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An Introduction and the Year Ahead

Elegance of language may not be in the power of all of us,
but simplicity and straightforwardness are. ~ Henry Alford

These words are on a plaque on the podium where my institution's library staff meet monthly (in-person and virtually) for the University of Rochester's River Campus Libraries all-staff meeting. For the past 11 years, I have looked at this quotation many times during others' presentations and for my own. As the next *College & Research Libraries* Editor, I feel thrilled, excited, fascinated and nervous. It is an honor and a challenge to be the next in line to steward scholarship in our profession through this journal.

Leading up to officially becoming the Editor on July 1, I have been Editor-Designate, working very closely for the last year with *C&RL* former editor, Wendi Arant-Kaspar. I am grateful to have been able to work with Wendi in this capacity, as she has been (and is) a kind, brave, and constructive mentor and colleague. I am also grateful to the Board and ACRL staff David Free and Dawn Mueller for their patience and unwavering support. As I begin my term as Editor, I would like to share a few things (of many) I have learned so far:

1. **Reviewers' work is essential and plays a vital role in the journal's development.**

   This seems like an obvious statement, but seeing it from an editor's perspective, I build on and coordinate with *C&RL*'s community of writers and readers. I am grateful to all the Journal's reviewers (past and present) for their time and commitment in reading and providing feedback to potential authors. Not only is it valuable for the authors but as Editor, I get glimpses of the expertise, perspectives, and experiences to help make better informed decisions about the submissions. They help shape *C&RL* and make it evolve. Whether or not a manuscript is accepted, it is that connection and input that is always valuable. I think it is safe to remark that from now through the duration of my time as Editor, I will always be looking for reviewers to broaden the pool of readership and expertise for *C&RL*'s prospective authors.

2. **The Editorial Board members carry a diversity of experiences that purposefully contribute to the care and feeding of the journal.**

   Recently, in an Editorial Board meeting, I asked the Board members to look ahead in the coming year and share what they think our priorities should be. One idea is to find ways to include and encourage more staff and student perspectives in the Journals' authorship and readership. Another idea is to increase engagement with *C&RL's* community of authors and readers. This could be via efforts to promote

the articles written and extend discursive conversation. After experiencing the isolation of COVID-19 pandemic lockdowns, I believe we are searching for more engagement and connections. It is fortunate to learn with and from the Board, as they endeavor to keep the journal relevant and responsive to the present and future.

3. **There are different workflows for different types of work on the Journal. There is the day-to-day management and the projects that help sustain and grow it.**

The Journal regularly receives a robust number of submissions and keeping up with each step of an article's process is the everyday part, but there are also essential projects always in the works or on the horizon. Besides releasing *C&RL's* Authorial Name Change Policy[1] this May, we have other projects that are in progress. Some have been stalled by the pandemic, and the Board and I are picking up the pieces to work toward realizing them.

Another project is to investigate ways to instill *C&RL's* CRediT Taxonomy.[2] In addition to crediting an article's contributors prior to review, could this involve giving credit and acknowledgement to all reviewers for each submission? Could this lead to transparent work practices such as initiating an open peer review process that is voluntary, professional and transparent for authors and reviewers? It is the idea and philosophy that is valued, but there is still work to be done on how to implement it in everyday work.

In the past, there have been *C&RL* issues in which the articles benefited from an open, developmental peer review. From what I have heard, there were many positive experiences gleaned from this practice. There are advantages and disadvantages to practicing open peer review and this will be practiced again in future issues.

There is work in process to implement a *C&RL* data policy that is beneficial for the journal and for the authors. Editorial Board members Minglu Wang and Adrian Ho are working on this project and we hope to complete it this year.

There are past projects to continue as well as current and future projects to plan for and accomplish. As a community of authors, readers, staff, faculty, students, researchers, everyone: with you, I want to continue to work to make this journal inspirational, engaging, and useful for academic and research library work, service, teaching, and research.

Notes

1. Amy Lazet and Brian M. Watson. "The Case for Retroactive Author Name Changes, *College & Research Libraries*, 83, no. 3 (2022), available online at https://crl.acrl.org/index.php/crl/article/view/25432/33301.

2. Sarah Fitzgerald, John Budd, Penny Beile, Wendi Kaspar. "Modeling Transparency in Roles: Moving from Authorship to Contributorship." *College & Research Libraries*, 81, no. 2 (2020), available online at https://crl.acrl.org/index.php/crl/article/view/24669.

How Policies Portray Students: A Discourse Analysis of Codes of Conduct in Academic Libraries

Megan Bresnahan

In academic libraries, "codes of conduct" are policies that define what people who use those libraries are allowed to do in library spaces and serve as rules for enforcement. In this policy discourse analysis, the author examines these policies to understand what dominant discourses emerge about students who use libraries. The discourses represented in these policies portray students through frames of deficit thinking, adultism, exclusion, and surveillance. The study advocates for a critical shift in the design and purpose of these policies, and the results may inspire academic librarians to revise their policies to center care and respect for students.

Introduction and Problem Statement

Many academic libraries create policies governing the use of their spaces, often referred to as "library codes of conduct," "library use policies," or "library community standards."[1] These documents communicate the organization's expectations of how people behave and interact in the public library spaces, and they define what people are allowed to do when using the library.[2] While codes of conduct in academic libraries may have a practical internal purpose of documentation, they also may have an external impact on how people experience the library, and they should not fall beyond critique and reflection. These policies will be particularly important as academic libraries continue to "reopen" from the global pandemic. Library workers will need to effectively manage their public spaces and strive to ensure the collective safety and well-being of their users.

This policy discourse analysis investigates the following question: What dominant discourses about students are represented in policies governing the use of academic library spaces (codes of conduct) at flagship state universities? The study seeks to interrogate the priorities and approaches described in these codes of conduct. Ultimately, the outcomes of this research should inspire the critical review of academic library codes of conduct and encourage library workers to consider alternative, justice-focused, discourse narratives in future revisions of these policies. The work may help to guide academic library policymakers to develop policies that support equitable experiences and demonstrate care for their students, especially those most marginalized by predominantly white, academic spaces. The study may also help

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library workers, who are charged with implementing policies, examine the application and impact of codes of conduct.

Literature Review

Academic libraries often sit at or near the center of university or college campuses and remain one of the most heavily used buildings.[3] They offer learning spaces that provide resources and services to support students (and others) using their buildings to work and learn. Library buildings are important services, in and of themselves, that require strategy, management, and maintenance.[4] In many cases, library spaces may matter more to students who have been marginalized by academic culture.[5] Some students may not have access to productive study spaces at home or the ability to purchase required course materials or technology.[6] As libraries begin to fully reopen following the spring 2020 closures from the COVID-19 pandemic, thoughtful efforts about the equitable management of these learning spaces will be paramount for the students who need them most.[7]

Libraries can be complicated and confusing buildings for students, but library decision-makers have long attempted to make better decisions about how space is configured and managed by working to understand the needs and behaviors of the people, especially students, who use their spaces.[8] Library and Information Science programs often include coursework in usability methods for systems and human-centered design that may inform the approaches that new librarians bring to their practice when they enter the field.[9] Many libraries have teams or positions dedicated to gathering and analyzing user data through practices like participatory design, service design, and user-centered design to make student-centered decisions about library spaces.[10] These efforts aim to make libraries more useful and accessible, and this user-centered approach should extend to how library workers create policies for their spaces.

While libraries aspire to be free, open, and inclusive organizations, historical examples of how they have operated in ways that reinforce inequities are common, and policies are no exception.[11] The American Library Association's (ALA) list of the Core Values of Librarianship, which is meant to inform and guide professional practice, identifies values that professionals should uphold such as diversity, public good, and social responsibility.[12] In practice, however, these values often come into conflict with one another and may be weighted differently in their implementation or outright ignored. There is an inherent tension between efforts to protect intellectual freedom, a core tenant of librarianship, when the views expressed by someone threaten, harass, or marginalize a group of people, and the profession as a whole has not fully grappled with how to address these incompatibilities.[13] Further, while the stated values of the profession champion "equal" access as core to its collective mission, practices have at times resulted in the production of problematic, toxic, and inequitable spaces that center white, middle-class norms and "other" anyone who falls outside of those norms.[14] In 2018, the Office of Intellectual Freedom (OIF) in the American Library Association hastily pushed through a new recommended meeting room policy for libraries that specifically called for the protection of the rights of hate groups to use these spaces, a position antithetical to the values of social responsibility and diversity.[15] In their recent article critiquing the American Library Association's actions around the meeting room policy, Seale and Mirza highlight how the profession's focus on individual rights works to reinforce systematic and structural inequities by failing to acknowledge how power and privilege grant these protections to some at the expense of others.[16] ALA justified this move as championing free speech and expression,

even when ideas are disagreeable or offensive to others.[17] In this example, when weighing professional decisions about which tenets of the values of librarianship to uphold when in conflict with one another, library policymakers created a policy that prioritized benefit to the individual (intellectual freedom and free speech) at the expense of benefit to historically marginalized communities (social justice and responsibility).

Dominant Discourses

A "discourse" is the language, thoughts, or images that produce meaning in communication, and a discourse becomes dominant when it gets reproduced through the common language, policies, structures, and practices used by a group.[18] Understanding a dominant discourse can provide important clues about a group's social values. Policy discourse analysis, as a research method, works to uncover what are considered "problems" and what emerge as "solutions" in the text of policies through common and powerful sociopolitical representations, or dominant discourses.[19] Using the example of meeting room policies, the dominant discourse indicates that the problem is the curtailment of free speech and expression, and the solution is for libraries to provide space for controversial, hateful voices, even if doing so conflicts with other stated values.

Librarianship is a predominantly white and female profession, and scholars have associated its workforce's stereotypes with the "Lady Bountiful" archetype or, rather, the icon of the white female as an agent for racial, moral, and civilizing projects that center whiteness. Interrogating this archetype, or discourse, allows contemporary librarians to critique the practices and representations that are symptomatic of this history.[20] Stereotypes of the profession construct a benevolent image of the nice, passive, and meek librarian that may operate to protect the status quo and shape some dominant discourses in the profession. If librarians assume that they operate in inherently good or kind ways, then their harmful behaviors, policies, or practices may be easier to overlook or feel beyond criticism. Fobazi Ettarh created the term "Vocational Awe," which describes this phenomenon in the profession, and the resulting negative impacts, such as low salaries, burnout, and problems around hiring and retention.[21] Librarians may need to look closely at their own practices and question assumptions of neutrality to position their work to actively counter dominant narratives. This work will benefit the profession and its workplaces but also our impact on our communities where marginalized identities and voices have been left on the periphery of our collections, services, and spaces.[22]

Within the context of these priorities and critiques, academic libraries in the United States have continued to question and debate their role in remaining neutral spaces for all people when they exist on campuses that are facing increased acts of violence, discrimination, bullying, and intimidation.[23] Many professionals in the library field feel that libraries claim to be neutral information and service providers but are, in reality, reinforcing systems of inequity, bias, and oppression.[24] For example, Pagowsky and Wallace described creating a research guide about #BlackLivesMatter at the University of Arizona, and they explain that representing all perspectives, and thus ascribing recognition and value to all resources, on this guide would have caused the intended audience for the guide, students of color, harm. Further, neutrality aims to maintain a perception of balance and the status quo, which has historically benefited people who are white, male, heterosexual, cisgender, able-bodied, and middle class.[25] Further, De Jesus critiques neutrality in libraries not by the actions of individuals but through its con-

nection to institutional oppression—ideologically, historically, and structurally.[26] With the recognition that libraries cannot be neutral or without agenda, making intentional decisions about professional practice and advocacy is necessary.[27] A critical approach to policy development that centers social justice and the users' experience is necessary to counter forces that have long served to reinforce systematic oppression in library professional practice.

Policy Studies in Academic Libraries

Several studies exist that examine various policies in academic libraries. For example, a study of art and architecture libraries identified trends in circulation policies, another analyzed the content of donation and gift policies in academic libraries, and another reviewed the availability and communication of mission statements in academic libraries who are members of the Association of Research Libraries.[28] By comparing access policies for building use with open access policies for content, Wilson et al. highlighted policy conflicts and the inconsistent attention to professional values in academic libraries, demonstrating the conflict between different policies within an institution. Other studies in libraries have both recommended and employed discourse analysis as a methodology, specifically for purposes of advancing equity and inclusion-focused agendas.[29] Examining values statements and initiatives from library professional associations, David Hudson presented an analysis of the dominant discourse around "diversity" as a concept in Library and Information Science to point to the ways that our collective approaches have produced few meaningful or measurable results moving the profession toward racial justice.[30] However, no studies have looked at the rhetoric of codes of conduct or library use policies in academic libraries nor have they used discourse analysis as a method applied to policies specifically.

