	26	36
School of Public Health	Mean	31.96	35.19	36.36	39.90
	N	15	24	31	34
Social Sciences	Mean	48.43	44.65	53.38	57.49
	N	21	32	46	64
Social Work	Mean	33.42	33.10	38.08	48.23
	N	3	5	6	8
Urban Planning & Public Affairs	Mean	43.90	40.89	50.77	54.84
	N	7	10	15	20
Total	Mean	34.94	37.24	39.90	45.28
	N	223	375	581	802

Publication Patterns by Rank

Because faculty rank in the tenure system will change over time, only faculty at UIC since 2010 were examined. The rank was assigned based on their status at the time the list of tenure system faculty was received from the OIR. A one-way between groups ANOVA was conducted to explore the impact of publication patterns on faculty rank. As shown in Table 7, there was a statistically significant difference at the $p < .001$ level in publications for assistant, associate, and full professors, indicating that full professors wrote more articles than assistant or associate professors. However, there was no statistically significant difference in literature use ($p = .298$), suggesting that the average number of references included in the articles did not differ significantly based on rank (2010–2019) (see Table 7, Figure 3).

TABLE 7
Average Publications and Average References Included in Publications by Rank

	Assistant	Associate	Full	
Publications	16.83	17.89	29.35	F (2,578) = 17.79, p <.001
Average references	40.70	41.75	43.70	F (2, 578) = 1.21, p =.298

Correlating with Faculty Productivity and Literature Use

The above findings illustrate that faculty publication patterns differ over time, by discipline, and by rank, respectively. As the number of references included in publications increased, so too did faculty productivity. However, it is uncertain exactly how the number of references included in publications related to productivity. As such, the number of articles by author published between 2010 and 2019 were examined to determine whether productivity (number of publications) was statistically correlated with literature use (average number of references included in publications). There was a non-significant negative relationship between the number of articles written and the number of references included in articles (r (581) = –.029, p = .489). In looking only at 2015–2019 articles and excluding authors who wrote 5 or fewer articles, there was a statistically significant negative correlation between the number of articles published and references used in the publications. This suggests that the more faculty are likely to publish, the less they tend to use the references in the publications (r (607) = –.093, p = .022).

Correlations between productivity and reference use was examined within the disciplines for the 2010 to 2019 publications. Only within pharmacy was a negative correlation observed; the more productive a faculty member, the fewer references included in their publications (r (26) = –.391, p =.048).

These findings suggest that while the overall number of references per article are increasing over time, at an individual level, the more productive a faculty member, the less references are included in publications. To further explore how publication patterns were related to literature use, the authors who had been at UIC since at least 2005 were grouped into the following categories based on productivity from 2005 to 2019:

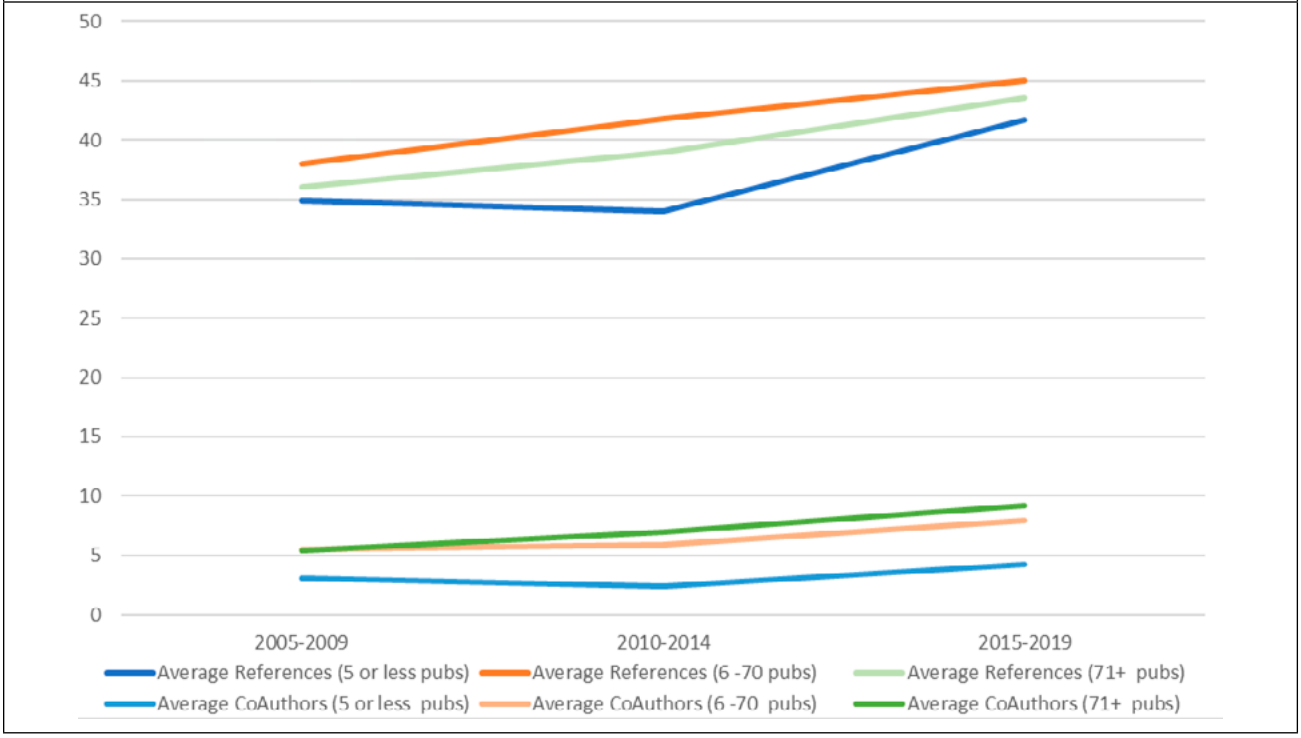
- Less productive – published 5 or fewer articles
- Productive – published 6 to 70 articles
- Prolific – published 71 or more articles

Note that the groups were formed based on the quartile of the faculty on their productivity; the middle groups were combined. As shown in Figure 4, although very prolific authors (published 71 or more articles) used fewer references than most of the productive authors (published 6 to 70 articles), the number of references used still increased over time. Less productive authors (published 5 or less) use fewer references in their publications overall compared to prolific and productive authors, but still appeared to increase the use of references in their publications over time. Productive authors used the most references in their publications, and their use of literature in publications also increased over time.