In the field of education, researchers have used policy discourse analysis methods to interrogate the circular impact of the dominant discourses in higher education on policy development, language, implementation, and enforcement.[31] Similar to David Hudson's 2017 study,[32] Susan Iverson conducted a policy discourse analysis of 21 diversity action plans at land-grant universities to explore how the concept of "diversity" was represented. The author found that these policy statements watered down approaches to antiracism and resulted—however unintentionally—in reinforcing the status quo, with little impact on systematic inequities in education.[33] Bertrand et al. critiqued the rhetoric that state policymakers use to explain education achievement gaps and other inequities in relation to the discourse of deficit-thinking about students, or the perception that students from historically marginalized groups are either responsible for their own inequitable outcomes or inherently prone to failure.[34] An international study analyzed how anti-immigrant discourses manifest in US and European policies and impact practices in schools and community contexts.[35] Finally, a policy study revealed how narratives of the US Department of Education invoke the discourse of the "marketplace of ideas" and neoliberalism in their policies.[36] Beyond the field of education, policy discourse analysis translates well to the disciplinary context of library and information science, especially for studies that aim to highlight the insidious nature of how systems of inequities are reinforced or even created by polices.

Methods

While traditional policy analyses may focus on evaluating the outcomes or effectiveness of a policy, policy discourse analysis draws from critical, feminist, and poststructural theories to

illuminate the dominant discourses that construct both policy problems and solutions. Dominant discourses both emerge from and are created by policies. They are illuminated through a close examination of the policy framework to reveal what is a *problem* and a *solution* to a problem. Traditional policy analysis may fail to consider the historical or social contexts that lend power to dominant discourses, and if not critiqued and intentionally resisted, dominant discourses may operate to perpetuate the problems they intend to address. In particular, the framework of policy discourse analysis emphasizes the importance of dominant discourses to explain why so many aims of a just society are slow to attain progress or are thwarted altogether.[37]

To investigate the research question, "What dominant discourses about students are represented in policies governing the use of academic library spaces (codes of conduct) at flagship state universities?" the author conducted a policy discourse analysis study by locating and reviewing any public-facing "codes of conduct" on library websites at flagship state universities.[38] Documents were identified for inclusion in this study by searching academic library websites for keywords like "library use policy" or "code of conduct." If no documentation was found, the website's organizational pages, often titled "About Us," were reviewed to identify relevant library policies. Of the 50 flagship universities in the United States, 31 public-facing library codes of conduct were identified in this review, and all available documents were included in this study. Once this content was identified, each code of conduct document was saved as a PDF file, if available, or the text of the webpage was copied and pasted into a text document. Each code of conduct document was assigned an identifier in its file name. PDFs and text documents were then imported into NVivo software for data analysis.

Relying on Elizabeth Allan's process for policy discourse analysis, the author analyzed the data through a phased approach (see table 1).[39]

TABLE 1
Policy Discourse Analysis Coding Framework

Phase 1: Review of document characteristics and structure: title of the policy, availability of contact information, date of last update, inclusion of a preamble introducing the text, and length of the document
Phase 2: Documents read; initial coding completed for each document to capture the topics covered by the codes of conduct
Phase 3: Refined codes, developed early themes, and established a code book
Phase 4: Read all documents again to check for missed references and coding consistency
Phase 5: Organized codes to develop themes and identify dominant discourses

In phase 1, codes of conduct documents in the sample were each reviewed individually, and their texts were deductively coded based on the characteristics of the document structure. This initial review identified the title of the document, and whether a preamble, contact information, or the "last updated" date was included in the code of conduct. Next, in phase 2, each document was read again, and inductive codes were then marked to describe the topics and categories included in the content of a document and to begin to identify early themes. The author took care to identify inductive themes related to a document's communicated purpose, priorities, and approaches; interesting or unusual examples; and other aspects that might be useful to examine in connection with the research questions for this study. If circulation policies

were included within a code of conduct, that content was excluded from review, as it is outside the scope of this investigation. In phase 3 of the analysis, nodes (term for codes in NVivo) were organized and refined to begin to identify thematic categories that emerged in the analysis across the documents. Nodes that had very few references were merged with similar ones, if appropriate, or removed if not connected to an emerging theme. Other nodes were divided into more granular codes, and some codes were renamed to clarify their meaning. These nodes were then used to develop a code book, which listed each node, its definition, a representative example of a reference to the node, early thematic categories, and any notes. In phase 4, all documents were read again to check for missed references and consistency in applying the final nodes. Finally, in phase 5, nodes were grouped into "parent" and "child" relationships in NVivo, and coded references were examined independently from the original documents. Nodes were grouped into thematic maps informed by the study's research question and theoretical approach. The author also took care to identify what conduct was not covered in the nodes that may point toward intentional or unintentional "policy silences." In addition, this analytical approach seeks to understand the problems identified in a policy and how those problems may misplace the source of the problem on the behavior of an individual rather than a system or structure derived from a specific historical or social context.[40] Throughout each phase, the author documented questions, emerging themes, and discussion points in research memos.

Results

Of the documents reviewed in this study, 56 percent were titled "Code of Conduct" or some similar variation of the title that included the term "conduct" (18 of 32 titles; one document had two titles, though there are 31 documents in the study). Other unique titles are included in table 2. "Use" and "policy" were also used frequently in the titles.

TABLE 2
Other Document Titles without the Word "Conduct"

About Using the Library
Building Use Policies
Community Standards
Disruptive Behavior and Inappropriate Use of Library Facilities
Expectations of Library Behavior
Library Building Use Policy
Library Use Policy
Patron Policies and Responsibilities
Policies and Procedures
Security Policy
University Libraries Rules and Regulations
University Library Access Policy

On average, documents were 3 pages and 884 words in length. One lengthy outlier was 12 pages long and included 3,744 words. Almost all of the documents (97%, or 30 of 31) included a preamble at the beginning of the document to explain its purpose. The tone of these preambles tended to be more aspirational and positive than the main body of the content, which,

as noted in the results and discussion below, tended to use more punitive and authoritarian language. Words commonly used in preambles included "productive," "rights," "services," "support," "safe," and "learning." Typical statements included commitments to "providing a safe, inclusive, and productive learning environment" or "a welcoming environment that is conductive to a variety of study needs" (see figure 1).

FIGURE 1
Common Preamble Words

Of the 31 codes of conduct reviewed, only four documents (13%) included explicit contact information and reporting instructions within the text. One document highlighted that the library provides accommodations for individuals with disabilities and provided contact information for requesting an accommodation. Another document invited people viewing the policy to submit feedback. Most did include information about what actions would be taken if a violation of the conduct code was reported (68%). Twelve documents (39%) stated the date the document was last reviewed and updated and often included the dates of previous revisions in the documentation. One code had not been updated for 17 years, and another had been updated just this year. On average, the date of "last update" was six years ago.

Analysis of Themes

Through an inductive thematic analysis, 41 thematic codes emerged from the data. The most common themes are described in table 3.

TABLE 3
Common Themes

Theme	Number of Documents (N = 31)	Number of References
Damaging or theft of library property	26	47
Bringing animals into the library	26	27
Creating noise or disruption	24	43
Smoking, drinking alcohol, and other substances	24	35
Consuming food and drink	23	27
Harassing or threatening others	22	39
Refusing to leave the library	22	29
Talking on cell phones	21	25

Policies also commonly prohibited the use of "things with wheels" in the library such as bicycles, wheelies, and skateboards; vending or selling things; sexual behavior or exposure; leaving one's belongings unattended; unplugging library computers; possessing weapons; entering unauthorized areas; and sleeping or hanging around the library too long. Surprisingly, given that this sample includes public universities serving the citizens of their states, most libraries in the sample (61%) explicitly excluded unaccompanied minors (though the age of who is considered to be a minor varied) from using their spaces. One document noted that children "should be prepared to show proof of age upon request." Codes of conduct commonly referred to other library or campus policies through links or references, sometimes with obvious alignment (such as acceptable use of computers) and at other times, there seemed to be a more complex relationship (like concealed-carry regulations for firearms).

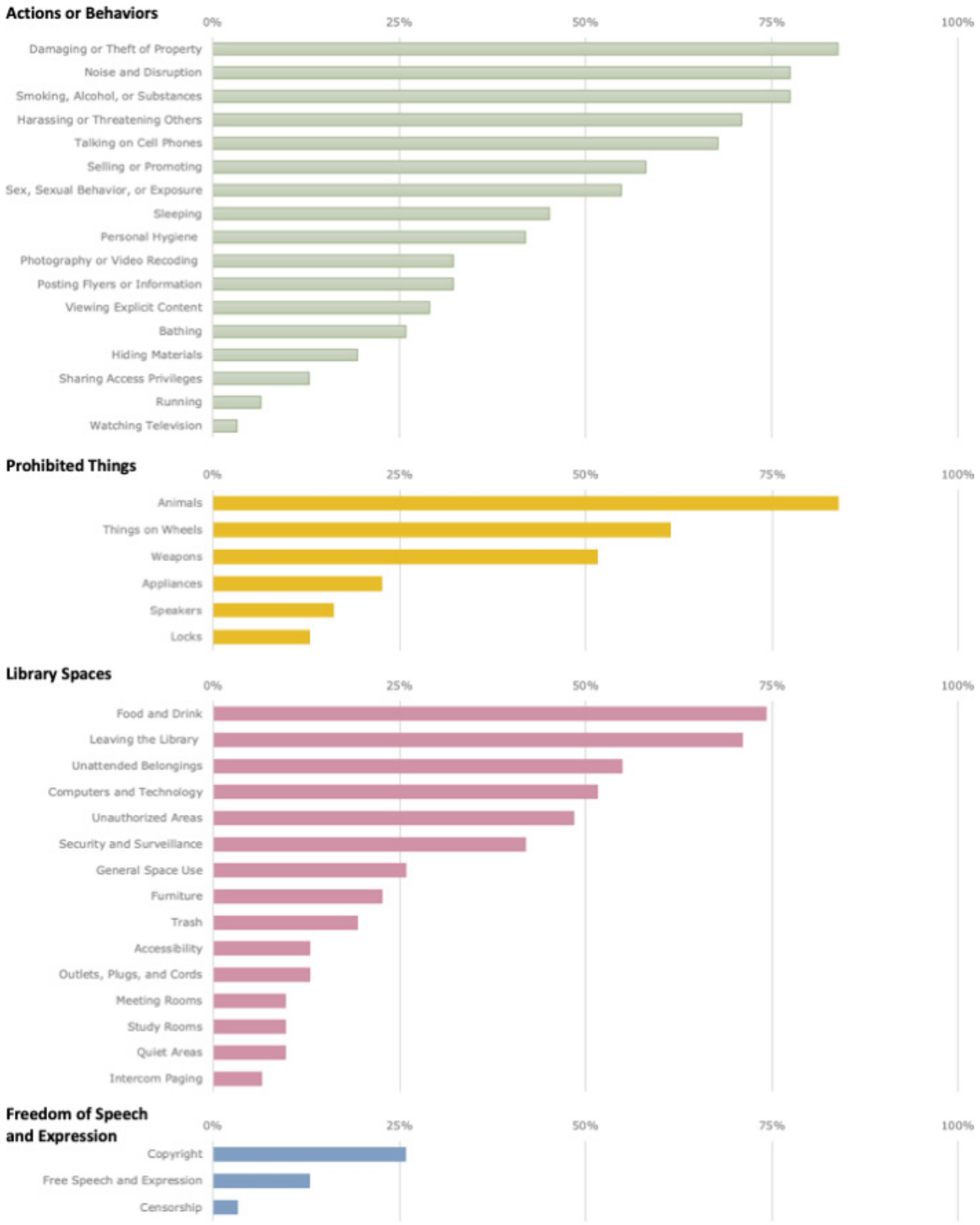
Overall, thematic codes fell into four content categories: "Actions or Behaviors" and "Prohibited Things" that are curtailed or prohibited by the policies, rules about the use of "Library Spaces," and statements about rights and restrictions to "Freedom of Speech and Expression." The prevalence of each theme, by category, is represented in figure 2.

Most of the themes that emerged from the data described behaviors or items that are not allowed. To uncover the use of punitive language in the codes of conduct, the terms "prohibit," "prohibited," "not allowed," "not permitted," and so on were searched in the text of the documents, and variations of the terms appeared in codes of conduct in 27 of the 31 documents, a total of 188 times. One document, an outlier, used the terms 33 times despite being only 3 pages long and 604 words in length. On average, the terms were used 7 times in each of the 27 documents.

Categories within a document were frequently presented in a random or alphabetical order, rather than grouped by themes or levels of concern or severity. As a result, more or less severe categories of behaviors were often grouped together (for example, entering a prohibited staff space is listed next to sexual exhibitionism), or in other cases, randomly listed (for instance, "running, sleeping, or loitering" were listed together as prohibited).

Uncommon but notable mentions included "not running in the library," "not watching television in the library," and "not playing musical instruments in the library." One library noted that "laptops are permitted" in the library, which seemed to be an unnecessary inclusion for any current learning environment. One document acknowledged concealed-carry

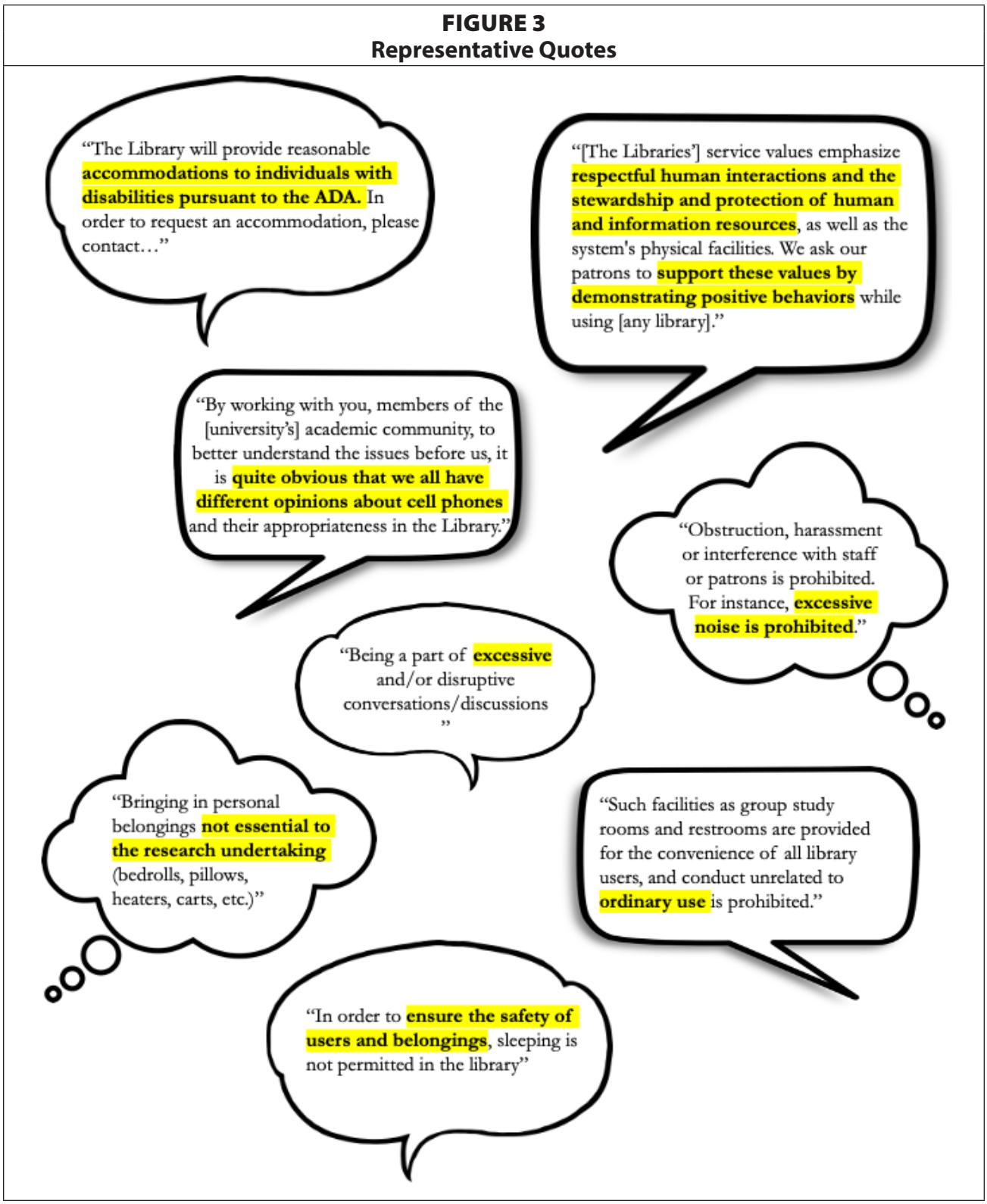
FIGURE 2
Prevalence of Themes in Codes of Conduct Documents (N = 31)



laws at the state level and stated that the library does not provide "publicly-available secure storage for concealed handguns. Lockers located in multiple library locations do not provide secure storage for weapons of any type." Here, codes of conduct may be reflective of local or state regulatory issues, which impact the policy context of the campus and academic library.

Representative quotes that emerged from the data are highlighted in figure 3.

FIGURE 3
Representative Quotes



Discussion of Dominant Discourses and Implications

In discourse analysis, the identification of themes allows for discourses to begin to take shape. The themes identified above revealed that a common purpose of codes of conduct policies is to control the behavior of uses in libraries, which is explored further in the analysis below. The process of exposing dominant discourses can then allow library policymakers to begin to identify alternative discourses. For example, instead of using language that denotes control and authority, policymakers can identify language that is more respectful and compassionate toward students.

User Experience and Deficit Thinking

Overall, the codes of conduct reviewed in this study prioritized the operational priorities of the library over the need to communicate clearly, usefully, and respectfully to their primary user population: students. Often, the focus of these documents is a laundry list of what users of library spaces are prohibited from doing. Few codes listed what users "can" or "will" be able to do in the library and more often list what cannot be done. Though often not explicit, this approach may reflect the practical purpose of these documents, which is to document what people are prohibited from doing in the library to justify enforcement of the policy when these actions occur. This approach identifies the behaviors of individual users as "problems" and establishes the policy elements as "solutions" to enable enforcement. The goal of the solution is that the individual will stop doing whatever is seen as the problem behavior.

At times, the creators of these codes of conduct are quite specific about problem behaviors. For example, two documents disallow students from using speakers or similar audio equipment in the library that may disturb other users; one, using somewhat obtuse language, refers to speakers as "audible sound generating devices." Several documents (26%) prohibit library users from bringing appliances into the library, including microwaves, refrigerators, hot plates, space heaters, and coffee pots. Allowing people to use small appliances in the library is perhaps an understandable safety concern and potential violation of fire code, and the inclusion of appliances in these documents may be related to safety concerns or compliance with health and safety regulations. However, there are many items that would be inappropriate or unsafe to bring to the library, so one might assume that this category could be commonly included in codes of conduct, because students have *in fact* brought these items into the library and attempted to use them. Thus, codes may be reflections of a library's common "problem log" entries.

As these documents communicate how library policymakers are regulating library spaces, the dominant discourse that emerges is of deficit and adultism; it is a discourse that assumes that students are irresponsible and require supervision.[41] The *problems* of managing a library space are articulated as behavioral issues displayed by users of the library; at flagship universities, one can assume these users are primarily students and primarily undergraduates. The *solutions* are then to prohibit such problems and ascribe consequences (loss of privileges, removal from building, calling the police) in response to undesirable behaviors. Uncovering and challenging the dominant discourses in policies allows one to explore alternative discourses. Here, instead of adding small appliances to what becomes "can't do" list, an alternative user-centered and care-based discourse would be to ask in the development of this policy: "why are students bringing these items into the library?"; "what needs are not being met by the library or campus spaces?"; and "are there low-stakes, inexpensive solutions that would

increase student comfort, wellbeing, and belonging in our spaces?" More simply, instead of writing a policy to prohibit small appliances as the solution, a library policymaker might ask, "can we give student patrons access to kitchen spaces, so they can eat the food that they choose to bring from home?"

Basic Needs for Students

Many codes of conduct specifically curtail students' ability to meet their basic needs, including eating and sleeping. Most libraries also set criteria for where students can eat or drink, and some even ban food altogether in their spaces. Fourteen documents (45%) do not allow users to sleep in the library. While some libraries explicitly do not allow users to sleep at all, others allow for "brief naps" or "dozing off" but will not let users arrange furniture into a configuration that would allow them to rest more comfortably. One code of conduct states, "laying down of bedding, arrangement of furniture or use of furniture for the purpose of sleeping is prohibited." Another policy outlines that using "library areas for prolonged sleeping or as living quarters" is prohibited. These policies may intend to discourage sleeping in the library to avoid inconveniencing other people using the shared space, but one library's sleep policy explains its logic. It states, "In order to ensure the *safety* of users and belongings, sleeping is not permitted in the library" [emphasis added]. This statement seems to imply that sleeping in the library is irresponsible because your belongings may be stolen, and the library policymakers know what is best for you. Another document mentions sleeping in the library and states that users cannot bring "personal belongings not essential to the research undertaking (bedrolls, pillows, heaters, carts, etc.)" into the library, and a different policy is explicit that groups cannot "camp out" for extended periods. As mentioned, if we are to assume that the elements that appear on these policies have been past issues in those libraries, then these codes of conduct seem to document that users of the library need a place to sleep and/or may even struggle with housing insecurity. While the library workers tasked with managing library spaces most certainly need to be able to safely close the library and have compliance when asking people to leave, these policies seem to point to a larger problem than the inconvenience of a bedroll or out of place furniture in the library spaces.

In some codes of conduct, libraries establish conflicting categories. For example, many codes prohibit sexual activity in the library but fewer state explicitly that sexual harassment is not tolerated. In one document, locks for laptops and bicycles are strictly prohibited, yet the library states that they are not responsible for the theft of any items left unattended in library spaces. Bicycles in the library are disallowed frequently in codes of conduct, yet the message from students here might be that there is not enough adequate or safe storage for their bicycles, which may be a primary mode of transportation for some students. Thirteen libraries include expectations of personal hygiene in their policies, but eight prohibit the use of bathrooms for bathing. For example, one document states that people cannot use "restrooms for bathing or shampooing, doing laundry, or changing clothes." In addition, given the prevalence of prohibiting bathing and sleeping in these documents, one might ask why there is not more literature in the profession on academic libraries and housing insecurity among our students, if it is documented so often through these policies. While there are practical and functional needs when managing behaviors in a shared space, creating a policy to prohibit an action or behavior may overlook and even negatively impact the most in-need and vulnerable student populations.

The alternative discourse would be for library policymakers to create codes of conduct that represent a genuine commitment to student well-being and success, and it may be beneficial to recall Maslow's Hierarchy of Needs. Maslow establishes a five-tier, pyramid model for human needs, the foundation of which must be met (physiological and safety needs), before one can reach the top of the pyramid, self-actualization.[42] Students must meet their basic needs—air, water, food, shelter, sleep, clothing—before they are able to rise through Maslow's hierarchy and meet their academic and learning needs. Through the lens of Maslow's model, many codes of conduct prevent people who use the library from meeting their basic needs and expect users to have already found ways to satisfy the base of the pyramid outside the library. The tone and focus of the policies communicates to students, "we don't trust you to eat or wash up or be responsible for your belongings." The students who will be most in need of support at the bottom of Maslow's pyramid will certainly be those individuals with fewer resources, less access to wealth, or limited social capital in academic spaces. When codes of conduct focus on the things people cannot do in library spaces, it is possible that libraries are missing an opportunity to support students in overcoming immediate barriers to academic success. Here, the policy discourses reveal one piece of how academic spaces may both reinforce and create achievement disparities among students.

The Absence of Social Responsibility and Justice

The discourses revealed in the codes of conduct prioritize the policy representation of individual core values of librarianship inconsistently. Despite work in the profession to amplify and invest in inclusive and equitable approaches to librarianship, the core values of the profession that align most directly with those efforts were not cited in any codes of conduct: social responsibility, diversity, and the public good. Notably, "intellectual freedom" was the only ALA Core Value explicitly cited by the codes of conduct in this study, despite the relevance and applicability to building use and library spaces of many of the other ALA Values (that is, access, education and lifelong learning, and sustainability). For example, "illegal pornography" is explicitly prohibited by many codes of conduct. However, the texts seem to shy away from addressing how viewing *legal* sexual content in a visible, shared space may impact others, particularly women who are frequently the subject of degradation and hostility in this content.[43] While libraries have long debated how to balance the intellectual freedoms granted to individuals with the needs of their community, recent case law has reaffirmed that libraries can prohibit the act of viewing explicit content in public spaces.[44] Yet, when addressing explicit or offensive content, many documents cite only ALA's core value of intellectual freedom along with the positions of the Office of Intellectual Freedom.

In codes of conduct, library policymakers have also overlooked the community or social impacts related to how they choose to address the issue of harassment. While most policies state that they prohibit harassment, only one code of conduct went so far as to qualify harassment related to race or other identities. Some documents prohibited bathing in restrooms without acknowledging the needs of Muslim students who may need access to foot bathing stations, disproportionately impacting students who are already marginalized in western, higher education environments. The intended purpose of codes of conduct is to encourage some behaviors and discourage others. Given the history of racism and exclusion in the library profession, it is, at best, an unfortunate oversight that these aspects of the policies are not crafted with greater inclusivity and cultural awareness. Further, despite the frequent

and recent documentation of bias in the profession, the codes do little to reassure students, particularly students of color, that they will be treated with respect and that policies will be interpreted and applied fairly.[45]

Many library policymakers included statements in their codes of conduct that broadly and vaguely curtailed behavior, such as "behavior that interferes with normal use of the libraries is not allowed," "behaviors that are inappropriate in library facilities are not allowed," "being a part of excessive and/or disruptive conversations/discussions," and "committing or participating in other activities *not listed* that are inconsistent with library activities." Other similarly vague terminology commonly used included terms like "disruption," "rowdiness," and "disorderly" to point to prohibited behaviors. These subjective descriptors leave decisions about whether a code of conduct has been violated, and what steps to take to enforce its rules, to the interpretation of library workers and assumes that those individuals will apply the policy or interpret behavior in a neutral way. Yet, in a sociopolitical environment where the rules of crime and punishment are applied inequitably, library policymakers cannot expect that our policies and their enforcement are not subject to the same biases. Policies may also be used as tools to justify actions that are later called out as inappropriate or biased, because the enforcer was merely following the policy itself. In addition, only four of the documents provided reporting instructions or contact information for a person to use when they witness or experience a violation in the library. Thus, the purpose of these documents seems to be more for library workers to judge behavior but less as a tool for people who use the library to advocate for their own rights and safety in a shared space.