Correlations between Faculty Productivity and Co-Authorship Size

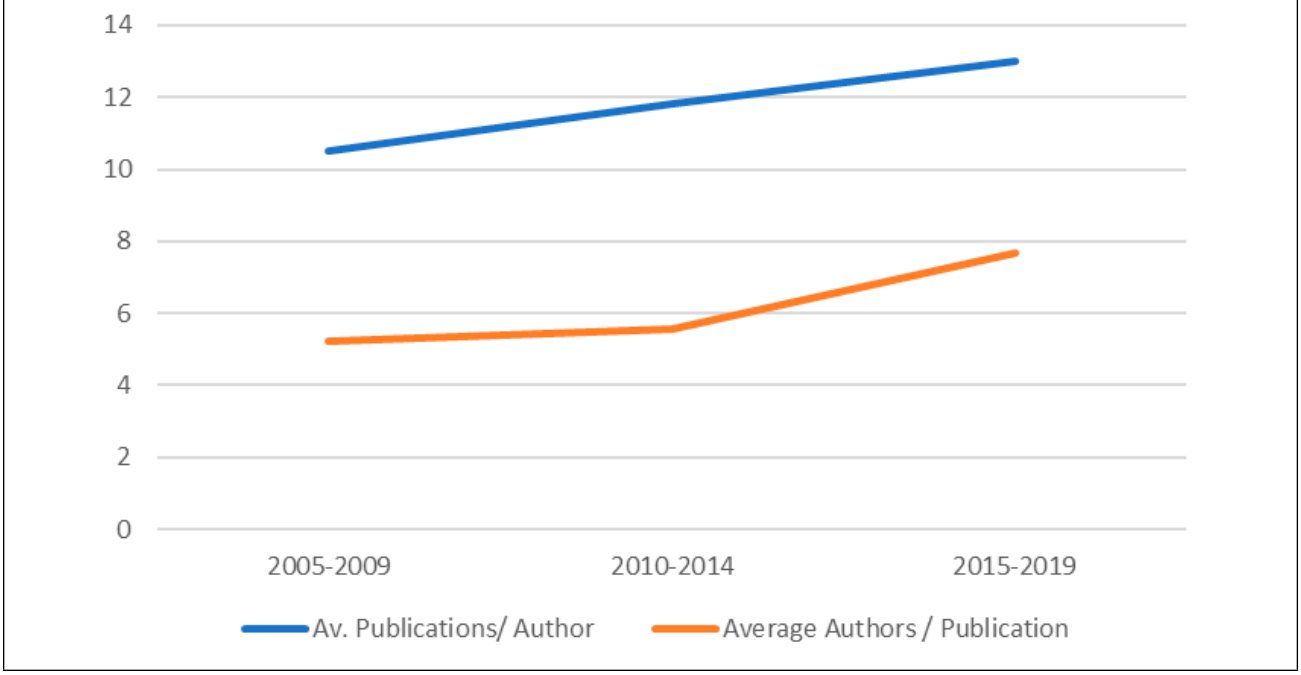
In general, the number of co-authors per article increased over time as did the number of articles per author (see Figure 5). There is a positive correlation between the number of articles written and the average number of co-authors on a publication (r (803) = .229, p =.001). The relationship between productivity and co-authorship size was also explored further by looking

FIGURE 4
Average References and Average Co-Authors by Productivity Level



at the level of faculty productivity. Productive faculty (6 to 70 articles) have fewer co-authors on average on publications compared to prolific authors (71 or more articles over 15 years) (see Figure 4). Less productive authors had fewer co-authors in their publications compared to productive and prolific authors.

FIGURE 5
Average Publications per Author and Average Authors Per Publications (all Faculty at UIC since 2005, n = 375)



Collection Size and Literature Use Controlling for Number of Authors

Partial correlation was used to explore the relationship between the library's collection size (measured by number of journal holdings) and faculty's literature use (measured by number of references used in the publications) while controlling for number of authors involved in the publications. There was a partial correlation between library's collection size and faculty's literature use, controlling for number of authors involved in the publications (r = .145, n = 24,692, p <.001), with library's collection size increase being associated with more literature use. An inspection of the zero-order correlation coefficient (r = .147) suggested that the observed relationship between library's collection size and literature use is not due merely to the influence of number of authors involved in the publication.

Impact of Faculty's Literature Use and Grant Funding on Research Productivity

To look more closely at articles that received grant funding versus those that did not, we compared articles that had grant funding compared to those that did not have grant funding, based on Scopus. Only publication data from 2010 to 2019 were explored in relation to an article being grant funded due to concerns of grant data accuracy through under-reporting in the Scopus database. (As noted previously, the overall number of publications at UIC increased over time. In the data comparing unfunded publications to funded publications from 2000 to 2019, it was observed that while the overall number of grant funded articles increased over time, the number of funded grants greatly increased between 2010 and 2014 and the number of unfunded grant publications greatly decreased over time. While it is logical to assume that as grant funding increases, the number of grant funded publications will increase, it seems less likely that unfunded grant publications will decrease significantly. In looking at the literature, we conclude that pressure increased in the scientific community to disclose funding information within the publication as a way to address potential conflicts of interest.[23] The NIH Public Access Policy would also have likely led to greater grant funding reporting. The funding details provided by Scopus most likely comes from disclosures in the articles, so as disclosures became more prominent in publications around 2010, grant reporting for indexed articles increased in Scopus as well. For this reason, only publications published since 2010 were explored in relation to the grant data provided by Scopus). A 2020 article also found there were inaccuracies in the funding data reported in the Scopus database.[24] Thus, it is likely that the number of articles that were noted to be grant funded remains under reported in Scopus. As such the comparisons using funding data provided through Scopus from 2010 to 2019 were used to explore but not confirm publication patterns.