Security and Surveillance

As mentioned in the results, some codes of conduct seemed to struggle with how to establish a safe learning environment when their public campus may be subject to local or state laws that permit open or concealed carry of firearms by students or the public. While an outlier, one document described that the library does not provide lockers as a service for the storage of deadly weapons, stating, "lockers located in multiple library locations do not provide secure storage for weapons of any type." This inclusion points to the profound and complex role of public institutions, like libraries, within a political, social, or legal context that may conflict with their educational mission.

Other documents read more like policies of campus police departments than the library. Two codes of conduct stated that violations would be reported and addressed by university, municipal, or state law enforcement. Several included sections on security enforcement in the library. One document discloses that "areas of the [library] may be under video surveillance," and another that "windows and doors must remain uncovered and unobstructed. Lights are to be left on," pointing again to the library's surveillance practices. Another code goes further; it states, "All persons on [university] property must identify themselves upon request of a [university] official acting in performance of their duties who reasonably suspect that the person has committed, is committing, or is about to commit a crime or a violation of a [university] rule or regulation." While the preambles of these documents aspired to communicate a welcoming and safe tone, inclusions within the text certainly stray far from that verbiage.

When not looked at carefully, codes of conduct in academic libraries may be assumed to be benign and act as little-noticed tools for managing public spaces. However, in some codes of conduct, we see libraries addressing storage for guns, surveilling the users of the library,

and demanding identification if someone is suspected of being about to commit a violation. The discourses of militarism, security, policing, and surveillance have found their way into these library policies. This discourse is a prime example of the dangers of vocational awe, which assumes that the library is an inherently good actor, when, in these examples, it is the library that participates in the police state. To challenge this discourse, policymakers in libraries must ask themselves who this rhetoric serves and who does it not serve.

Implications

The discourses about students that emerged in this study are ones framed by deficit-thinking and adultism. In most cases, the image of the student portrayed is of a person who is too irresponsible to be trusted. They bring inappropriate items to the library, and they do not clean up after themselves. The problem of the student is addressed by using these policies, which ask students not to do these things or risk losing the privilege of library access. The solution assumes that the problem's remedy is a simple choice by individuals when, more likely, the problems represented in these policies are far more connected to systematic or institutional inequities in higher education.

What is a policy and why do we have them? Most library workers will acknowledge the usefulness and importance of policies and documentation for the operational needs of academic libraries. But one might ask: How are we using policies to make the library better, not just to make it good or not be awful to the people who use the library, but how do we actively center their needs? What unconscious or conscious bias is reflected in these documents? How do they reproduce the dominant discourses in librarianship, high education, or society? Are students involved in the policy making? Is their input sought and listened to? Many codes of conduct have some positive moments that clearly communicate the services and support that libraries offer, as well as the climate they wish to maintain in the shared use of their space, but most are presented problematically. This study makes clear that most codes have neither been looked at with a critical, equity-focused lens nor examined to align with library's mission, values, and professional aspirations in mind. Our carefully crafted value and mission statements in academic libraries can seem to be true aspirations or mere marketing tools, depending on our policies and actions. The gap between *what we say* and *what we do* in libraries has been pointed out in the literature. Baharak Yousefi identifies disparities between the formal declarations made by academic libraries and frequent and historical examples of exclusion in the profession.[46] By comparison, this study reveals less of a gap: what we *say* in our policies is actually what we *do*. This analysis of policy documents exposes issues that are given meaning when placed in the context of the problems of librarianship: policies in academic libraries may replicate the norms of a profession dominated by white, middle-class values at the expense of our students (and our workforce), especially those who are most marginalized. These policies may promise safety in the library but fail to question "safe for whom?" Policymakers in academic libraries must reflect on the impact of implicit bias and racism in our profession and uncover how it manifests in our policies. In the case of codes of conduct, which often become lists of things that people cannot do in the library, there may be an opportunity to reimagine how we respond to conduct violations. As much as we need utilitarian tools for the practical management of library spaces, there may be ways to reframe conduct violations as information about user needs, which can be communicated and addressed by the library or elsewhere on campus through resource allocation.

Limitations

This study does not consider how a library's code of conduct policy fits within the context of other policies, other strategic initiatives, or a university's or library's culture, which are factors that may influence how the policy is interpreted or used. The author did not have any information about who wrote these policies, why they were written, how often they are used, or how they are applied. The sample was subject to the availability of each policy online, and it is possible that libraries that do not post these policies may approach space management and messaging around their building policies differently. In addition, the policies included in this qualitative study represent academic libraries at public, state universities, and results are not necessarily generalizable to other library settings.

Conclusion

In this study, the dominant discourses that emerged in codes of conduct failed to look at students as whole human beings who merit our best respect and care. The policies point toward individuals and individual actions as problems (a student brings a space heater to be warm and comfortable while they study, which is a liability), when these actions are more likely evidence of institutional or systematic issues (lack of investment in liberal arts and public education, which prevents campuses from providing plentiful and comfortable study spaces). As academic libraries work to reopen safely during the COVID-19 pandemic, our codes of conduct will be ever more important as library workers are tasked with social distancing and mask enforcement. Managing conduct during a pandemic—when adherence to public health guidelines has become political, and racial and economic disparities have been amplified—will be complex. Library managers and administrators may be keen to update their codes of conduct to reflect new expectations and compliance requirements for public health and safety during a pandemic as they reopen, while our students return to our campuses having experienced and continuing to experience stress and anxiety around their health and that of their friends and families. They may be grieving or traumatized or isolated. With this in mind, codes of conduct policies can be revisited and reshaped with an eye toward demonstrating care and respect for people as they come to learn in our reopened library spaces.

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Digital Scholarship Programs in Practice

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Digital scholarship programs, a university unit of relatively recent origin, provide support and community for scholars integrating digital technologies into their research, teaching, and engagement work. But they have not been well defined in higher education scholarship and sometimes not even well understood on their campuses. To clarify the nature of digital scholarship programs, we surveyed what they do in practice. Using a combination of systematic searching of university websites and a survey instrument with 12 qualitative and 5 quantitative questions, we investigated the infrastructure, activities, and perceived successes and challenges of digital scholarship programs at Carnegie Classification R1: Doctoral Universities. Our study reveals that these programs exist at more than three-fourths of R1s, and their staff serve a critical function at the intersection of technology and scholarship. While our survey finds many commonalities between digital scholarship programs, such as supporting the application of research programming languages or offering professional development training, it also illustrates that these units have more heterogeneity and a broader scope than more established scholarly support units at research institutions. The degree to which we find digital scholarship programs already representing interunit partnerships and striving for even more collaboration illustrates increased cooperation and a will for further coordination in the face of a culture of internal competition under academic capitalism. Digital scholarship programs' partnership structures offer higher education a model for building bridges between organizational silos in a fashion that respects the autonomy and distinctiveness of individual units, reduces internal competition, and offers user-centered scholarly support.

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Introduction

Librarians Joan Lippincott, Harriette Hemmasi, and Viv Lewis define digital scholarship programs as "service organizations, staffed by individuals with specialized skills, who support work in the digital environment."[1] If that definition sounds broad, that is because digital scholarship programs combine three terms that each encompass a wide range of activities in their own right. "Digital" encompasses any technology that uses binary numbers to function, encompassing activities that range from the basic arithmetical functions of an electronic calculator to holographic simulations of thermodynamic processes. Similarly broad in its designation, "scholarship" often acts as a catch-all for the professional activities of students, researchers, and faculty within academe, including but not limited to research, teaching, and engagement efforts. And "program" in the context of the academy signals all sorts of internal organizational administrative structures from degree programs to faculty development units to community relations organizations. We, the authors of this study, have wrestled with the expansive, nebulous meaning of such units firsthand. Each of us plays a role in the University of Minnesota's digital scholarship program, which is both historically rooted in our university libraries and presently a partnership among nine units across the institution. The complexity of our own program has prompted us to explore what a digital scholarship program is for ourselves and for our peers. To this end, we decided to ask not what a digital scholarship program is theoretically, but rather what it does in practice. Using a combination of systematic-review methods and a survey instrument with 12 qualitative and 5 quantitative questions, we investigated the infrastructure, activities, and perceived successes and challenges of digital scholarship programs at Carnegie Classification R1: Doctoral Universities.

Our study reveals the structure, practices, obstacles, and aims of digital scholarship programs at large research universities. It establishes a baseline of digital scholarship program design from which stakeholders may consider the design and redesign of these relatively novel units. Our research finds that digital scholarship programs tend to be structured as support-oriented organizations most commonly rooted in libraries but often partnered with or funded by other units within a university. These programs exist at more than three-fourths of R1 institutions whose staff serve a critical function at the intersection of technology and the three core facets of scholarship: research, teaching, and engagement. Our survey finds many commonalities in the work of digital scholarship programs; for instance, our evidence suggests that most programs help scholars use research programming languages and offer professional development training on how to use emerging software. But our findings also illustrate that these units have more heterogeneity and a broader scope than other more established scholarly support units—such as centers for teaching and offices of information technology—at research institutions. Additionally, our research reveals how the premier research institutions of the United States have addressed the ascendent role of digital technologies in scholarship and should help top-level university administrators, university library leaders, and those involved in digital scholarship themselves better understand the purpose and potential of these now prevalent organizations. The degree to which we find digital scholarship programs already representing interunit partnerships and striving for even more collaboration illustrates that digital scholarship program leaders and their partners are working to build cooperation and coordinate their scholar support efforts even in the face of higher education's culture of internal competition under academic capitalism. The implications of our finding that digital scholarship programs tend to stem from and maintain roots in academic libraries, but rarely

stem from or are supported by libraries alone, has implications for the design of other programs and higher education administration generally. Digital scholarship programs, we find, offer the potential to become a model for building bridges among the organizational silos in a fashion that respects the autonomy and distinctiveness of individual units, reduces internal competition, and offers a user-centered design for scholarly support.

Literature Review

Although a handful of surveys about digital scholarship programs have been conducted, there has not been a systematic survey to date of Carnegie R1 institutions focused explicitly on broad programmatic support of digital scholarship as defined above. Two Systems and Procedures Exchange Center (SPEC) kits from the Association of Research Libraries (ARL) surveyed libraries regarding digital humanities and digital scholarship activities, infrastructure, funding, and staffing in 2011 and 2016.[2] The Digital Scholarship Centers Interest Group from a different library association, the Association of College & Research Libraries (ACRL), also conducted a survey in 2015/2016 to gather information on digital scholarship centers and the services they provide.[3] This ACRL survey follows a related one done in 2008 by yet a third library association, the Council on Library and Information Resources (CLIR), about digital humanities centers in the United States.[4] However, these studies included not only digital scholarship programs, but also programs that were exclusively focused on the more narrowly defined "digital humanities" support. Additionally, these studies centered on library-based programs. As ARL is primarily composed of libraries at research-intensive universities in North America, there is considerable overlap with institutions with Carnegie R1 Classification. Unlike these surveys that were sent to ARL member contacts in the libraries and focused primarily on library support and programming for digital humanities and digital scholarship from the library, our survey is the first to investigate digital scholarship programs regardless of where they reside, inclusive of those that are administratively outside a university library.

Despite their library-centered design and conflation of digital scholarship and digital humanities programs, these studies still hold relevance for our own. Bryson et al. indicate "a work in progress" or "in development" status for digital humanities support at many institutions. Forty-eight percent noted they provide ad hoc services for digital scholarship projects in the Humanities.[5] Results from Mulligan's study "Supporting Digital Scholarship" found a majority of ARL member libraries have dedicated digital scholarship or digital humanities units in their libraries. Fifty-nine percent of the 70 responding libraries noted that a department or unit was created or reorganized specifically to support digital scholarship activities, while another 11 percent is in the process of creating such a unit.[6]

All of the studies examined noted that digital scholarship activities are supported by different types of staff including librarians, library support staff, IT staff, faculty, and students. Bryson et al. found that the total number of permanent staff supporting digital humanities activities overall ranges from 0.5 to 16 staff, with 4.31 as the mean.[7] Mulligan asked respondents to note the number of staff with responsibilities for specific digital scholarship activities. In the case of computational text support, the range for the number of staff was between 1 and 5 staff, with 2.42 as the mean.[8] Bryson et al. provided data on the types of staff dedicated to support digital humanities and those called in on an ad hoc basis. Among the 51 respondents to this question, "digital humanities/scholarship librarian" was the highest category for dedicated staff with 13, followed by "IT staff" with 7.[9]

Both ARL studies indicate a strong need to collaborate with other university departments to fully support digital scholarship activities. Seventy-five percent of the respondents in the 2011 study conducted by Bryson et al. note collaborations with other units, most notably university information technology units, humanities computing units, and academic departments and centers.[10] Mulligan specifically asked in their 2016 survey whether researchers can find support for 20 digital scholarship services inside the library, elsewhere at the university, or outside the university. For instance, 59 out of 72 respondents indicated 3-D modeling and printing support was available outside the library in comparison to only 42 who stated support in the library. Support for statistical analysis is also primarily provided outside the library. In contrast, support for digital preservation, data curation, and metadata management is primarily available in libraries.[11] Like Bryson et al., Mulligan found strong collaborations with information technology units and humanities computing units. Partnerships with external digital humanities centers or multi-institutional entities were also noted by some respondents.[12] In addition to providing information and statistics on successful partnerships, Zorich noted that 78 percent of the 32 responding digital humanities centers described partnerships that were to some degree unsuccessful. Reasons noted include lack of institutional support, staff changing, loss of funding, mismatched expectations, and communication issues.[13]

A number of trends are evident in the literature regarding specific digital scholarship support services offered. Ippoliti and Mulligan report that more than 75 percent of responding libraries offer services related to data curation and preservation, text mining and analysis, metadata, digital publishing, and Geographic Information Systems (GIS).[14]

By and large, a multipronged marketing approach is used to promote digital scholarship services with methods such as email, the library website, digital signage, posters, listservs, social media, speaking at orientations and other events, and word of mouth. Ippoliti found that email and word of mouth were the most frequently employed followed by the library website and social media.[15] Bryson et al. noted a reliance on subject librarians as the main way to advertise services.[16] Comments in Mulligan's survey results also noted subject librarians as a prominent means of marketing these services.[17]

Although digital scholarship services and activities are funded via a myriad of ways, the library's operating budget is by far the most prevalent source. Ninety percent of respondents selected the library's general budget in Bryson et al.[18] and, similarly, 100 percent did in Mulligan.[19] Sixteen of the 71 respondents (23%) also noted a designated digital scholarship budget in Mulligan.[20] More than 70 percent of respondents noted grant funding to the library as a funding source.[21] Zorich noted that many digital humanities centers are considering establishing endowments as a means for more stable funding. Twenty-two percent of centers have endowments in place.[22] Mulligan corroborated this trend, with 25 percent of respondents selecting endowments as a funding source.[23] A decrease in financial support for digital scholarship services and activities among academic departments is also evident in the literature. Whereas Bryson et al. found that 50 percent of the digital scholarship and digital humanities programs received funding from academic departments,[24] this amount decreased to 18 percent, according to Mulligan. However, support from the university is still significant, as 27 percent of digital scholarship programs receive funding from central university funds.[25]

Mulligan noted that most institutions provide support for faculty, students, staff and other groups affiliated directly with an institution, while 23 percent extend support to external researchers and 15 percent to the general public.[26] Likewise, Bryson et al. found only

29 percent of respondents provide support to outside researchers. Looking specifically at affiliated users, this study found that 98 percent of respondents provide digital humanities support to faculty, whereas only 85 percent provide support to graduate students, 77 percent to postdoctoral or affiliated researchers, and 65 percent to undergraduates.[27] This primacy of faculty and graduate students over undergraduates is corroborated in a number of free-text comments in Mulligan's 2016 study.[28]

While far-reaching studies of digital scholarship programs are scarce, many institutions have published case studies about how they have implemented programs. Since digital scholarship support varies by institutional size and type, these case studies offer road maps for organizations still working to implement digital scholarship programs of their own. Librarians at Kansas State, for example, illustrate how they have built a digital scholarship program around digital publishing and a robust institutional repository, stressing the impact well beyond the confines of their campus.[29] At University of Colorado-Boulder, the team of librarians and technologists that comprise that school's Center for Research Data and Digital Scholarship focus on the promotion of data literacy.[30] University of North Carolina-Charlotte librarians describe the shift from à la carte digital services to a more formal program and staffing model in their Digital Scholarship Lab.[31] Miller describes the elements that led to Middle Tennessee State University's Digital Scholarship Lab—which combines campuswide collaborations with integration of existing library services to provide a range of digital scholarship support and outreach—as an "if they ask, try" model.[32] Mitchem and Rice described how Appalachian State University built a digital scholarship program, despite a culture of skepticism around the concept on their campus.[33] Longmeier and Murphy discussed how a logic model and corresponding data-gathering plan were used to assess digital scholarship services at the Ohio State University Libraries to measure sustained engagement and long-term impacts.[34] While each of these case studies offered expert advice for practitioners on other campuses, they are far from universal experiences and point toward the need for more expansive and systematic study. Though our study overlaps with some of the above literature, our methods surface programs that support digital technology across the university, highlighting the depth of libraries' involvement in these programs without ignoring the significant contributions of other units to these endeavors.

Data, Methods, Research Design

Identifying Digital Scholarship Programs at R1 Institutions

Many institutions around the world and many types of institutions within the United States are home to digital scholarship programs. However, for the purposes of our study, we chose to investigate only those programs at universities categorized by the Carnegie Classification of Institutions of Higher Education as "R1: Doctoral Universities—Very high research activity." The R1 designator represents institutions of higher education physically located in the United States that awarded at least 20 doctorates in the 2016–2017 academic year, reported at least $5 million in research expenditures, and ranked "very high" in either the Carnegie Institution–developed index measuring aggregate research activity or its index measuring per-capita research activity or both.[35] Though the R1 designator includes some overlap with other groupings that have been used to investigate digital scholarship programs in the past, we selected the R1 classification to limit our analysis so that our pool of participants would be limited to higher education institutions in one country. Other groupings, such as the member institutions of the Association of Research Libraries, include institutions from multiple coun-

tries (such as Canadian universities) and non–degree-granting institutions (such as the Boston Public Library), which introduce the confounding factors that come with an international sample and additional diversity in institutional mission. We recognize that there is a notable presence of digital scholarship programs both at smaller institutions and beyond the United States. However, digital scholarship programs at liberal arts colleges, community colleges, and other institutions of higher education often present distinctive resource constraints and tend to support few if any graduate students, making budgetary and user comparison difficult. And while it is possible to identify large, degree-granting research institutions throughout the world, we feel that each country or at least each region of the world's digital scholarship program landscape deserves an article-length analysis. It is our hope that other research teams use and modify our baseline survey to study their own national contexts so that eventual cross-national comparison may become possible.

Our research of digital scholarship programs at R1 institutions took a two-phased approach. In the first phase of our work, we conducted what evidence synthesis scholars Maria Grant and Andrew Booth classify as a comprehensive "mixed studies review/mixed methods review" that combined a "mapping review/systematic mapping" with supplemental "stakeholder consultation."[36] We began by searching the public websites of each R1 institution to identify whether a given institution maintained a digital scholarship program. As mentioned at the outset, the component terms of "digital scholarship program" refer to an expansive set of possibilities that are only marginally narrowed when compounded. But because we hoped to let these programs speak for themselves to reveal their practices, we paired "fuzzy"-yet-systematic searching with direct correspondences to determine whether a university had a "program" that supported the use of "digital" technologies in "scholarship." Navigating first to each institution's main page, we queried its domain search to return results for "digital scholarship." In many cases, the top results were easily identifiable as a digital scholarship program with names such as Digital Scholarship Services, Digital Scholarship Lab, or Center for Digital Scholarship. This search also regularly returned results of clearly identifiable digital scholarship programs without "digital scholarship" in their title such as Scholars' Lab or Innovate Make Create. For institutions where a digital scholarship program was not found during the initial search, we searched the two terms without quotes on the university website and combed the top 20 results for any university programs that might reasonably be identified as supporting digital scholarship by some other name. One "positive result" in this search identified a digital scholarship program that was no longer in service. For all remaining institutions that did not display any clearly identifiable digital scholarship program, we sent an email to an Associate Dean of Libraries or Associate University Librarian asking if their institution has a digital scholarship program we had overlooked. Out of the 54 cases that required such contact—representing 41 percent of the 131 R1 institutions—an additional 24 digital scholarship programs were identified. Email from the library administrators also confirmed that 30 institutions had no digital scholarship program whatsoever. From these results, we identified a point of contact for each digital scholarship program. We manually scanned each program site to identify its leader and their email (87), or, in the cases in which leadership was not identifiable (13), we used the program's generic email address. To these 100 email contacts, we sent our survey. One of these contacts let us know that their digital scholarship program was no longer in service, making our maximum possible N = 99, representing 76 percent of R1 institutions.

The Survey Instrument and Process

We designed our 17-question survey to accomplish three goals: 1) gain a description of the infrastructure of each program; 2) develop a qualitative outline of each program's activities; and 3) invite respondents to reflect on their program's perceived successes and challenges. In the service of our first goal, we asked participants for the program's name, their title, the job classes dedicated to the program's administration, and the program's funding sources. To meet our second goal, we asked respondents about the percentage of activities, topics, and technologies their program most frequently supports, how their program conducts outreach to potential users, the academic demographics of their users, how their program overlaps with others on campus, their means of assessing their work, and what they are prioritizing for the near future. Finally, to our third goal, we asked respondents to identify and describe their program's successes and challenges in recent years. Though we reviewed the instruments of related studies before drafting our own survey, no clear model was found to meet these specific aims. Since our questions were not drawn from previous studies, we sent a test version of the instrument to an external volunteer in a digital scholarship program leadership role at an institution that was not included in the R1 classification and took the survey ourselves. We calibrated the questions to our aims based on these tests.

The survey was submitted to IRB and determined to be "Not Human Research." Nevertheless, we asked participants for consent and offered the option of withdrawing that consent or concluding the survey at any time. We distributed our survey on May 4, 2020, via email from the first author's email address. Potential respondents were given one month to complete the survey using a Qualtrics link. After seven days, we sent a reminder email to those digital scholarship program leaders who had yet to complete the survey, and we sent one more reminder two weeks after that. A third and final reminder with a deadline extension was sent one week later. The full survey instrument is available in the appendix.

Data Analysis Methods

Survey responses were exported from Qualtrics and imported into Python for data analysis using the pandas, numpy, and matplotlib packages.[37] Of the five quantitative questions in the survey, one asked respondents to share the number of employees in their digital scholarship program (Q4). These figures were summed and plotted according to employee type. The remaining four quantitative questions asked respondents to estimate percentages of contributions associated with specific types (of employee, funding source, activity, and user). These data were analyzed by calculating the mean percentage for each type or category in question.

The 12 qualitative questions were analyzed using automated methods, lightweight manual coding, and full inductive human coding workflows. Word frequencies were calculated to explore key concepts in free-text answers for questions about institution names (Q1), program names (Q2), and job titles of respondents (Q3). Text-normalization was used to count technology support topics (Q10) by developing a dictionary to replace variations on common technologies named in free-text answers (such as "Adobe," "Adobe CC," "adobe creative suite," and "Adobe CS") with controlled terms for each technology or tool (like "adobe"). Two of the authors inductively coded the relatively simple and short free-text answers about funding sources (Q6), user support topics (Q9), types of outreach (Q11), and duplicative sources (Q13). Responses for funding sources and duplicative sources were each tagged with one code per response. Most responses for user support topics and types of outreach also received one

code per response, though 1.5 percent of the user support responses and 10 percent of the responses for outreach received two codes. For these four questions, authors 1 and 2 looked at the survey answers independently to draft potential codes. After discussing and refining initial code categories via email, one author coded the remaining responses following the agreed-upon category definitions. Due to the relatively straightforward nature of these category assignments, they were not independently coded.

The final four questions of the survey asked respondents to share perceptions of their programs' major successes and challenges, to reflect on future priorities, and to describe assessment practices. Free-text responses for each question were inductively coded by authors 1 and 2. First, each author independently created codes related to program *practices* and applied those to 20 percent of the responses for each question. The authors then discussed their initial coding and finalized a codebook that was used to independently code the remaining survey responses [see data repository documentation[38]]. When the independent coding was complete, the authors discussed, tracked, and resolved all coding discrepancies for the four question responses. Intercoder percentage agreement for the four questions ranged from 94 to 96 percent, and each question had between 20 and 24 possible codes. Each question response was coded for multiple themes related to program practices. All responses for the four questions that were not submitted as blank were assigned at least a single code. The most codes assigned to any single response was 10, and more than 50 percent of all question responses were coded with at least three practice codes.

Results

We received 77 survey responses from 99 invited participants, ultimately removing six replies from this initial set: three duplicate responses from institutions where multiple individuals replied; one response was withdrawn at the participant's request; one response did not name an institution so could not be included; and another indicated they did not consent to the survey (upon email follow-up this respondent indicated they were no longer at the institution). Our final data set includes 71 responses, which constitutes a 72 percent response rate for the survey overall. Ten of the 71 survey responses in our dataset were partially completed, and all completed responses for individual survey questions are included in the analysis below.