Exploring publication data since 2010, it is observed that grant funded articles include significantly more references than do unfunded articles (t (14075) = 12.55, p < .001) (see Table 8). Grant funded publications also had a significantly higher number of co-authors, compared to non-grant funded articles (t (14075) = 9.84, p < .001).

TABLE 8
Average Number of References and Average Number of Authors per Publication by Funding Since 2010

Funding	Average Number of References	Average Number of Authors
Unfunded (N = 5,628)	39.77	6.18
Funded (N = 8,450)	46.05	13.83

To explore the impact of faculty's literature use on their research productivity, a two-way between-groups ANOVA was conducted. Faculty was grouped into four groups based on the number of references on average used in publications: Group 1: Average references used from 1–32; Group 2: Average references used from 33–41; Group 3: Average references used from 42–51; and Group 4: Average references used from 52 or more.

There was a statistically significant difference in the average number of publications for the four groups of their literature use: F (3, 522) = 8.374, $p < .001$, eta-squared effect size = .05 (medium effect guided by Cohen's criteria, see Table 9). Post-hoc comparisons using the Tukey HSD test indicated that the mean publications for Group 1 (literature use from 1–32, $M = 19.08$, $SD = 18.80$) was significantly lower than those of Group 2 (literature use from 33–41, $M = 29.92$, $SD = 27.40$) and Group 3 (literature use from 42–51, $M = 29.23$, $SD = 24.00$). Group 4 (literature use 52 or higher, ($M = 20.92$, $SD = 18.10$) was significantly lower than both Group 2 and Group 3. However, Group 4 did not differ significantly from Group 1. This finding suggests that for some researchers (Groups 2 & 3), their literature use positively impacted productivity, however, for those researchers that include a very low or very high number of references in their publications, their research productivity is not influenced by their use of the literature.

TABLE 9
One-Way Between Groups ANOVA Comparing Productivity across Four Groups of Literature Use, 2010–2019 (*n*=526)

Variables	Group 1 1–32 references		Group 2 33–41 references		Group 3 42–51 references		Group 4 52/above references					
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*w*	*df*	*F*	*p*	Eta squared
Productivity	19.08	18.80	29.92	27.40	29.23	24.00	20.92	18.10	3, 522	8.374	<.001	.05

Confounding Variables

This study has observed changes in publication patterns over time, including increased faculty productivity and increased references in publications. At the same time, the size of the library's journal collection has grown. Unfortunately, it is not possible to conclude a relationship between library collection use and faculty productivity due to several confounding variables including unknown sources of the references included in publications, increased grant funding, increased co-authorships, a general increase in faculty members at UIC, and greater access to online abstracting and indexing tools. (See Table 10.)

TABLE 10
Faculty at UIC for at Least 15 years (*n* = 375)

	2005–2009	2010–2014	2015–2019
Publications	10.49	11.80	13.02
Average references	37.24	39.37	45.46
Average co-authors	5.22	5.56	7.69
HERD funding ($000)*	$338,257	$369,626	$361,823
Average journal holdings*	24,921.6	26,540.8	28,160
Average teaching faculty (ARL)*	1,170	1,333	2,143
*Data specific to all of UIC.[25]			

Sources of the references: Over time, journal holdings increased at the institution, the number of open access journals increased, and the availability of indexing and abstracting tools increased, all of which can increase the identification and use of articles in publications. However, the sources of the articles that were used in publications were not known. Articles may have been accessed through the library's collection, inter library loan, colleagues, or other means. To ascertain a level of understanding related to the references that faculty could potentially have accessed through the library's collections, we compared the references included in 2016–2019 publications identified in Scopus to our holdings, using a report from our link-out tool to identify journals the library licenses or that were freely available. Approximately 4,860 journals were identified from the references used in the Scopus publications, and 725 (15%) were not found to be part of the collection or through open access. In addition, there was a positive correlation between full-text article downloads through the Serials Solutions link-through reports and the references included in publications between 2016 and 2019 (r (4874) = .546, $p < .001$). This suggests that UIC researchers likely relied on the library for access to journal articles that are used in their publications, but it is not possible to conclude this definitively. A 2019 study exploring how faculty seek and read articles noted that although most articles read are still in online journals from the library or their departments, researchers are finding other ways to discover and access articles.[26]

Access to online information: Improvement in online access to information including both online journals and indexing and abstracting databases also likely influenced the increase in the use of references in publications, in addition to the increase in the number of journals available through UIC.