Program names (Q2, n = 64). Seven respondents either did not indicate a program name or noted that the program was not yet formally titled. Of the remaining 64 responses, 56 included the term "digital" in the program title, and 42 included the exact phrase "digital scholarship." Given that a website search for "digital scholarship" was a primary means of identifying institutions to survey, this is no surprise. A variety of place and service terms were present in the program names, demonstrating little cross-institutional consensus: "services" was present in the program title at 13 institutions, "center" at 12, "lab" at 6, "commons" and "studio" at 4 each, and "hub" at 3. Relatively few programs signaled disciplinary affiliations, though 6 programs have "humanities" in the program title, 5 have "arts," and 2 have "sciences."

Job titles (Q3, n = 71). The majority of respondents' job titles reflected their roles as heads, directors, or co-directors of digital scholarship programs (44), while 6 respondents serve as associate university librarians (AUL) or in equivalent positions. Twelve respondents had librarian job titles—7 of those as "digital scholarship librarians"—and fewer respondents identified as assistant (1) or associate professors (2), coordinators (2), strategists (2), analysts (1), or postdoctoral fellows (1). Some job titles reflected dual roles (for example, Head of digital scholarship program and Associate Professor), and one survey was co-submitted by both an AUL and librarian.

Number of employees (Q4, n = 71). At the institutions reflected by the survey, librarians, curators, and archivists (185) are far and away the most common full-time employee types to contribute at least 50 percent of their time to digital scholarship programs, followed by technologists (74), faculty (36), administrative staff (31), postdocs (17), and other (21). Significant variation exists from institution to institution, however. At the low end, five institutions noted that no employees contribute more than 50 percent of time to their programs, while a majority of institutions (38) listed between 1 and 5 employees. Five institutions at the higher end shared that 14 or more employees contribute 50 percent or more of their time to their programs, with 18 employees comprising the most substantial workforce of responding institutions. Two institutions listed only faculty members, another two listed only postdocs, while 14 listed only librarians as contributors to their programs.

Percentage of employee type contribution (Q5, n = 71). The percentage by which employee types contribute to the core activities of the program largely mirrors the number of full-time employees indicated in Q4 above. The mean contributions for all survey respondents show librarians, curators, and archivists contributing at 51 percent, followed by technologists (15%), faculty (11%), administrative staff (7%), graduate students (6%), undergraduates (4%), postdocs (3%), and other (2%). It is notable that the only employee class to contribute 100 percent of the core activities of an institution's specific program were librarians, who constituted 100 percent of the contributions at 10 institutions. The highest portion that other job classes were noted to contribute was 90 percent (postdocs), 80 percent (faculty), 80 percent (administrative staff), 70 percent (graduate students), 65 percent (technologists), and 25 percent (undergraduates).

Q6: Funding sources (n = 71) and Q7: Percentage of funding (n = 68). Respondents submitted free-text responses to the prompt to list "all units (e.g., Office of Information Technology) or sources (e.g., Mellon Foundation) that provide funding for your digital scholarship program." These answers were qualitatively coded by authors 1 and 2 into eight general categories: Libraries, Grants, Gifts, Office of President/Provost/Research, IT, Colleges, Institutes/Centers, and Departments. Three respondents listed funding sources in Q6 but provided no corresponding percentages of contributions in Q7, so they were dropped from the analysis. Thirty of the 33 institutions that listed a single funding source were funded entirely by the library system at their institution.

Each respondent provided a percentage contribution for each funding source identified in Q6. To calculate the mean contribution of each of the eight kinds of funding sources from Q6, source categories that were not listed by a specific respondent were assigned a percentage contribution of zero percent. The mean funding contribution was then calculated for each of the eight funding categories. Essentially, these means are derived by dividing the sum of the percentage values reported for each single category by the sum of the percentage values for all categories [see table 1].

There are notable differences between the percentage of respondents receiving funding from specific sources and the size of the contributions those sources each made to digital scholarship programs. While grants were listed at 28 institutions, for example, constituting the second most common type of funding source, the average percentage of their overall contribution across all digital scholarship programs was only 2.53 percent. Conversely, gifts, when present—less commonly listed by institutions as a funding source—contributed more significantly to the overall budget of digital scholarship programs, averaging 6.1 percent. Specific respondents also provide notable exceptions to the general trend of libraries provid-

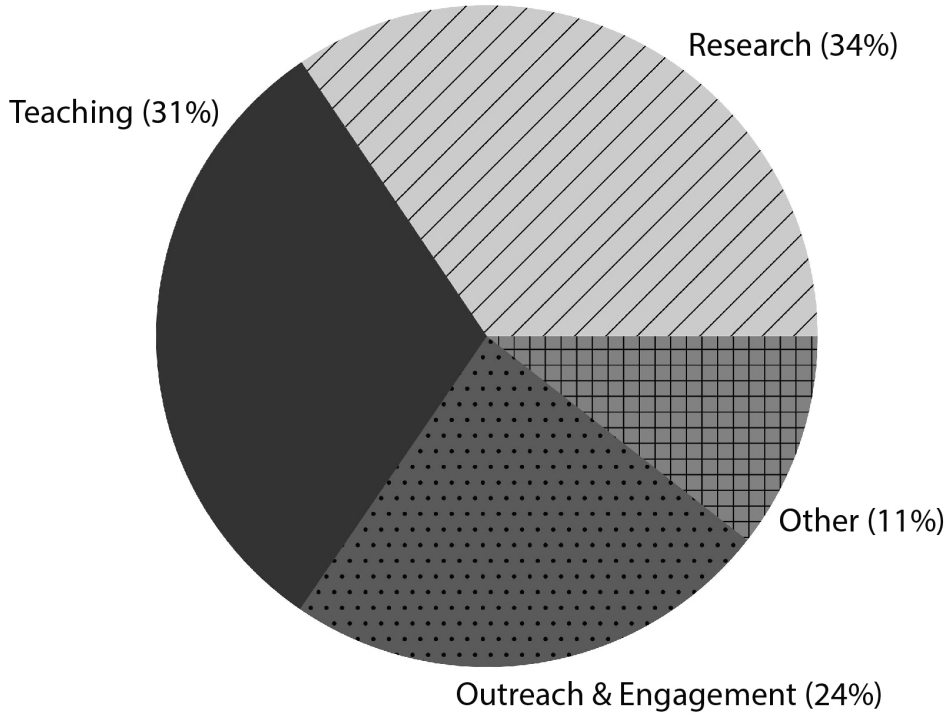
TABLE 1
Counts, Percentage of Institutions Reporting, and Mean Funding for Each Funding Source Category Identified in Q6/Q7

Funding Source	Count	% of Respondents Receiving Funds from Source (Q6)	Mean Funding Contribution (Q7)
Libraries	62	91.18%	78.23%
Grants	28	41.18%	2.60%
Colleges	20	29.41%	3.71%
Office of Provost/President/Research	18	26.47%	6.29%
Gifts	7	10.3%	6.1%
IT	7	10.29%	2.40%
Departments	5	7.35%	0.45%
Institutes/Centers	5	7.35%	0.22%

ing much of the funding to most institutions: one respondent reported that their program is funded entirely by grants; a second reported that 86 percent of the program is funded by Offices of President/Provost/Research, while the remaining 14 percent was funded by grants; and a third was funded 80 percent by gifts and 20 percent by Offices of President/Provost/Research.

Q8: Categories of activities (n = 66). Looking at the activities and support that digital scholarship programs engage in, the mean across the 66 respondents shows a relatively even split. Most institutions engage in all three of the primary categories of activity: only five institutions responded that research comprises none of their activities or support, while another three listed

FIGURE 1
The Mean Percentage of Categories of Activities and Support That Digital Scholarship Programs Reflected in the Survey Engage In (Q8)

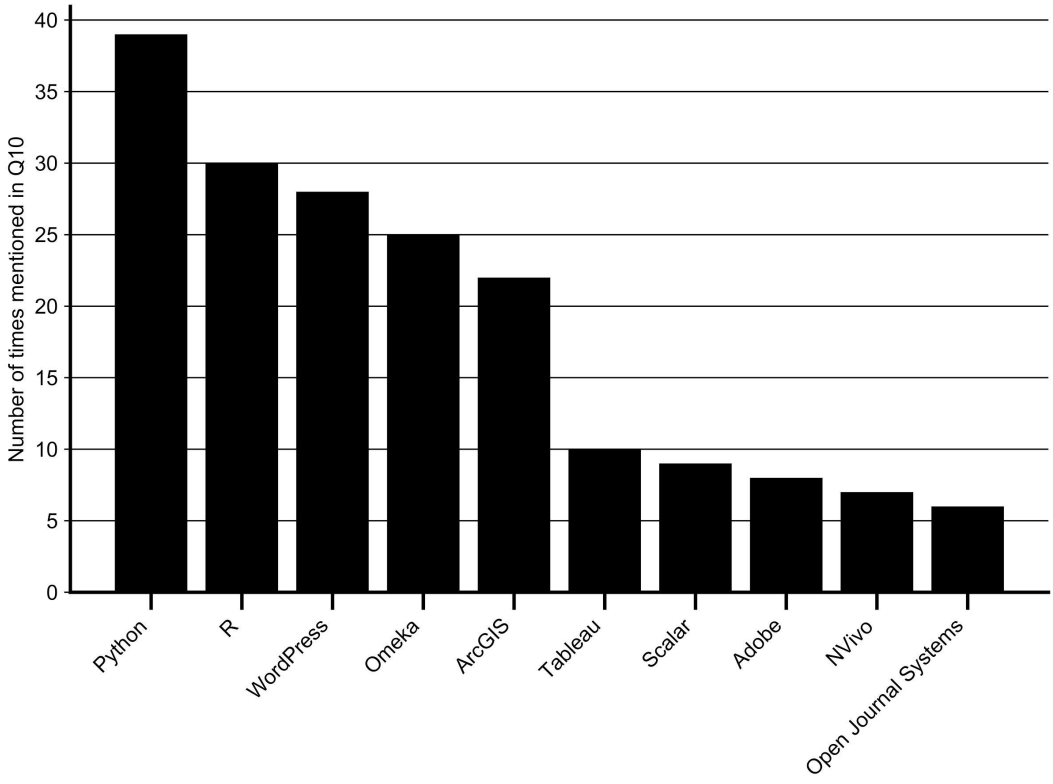


teaching at zero percent, and two engage in no outreach or engagement activities. On the high end, one institution noted that outreach and engagement constituted 100 percent of their activities; but, on the whole, institutions largely reported a relatively even spread across these categories.

Q9: Individual support topics (n = 65). Respondents could enter up to five topics for which individuals at their campus most often sought support from their digital scholarship program. Authors 1 and 2 then qualitatively coded these responses into 26 discrete categories.[39] Considering that only a single institution included the word "data" in the title of their program, it was surprising to note that the two most common topic categories for which individuals seek support were Data visualization (36) and Data analysis and programming (32). Other areas of common support across institutions were GIS and geospatial (30), Digital archives, collections, and exhibits (30), Text mining (28), Online publishing and scholarly communication (27), and Web design and development (17).

Q10: Technology support topics (n = 71). Respondents each shared up to five software applications, hardware, and/or programming languages for which individuals most often go to their program for support. Of the 94 technologies that were mentioned overall, only five were noted by more than 20 institutions. Python was the most common technology mentioned (39 times), followed by R/RStudio (30), WordPress (28), Omeka (25), and ArcGIS (22). The remaining 89 technologies were mentioned by 10 or fewer respondents, which includes a long tail of application support in areas such as design (Adobe products [8]), publishing (Pressbooks [3]), web development (Scalar [9], HTML/CSS [3]), research computing (NVivo [7], Gephi [3]), and GIS (StoryMaps [6], QGIS [4]).

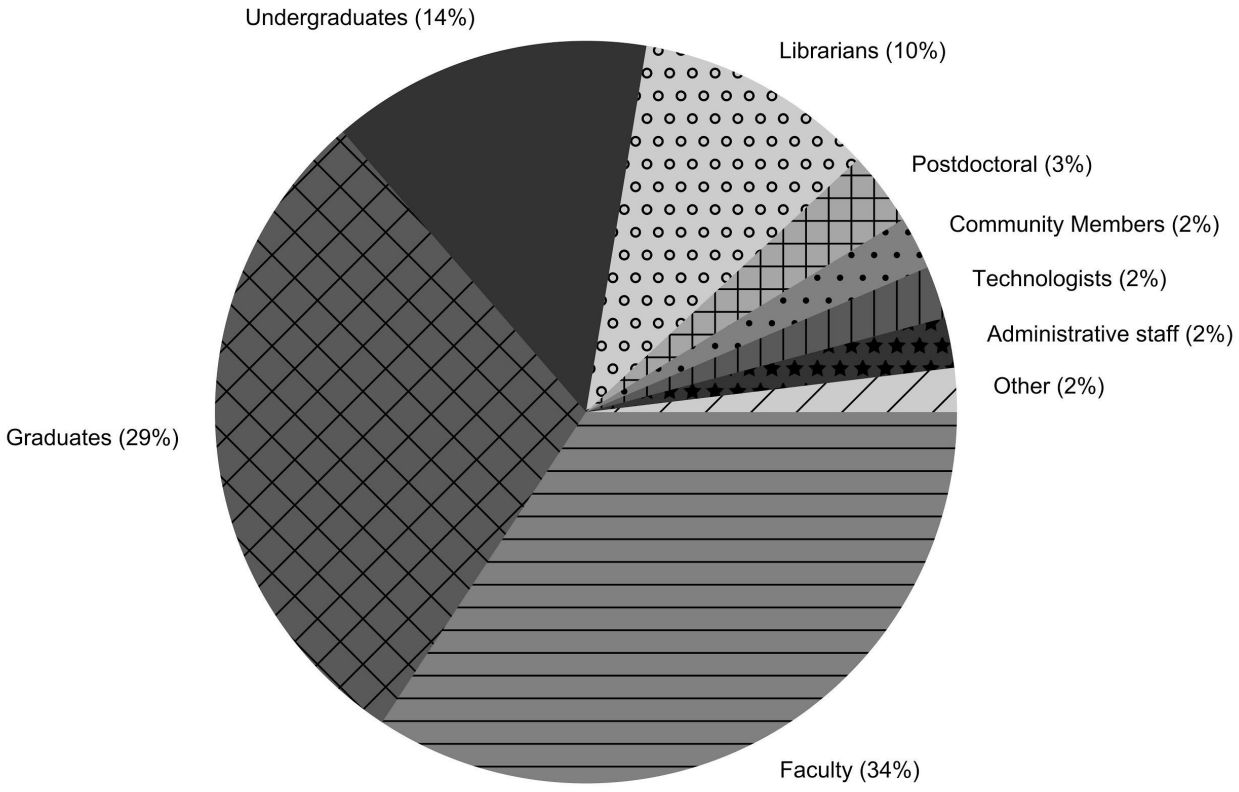
FIGURE 2
The Total Number of Times Each of the Ten Most Common Categories of Technologies Supported by Digital Scholarship Programs Were Identified by Survey Respondents in Q10 of the Survey



Q11: Outreach activities (n = 65). Survey participants were asked to share up to five of the most effective ways they share program activities, services, and events with their constituents. Sixty-five respondents replied to the question, providing at least two modes of outreach, while 26 of those respondents provided examples for all five modes. Authors 1 and 2 qualitatively coded the free-text responses into 16 different categories. Email—a category that includes regular newsletters as well as direct email to individuals on campus and professional listservs—was the most frequently mentioned kind of outreach at 66, by more than a factor of 2, followed by department visits (including departmental orientations).[40] Social media (mentioned 26 times) and website posts (20) are also common modes of outreach, but were mentioned far less than email. More traditional modes such as signage (11)—including print flyers/handouts, as well as digital displays—and tabling at campus events (10), were rarely mentioned as viable ways to communicate to campus users.[41] Only two respondents mentioned arranging more formal outreach via campus communications/PR professionals.

Q12: Who uses the program (n = 66)? The primary users of digital scholarship programs across institutions are faculty (34%) and graduate students (29%), followed by undergraduates (14%) and librarians, curators, and archivists (10%). The long tail of users includes postdocs (3%), along with technologists, administrators, community members, and other users (2% each). No program appears to cater specifically to a single category of user, as the highest percentage of use that any institution reports is 75 percent by faculty, 70 percent by graduate students, and 65 percent by undergraduates.[42]

FIGURE 3
The Mean Percentage of User Types at Digital Scholarship Programs as Collected in Q12 of the Survey



Q13: Duplicative services (n = 54). Seventeen institutions did not list any campus units that offer services or programs that are closely related to, or duplicative of, their own program offerings. Only one institution listed 10 units (the maximum number allowed by the survey), another listed seven, and all others listed fewer than six. Most commonly, institutions listed three or four similar or duplicative services at their campuses. Authors 1 and 2 qualitatively coded the 193 services listed overall by the 54 respondent institutions into one of 16 categories that were chosen to encapsulate the distinct and common divisions within a university's administrative structure. Research Centers—which were coded to include research institutes and all named centers with the exception of those focused on teaching and learning—were the most common kind of similar or duplicative service (49), constituting nearly 25 percent of the identified services overall. Central IT, Libraries, Labs, and Research Divisions each accounted for between 10 and 12 percent of the services named here, with the remaining 10 categories of similar/duplicative services each representing less than 5 percent of the total.

Q14: Major successes (n = 61). Question 14 asked respondents to identify the major successes of their digital scholarship program during the past several years. Authors 1 and 2 coded the 61 free-text responses into 21 program practice themes, and the initial independent coding matched on 1,216 out of a possible 1,281 codes, yielding an intercoder percentage agreement of 94 percent.

After resolving coding differences, the most common successes mentioned were related to *building initiatives/services* (44%) and *building partnerships* (44%). The *building initiatives/services* theme was used to capture any mention of launching or expanding initiatives, services, or other strategic and intentional areas of support. Common examples from the responses were initiatives related to library publishing, open access, research data management, as well as faculty and graduate fellowships. The practice of *building partnerships* was the other most common success mentioned and includes the development of new partnerships or the strengthening of existing partnerships with other institutional units or community partners. It was not used when respondents mentioned "partnerships" with clients of the program, such as faculty or graduate students.

The third most common practice identified as indicative of a program's success was *delivering training/events* (38%), which includes workshops, lectures, and other noncurricular events. A number of codes were used for other teaching and learning practices: the *offering degree/certificate/credit courses* (13%) theme includes more substantial and formal teaching paths; *supporting teaching projects* (10%) includes curriculum integration, assignment development, and in-class visits; while *creating guides/OER* (8%) was used for the creation of open online educational resources, including library guides.

Other common responses relate to the development of a well-used and sufficiently resourced digital scholarship program. These largely concern the ability of the program to meet institutional needs: *expanding utilization* (25%), *securing/budget/grants/gifts* (23%), *adding staff* (11%), *improving/maintaining reputation* (11%), and *building physical spaces* (10%). *Supporting research projects* (23%) and *offering grants/fellowships* (18%) were other common successes and speak to a focus on research-support. Less commonly mentioned activities relate to building or maintaining digital tools and infrastructure: *licensing/maintaining a tool* (18%) refers to the support of open source and commercial software (such as digital libraries/repositories and content management systems) as well as hardware infrastructure, while *developing a tool* (3%) includes the development of entirely new digital systems.

TABLE 2
The Number of Major Success Categories Mentioned by Respondents in Q14 (n = 61)

Success Category	Count	% of Respondents Reporting Success
Building Initiatives/Services	27	44%
Building Partnerships	27	44%
Delivering Training/Events	23	38%
Expanding Utilization	15	25%
Supporting Research Projects	14	22%
Securing Budget/Grants/Gifts	14	22%
Offering Grants/Fellowships	11	18%
Licensing/Maintaining a Tool	11	18%

Q15: Challenges (n = 56). Fifty-six individuals responded to the question "What are the primary challenges your program currently faces or has recently overcome?" Authors 1 and 2 coded these responses using 20 inductive themes, some of which correspond to codes used for Q14 and Q17 and matched on 1,145 of a possible 1,200 codes, leading to an intercoder percentage agreement of 95 percent.

The most common challenges mentioned by survey respondents related to *insecure/inadequate funding* (39%) and *understaffing* (38%). Another notable staffing challenge, tracked separately for instances when staff members either left for other jobs or job positions were lost, was *turnover/loss of staff* (21%). These challenges clearly intersect with another prominent theme, *insufficient capacity*, which was mentioned in 32 percent of the responses and was used when a lack of ability in services, programs, or events to meet demand was noted or respondents shared a sense of being "spread thin." More than one in 10 (13%) respondents also noted challenges in *broadening/deepening expertise*, a theme that was the second most common future priority mentioned in Q17.

Other key challenges relate to a program's placement within an institution and its ability to promote and effectively communicate its role. *Hierarchy/institutional barriers* (32%), the third most common challenge encountered, was coded when respondents shared issues related to institutional and organizational structures. Respondents also regularly noted outreach difficulties: *promotion of program* (27%) was coded in cases where promoting digital scholarship services was a challenge, and *communication* (16%) for difficulties communicating about the program and/or a lack of user understanding of the program and its services.

Building initiatives/services, the top theme for both program successes (Q14) and future priorities (Q17), was only raised as a challenge in 11 percent of responses, suggesting that, while building new initiatives and services has been and will continue to be important work for digital scholarship programs, it is not, in and of itself, a prominent challenge. Similarly, *building partnerships*—the second most common theme for both successes (Q14) and future priorities (Q17)—was less commonly mentioned as a challenge, though it was still present in 20 percent of the responses.

Q16: Assessment (n = 59). Question 16 asked respondents to identify how their "program assesses its own impact, successes, and challenges" and was answered by 59 respondents. The free-text answers were assigned 23 codes to reflect various assessment practices, the intercoder percentage agreement for which was 96 percent, with 1,301 codes matching out of a total universe of 1,357 possible codes.

TABLE 3
The Number of Challenge Categories Mentioned by Respondents in Q15 (n = 56)

Challenge Category	Count	% of Respondents Reporting Challenge
Insecure/Inadequate Funding	22	39%
Understaffing	21	38%
Hierarchy/Institutional Barriers	18	32%
Insufficient Capacity	18	32%
Promotion of Program	15	27%
Turnover/Loss of Staff	12	21%
Building Partnerships	11	20%
Communication	9	16%

Unsurprisingly, the most common practices mentioned to assess digital scholarship programs were the collection of *consultation statistics* (41%) and *training/event statistics* (37%), the latter of which was defined to include in-class instruction statistics. Other areas where activities were counted, though less frequently, were: *website analytics* (15%), which included data collected to reflect visits to digital scholarship websites and guides; *inquiry statistics* (14%), used to track the number of inquiries, new users, and requests; *project/publication statistics* (12%), used to track the outputs of scholars who use the digital scholarship program; and *funding statistics* (5%), used when funding, such as the number and amount of grants and outside gifts received, was tracked for assessment purposes.

The third most prevalent assessment practice mentioned was the utilization of *user surveys* (36%), including needs assessments, which lends a qualitative aspect to the otherwise heavily quantitative measures that were most frequent. Other qualitative data was collected in person via *informal feedback* (17%), *senior leadership/partner input* (8%), and *leadership/staff retreats* (7%). Along with the collection of data and user input, respondents commonly mentioned practices such as *report writing* (27%) and *strategic planning* (20%) as critical to the assessment of its impact, successes, and challenges. *Communicating success stories* (10%) was noted for cases when respondents mentioned documenting and sharing best practices or user success stories, and *standardized evaluations* (10%) for cases where respondents used assessment forms or templates required or recommended by institutions or professional organizations.

TABLE 4
The Number of Assessment Categories Mentioned by Respondents in Q16 (n = 59)

Assessment Category	Count	% of Respondents Reporting Assessment Type
Consultation Statistics	24	41%
Training/Event Statistics	22	37%
User Surveys	21	36%
Report Writing	16	27%
Strategic Planning	12	20%
Informal Feedback	10	17%
Website Analytics	9	15%
Inquiry Statistics	8	14%

Q17: Priorities (n = 60). Question 17 asked respondents to share the most important priorities for their program across the next three to five years. Sixty free-text responses were collected and coded using 24 program practice themes, 21 of which were the same as those used for Q14. Authors 1 and 2 created three new codes—*broadening/deepening expertise*, *completing scholarly projects*, and *social justice*—none of which appeared in survey responses to Q14. The initial independent coding matched on 1,368 out of a possible 1,440 codes, yielding an intercoder percentage agreement of 95 percent.

Building initiatives/services (52%) was the most frequently mentioned priority for future work, followed by *broadening/deepening expertise* (35%), which was assigned for responses that mentioned building staff expertise in new domains or tools to help expand or improve digital scholarship program offerings. The expertise of staff in digital scholarship programs appeared to be notable to respondents primarily when it was lacking: it was not mentioned by any respondents as an example of success in a program (Q14), nor was it ever mentioned directly as something to be formally assessed (Q16), yet it was identified as a priority for the future at more than a third of the institutions. *Adding staff* was also a more prevalent theme as a future priority (23%) than it had been as a notable success (11%, Q14), suggesting that for many digital scholarship programs, human resources and expertise are key issues for their continued success. *Building physical spaces* appears to be a continued focus, mentioned by 15 percent of respondents for Q17, compared to 10 percent of respondents for Q14. And *building partnerships* (35%), though slightly less prevalent than it had been as a notable success in Q14 at 44 percent, was mentioned as often as *broadening/deepening expertise* as an area of future focus.

Themes related to teaching activities were not uncommon as future priorities but were significantly less prevalent than they had been as successful practices in Q14, suggesting that some programs find their teaching activities to be sufficient at current levels.