Increased Grant Funding: The annual grant funding that UIC received increased over time, based on the Higher Education Research and Development (HERD) Survey data (higher education R&D expenditures). The increase in grant funding would likely have an impact on the number of publications produced, which makes it difficult to explore the impact of the collections on productivity.

Co-authorship: Co-authorship is also increasing, perhaps because of a greater focus on collaboration, interdisciplinary research, and team science, but also potentially because of an increase in the overall faculty at UIC. Co-authorship influenced both productivity and the use of references in publications.

Discussion and Future Directions

Over a 25-year period, grant funding, the number of journals available to researchers, the average number of journal publications of faculty members, the average number of references included per article, and the average number of authors contributing to the articles all increased. Grant-funded publications tend to include more references and co-authors than non-grant funded articles.

The findings of this study demonstrate a relationship between availability of online journals and an increase in the use of literature in faculty publications, as illustrated by the increase of references in papers. This study also suggested that as the size of the journal collections increased, so did faculty productivity. However, it is not possible to conclude that a larger journal collection led to greater faculty productivity. While there is an apparent causal mechanism for references increasing when more journals are available online, it is confounded by the increase in online databases, both free and subscription based, and the ease of access to online journals and databases.

This study also demonstrated that as access to the literature increased, so did faculty productivity and co-authorship on faculty publications. We did find that the most productive faculty also had the greatest number of co-authors on the publications, and the least productive faculty had the least number of co-authors on their publications, suggesting that co-authorship plays a role in faculty productivity. The increase in co-authorship is likely influenced by several factors, such as an increase in the number of faculty at UIC and a focus on team science and interdisciplinary research. It is also possible that technology and the internet have made it easier for faculty to collaborate within and across institutions.

We also found the increase in the use of articles in publications increased as the size of the library's collections and access to additional online resources increased, and this finding was not merely due to the influence of number of authors involved in a publication. While the most prolific authors were not the largest users of references, the productive authors did use the largest number of references in their publications. It was also observed that the least productive faculty used the fewest references in their publications. This suggests that there is a relationship between the use of the literature and faculty productivity. Increasing numbers of references may show that research is more thorough in the context of expanding information. However, large numbers of references might also be a strategy for less well-known authors to establish their credentials, whereas established authors at institutions with high productivity can be published with a more concise list of references.[27] Further research comparing data at institutions with varying rates of publication could clarify this connection. In general, most disciplines increased in the number of publications over the years and the number of references used in publications.

One of the greatest limitations of this study was that the data was limited to one institution. In order to explore the potential impact of online journals, a retrospective longitudinal study was conducted to explore the impact of the growth of available journals on faculty research. The next steps are to explore more recent data with other ARL libraries with different budgets, collection size, and grant funding to further explore how the size of journal collections may impact the use of the literature in publications, and potential faculty productivity.

Conclusion

Journal articles remain an important source of scholarly information for researchers in many disciplines, and their use of references in journal articles has increased over time. In addition, faculty productivity has increased. While it is challenging to demonstrate the availability of and use of journal literature in relation to faculty productivity, the use of scholarly literature remains paramount in faculty research. There are some disciplinary differences, and also differences in literature use relevant to faculty productivity, although in general all faculty increased their use of the literature in their publications. Academic libraries must continue to justify funding access to electronic journals as subscription fees rise above inflation. The challenge for libraries remains demonstrating the impact of the library among so many other variables that play a role in access to and use of information, and faculty productivity.

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