TABLE 5
Percentage of Themes Identified as Successes and Future Priorities by Respondents

Teaching Practice Theme	Successes (Q14, n = 61)	Future Priorities (Q17, n = 60)
Delivering Training/Events	38%	18%
Creating Guides/OER	8%	8%
Supporting Teaching Projects	10%	7%
Offering Degree/Certificate/Credit Courses	13%	7%

Other areas that were mentioned less frequently as future priorities than as notable successes were: *supporting research projects* (15% in Q17, down from 23% in Q14), *offering grants/fellowships* (5%, down from 18%), and *licensing/maintaining a tool* (10%, down from 18%). Areas that were mentioned at almost exactly the same rates as future priorities and key successes were *expanding utilization* (26%), *securing budget/grants/gifts* (22%), and *improving/maintaining reputation* (12%).

The code *sustaining the digital scholarship program*—used when respondents mentioned working to improve sustainability of program (such as aligning/dropping services to improve the program, building political capital)—appeared as a future priority in 12 percent of responses (Q17), while as a notable success in only 3 percent of the Q14 responses.

Social justice was named explicitly as a future priority by three respondents, while another referred to the need to reorganize the program in such a way as to not report up through a

"particularly racist leadership structure," leading to the theme's appearance in 7 percent of the responses to Q17.

TABLE 6
The Number of Future Priority Categories Mentioned by Respondents in Q17 (n = 60)

Future Priority Category	Count	% of Respondents Reporting Priority Type
Building Initiatives/Services	31	52%
Broadening/Deepening Expertise	21	35%
Building Partnerships	21	35%
Expanding Utilization	16	27%
Adding Staff	14	23%
Securing Budget/Grants/Gifts	13	22%
Program Evaluation	13	22%
Delivering Training/Events	11	18%

Discussion

Since no study of digital scholarship programs has specifically analyzed programs at Carnegie Classification R1 institutions, the foundational finding of our research is that 99 institutions out of the 131—more than three-fourths of all R1 institutions—are home to a digital scholarship program of some sort. This prevalence signals that support for the integration of digital technologies into scholarly activities is seen as critical enough to warrant a dedicated unit at most very-high-research-activity doctoral institutions.

Our survey, however, reveals much beyond the prevalence of these programs. As we had hoped, it offers us insight into their practices. Generally, such programs tend to present themselves as "digital scholarship" programs and be led by a director. Our findings show, however, that there is a broad spread of program names and leadership titles, pointing to their relative novelty in the landscape of higher education. Inclusive of this leadership, we found that digital scholarship programs are staffed by teams with an average of five individuals who dedicate the majority of their time to a digital scholarship program's activities, a team-size average that represents a slight increase from findings in the 2011 survey of ARL institutions conducted by Bryson et al.[43] Our findings that more than half of the individuals who dedicate the majority of their time to digital scholarship programs are academic librarians and that 10 programs are administered entirely by librarians is also in line with the fact that the overwhelming majority of previous studies have focused on digital scholarship programs residing administratively within libraries. That said, our survey also reveals that very nearly half of the staff of digital scholarship programs come from other job classes, with strong representation from technologists, faculty, and administrators. Moreover, we found that 85 percent of programs have at least some mix of job classes, which echoes the findings of Bryson et al., Mulligan, and Zorich.[44] This suggests that most digital scholarship programs are indeed cross-unit collaborations.

While collaboration between types of staff is common, libraries tend to be the main funding source for digital scholarship programs; and it is likely that some of the nonlibrarian/archivist/curator categories of staff are employed by libraries, such as technologists and administrators. Indeed, 42 percent of responding institutions were *fully* funded by libraries. And 91 percent

of responding institutions fund their digital scholarship programs at least in part through libraries. Though the history of digital humanities and its centers have been explored in depth, the origins of digital scholarship and its centers are comparatively underexplored. In a brief commentary on the history of formal programs for supporting digital scholarship, Ed Ayers suggests that such programs took root in the first decade of the twenty-first century.[45] However, neither Ayers nor others trace the original institutional units or original funding sources of programs. Our findings, along with the findings of Bryson et al., Mulligan, and Zorich, demonstrate that libraries have an outsized role in digital scholarship programs throughout the second decade of the twentieth century,[46] but the question—why did digital scholarship programs tend to develop from within libraries?—remains unsettled. The fact that six of our respondents' programs were funded only by gifts, colleges, or offices of a provost, president, or research suggests that alternative units from which to build and manage digital scholarship programs exist. Further complicating previous assumptions about libraries' dominance of digital scholarship programs is the fact that the second largest measure of success respondents reported was "building partnerships." Not only did more than half of respondents identify partnership building as a success, but multiple respondents directly reported this as alleviating confusion between units and facilitating access to infrastructure and personnel or, in the words of one respondent, "a user-centered … comprehensive suite of services."

Speaking to the breadth of digital scholarship programs is our finding that these programs support research, teaching, and outreach and engagement—the three core activities of scholarship—in roughly equal measure. And that diversity of activity-support-type is further reinforced by the dozens of distinct support topics and the nearly 100 distinct technologies that respondents mentioned supporting. While our survey suggests a few key applications in certain areas of support—such as Python and R/RStudio for research computing and WordPress and Omeka for web development—digital scholarship programs otherwise support a wide array of applications with few areas of direct overlap. This breadth suggests that digital scholarship programs live up to the name of the field, supporting and directly engaging with a rich spectrum of technologies rooted in zeros and ones across all aspects of scholarship from research to engagement to teaching and beyond. This breadth of focus may also be evident in the fact that the term "data" only appeared in the digital scholarship program name at a single institution, despite the frequent support offered by digital scholarship programs for common data analysis tools such as Python and R/RStudio.

This wide range of support is likely the core reason that so many digital scholarship programs report their programs as having some overlap and duplication with other units on campus. Our qualitative analysis found at least 16 distinct types of duplicative units with particular overlap between digital scholarship programs and research centers, central IT units, and libraries. But while the array of support that digital scholarship programs offer often feeds boundary confusion with other units, we found that such programs focus the vast majority of their support activities—around 80 percent—on faculty, graduate students, and academic staff with research or teaching responsibilities, such as librarians and postdoctoral researchers, which aligns with the "scholarship" support mission of these programs. And, reflective of digital scholarship programs serving an internal population of scholars or scholars in training is the fact that these programs tend to use more traditional forms of digital communication (such as email and websites as opposed to social media) and high-touch outreach at faculty meetings and scholarly events such as research talks.

Though our short-answer and quantitative questions reveal much about the form and function of digital scholarship programs, our open-ended qualitative questions reveal even more about what digital scholarship programs do in practice. Extant literature on digital scholarship programs has proceeded from the assumption that these programs are "support" programs. We find little evidence to dispute this generalization and, indeed, find activities related to "support" of scholarship as the most common benchmark for success, with "building initiatives/services," "supporting research projects," "offering grants/fellowships," "licensing/maintaining a tool," and "supporting teaching projects" each reported as key successes by at least half a dozen or more institutions. The centrality of digital scholarship programs' support mission was reinforced further by the qualitative responses to the way in which these programs evaluate themselves. The top three methods of program evaluation—consultation statistics, training/event statistics, and user surveys—all speak to a mission of supporting scholars. But while digital scholarship programs clearly serve a supporting role, many also act as intellectual hubs and their staff author or collaboratively produce scholarship too. This fact is evidenced by responses that measured success through securing external grants; offering degrees, certificates, and credit courses; and publishing scholarship.

Beyond the practices of digital scholarship programs, our survey also offers insight into the hurdles and hopes of these programs and reveals the tensions these programs experience within their universities and the socioeconomic pressures they face from the world at large. At the turn of the century, Sheila Slaughter and Larry Leslie outlined the neoliberalization of American universities and demonstrated how "academic capitalism" was reorienting the behaviors of universities and their staff. Universities, Slaughter and Leslie illustrated, were increasingly basing their decisions on revenue generation and increasingly behaving like their counterparts in the for-profit sector.[47] The responses to our qualitative questions illuminate Slaughter and Leslie's concept of academic capitalism in microcosm. Concerns about funding insecurity, understaffing, institutional inefficiencies and barriers, insufficient capacity, and staff turnover—all difficulties related to external market pressures and internal pressures to do more with less—represent five of the top six areas of concerns for digital scholarship programs. A concern that intersects and ties together many of these categories of challenges is a culture of internal competition between digital scholarship programs and other units that are outside their partnership or even, in a few cases, in overt and direct conflict with them. As one respondent stated, "Our university IT department, who are fully aware of our strategic plans for data viz and other services, are beginning to offer their own competing services to get funding from research grants." Concerns like this also speak to common struggles to promote the program, build partnerships, and clearly communicate what the program does and does not support, categories that were reported as challenges by at least 15 percent of respondents.

One challenge that was a particular result of the timing of our survey, but is likely to only grow in its impact, is the COVID-19 pandemic. Our survey was distributed in May 2020, roughly two months after COVID-19's initial exponential spread in the United States, which led to the physical closure of most academic institutions and the pivot to online support. It is perhaps surprising then, to note that only 14 percent of respondents identified challenges related to COVID-19 specifically in their responses. While many institutions were still only beginning to come to terms with the potential impact of the pandemic on institutional budgets and the well-being of their constituents, the authors suspect that COVID-19 would have been a far more prominent theme had the survey been distributed later in 2020 as higher education

institutions began to more specifically reckon with the lengthy and significant impact of the virus on their operations and the world, generally.

One program pointed to the particularly notable challenge of racism, reporting that "white supremacy and blatant racism" were occluding the program from "the budget, staff or other material resources to do the work." Though only one respondent reported this challenge, research on the administration of higher education institutions suggests that structural racism of this ilk is prevalent throughout academia.[48] While neither we nor others have studied the social demographics of digital scholarship program leadership, the general underrepresentation of Black people, Indigenous people, and People of Color in leadership roles throughout higher education—but especially in the information technology and research offices sectors—may explain why only one respondent thought this challenge to be notable.[49] Racism was only reported by one institution as a challenge, but four institutions identified social justice of some sort as a priority for the next three to five years. With this code representing only 7 percent of respondents, diversity, equity, inclusion, and other forms of antibias work did not appear to be a particular priority for most digital scholarship programs at the time of this survey.

The activities that programs aspire to focus on in the next half-decade or so correspond rather closely with the categories around which they measure their successes. It seems programs hope to do more of what they have done well such as building support services and expanding expertise. Concerns of internal marketing, internal competition, securing internal and external funding, expanding staff capacity, finding dedicated physical space, and generally sustaining the program again speak to the inescapability of academic capitalism within which these programs exist. But, while digital scholarship programs strive to perform well in the face of the market pressures that increasingly pervade academia, many also seek to design their programs' future around ideals of partnership and resource sharing. Building partnerships with other units in their university was tied for the second most common goal of digital scholarship programs, and narrative responses representing such sentiments hoped to "deep[en] our relationships with … other allied units on campus," "physically and conceptually connect existing (but historically siloed) experts, services, and activities," "redirect funding to a shared pool … or partner more closely with campus affiliates," "better integration with more units on campus," "continu[e] to build a network among practitioners on campus," "develop a cohesive network for providing services… and expertise across campus," and "integrate our unit more closely with other related units on campus." The reasoning for such strivings for partnership ranged from decreasing redundancy to clarifying access to support resources to working with greater efficiency, but most commonly these efforts aimed to quell internal competition and never mentioned external market pressures or management strategies as influencing such aims. Given these responses, it appears that building a culture of cooperation is an aim of digital scholarship programs second only to their core mission of supporting more projects that integrate digital technologies into scholarly activities.

Conclusion

Our survey and analysis of digital scholarship programs at R1 universities presents the structure, practices, obstacles, and aims of these relatively novel units within the landscape of large research institutions. Digital technology is increasingly present in contemporary scholarship,

and these programs represent a critical means for scholars to enhance their research, teaching, and engagement work with established and emergent digital techniques and tools. By better understanding how digital scholarship programs at the premier research institutions of the United States have sought to build support structures for the application of digital technologies to scholarship, we are hopeful that our work sets a foundation from which comparative research of program design can be built.

To date, surveys of digital scholarship programs have presumed that these units were library-centered. Our work tells a more complex story. Academic libraries do, indeed, maintain an outsized role in funding, staffing, and housing digital scholarship programs. However, we find cross-unit collaboration is a critical component of the design of digital scholarship programs, too. If digital scholarship program leaders can point the leaders in higher education toward successful models of digital scholarship services and programs, they strengthen their case for investments in well-defined and user-centered services, professional development training and events, depth and breadth of support staff expertise, coordinated messaging to faculty and students, and, above all, cross-unit partnerships. And while we have focused on digital scholarship programs in our work, we believe our findings hold potential for program design in other fields as well. Within academic libraries, programs rooted in libraries yet connected formally or informally to other campus units such as scholarly communications and research data services may draw lessons from this work. Moreover, our findings related to cross-unit coordination and partnership should inform central administration planning within large research institutions when they consider the design or redesign of any units with a mission of supporting scholarship.

APPENDIX
The Survey Instrument

By proceeding to take this survey, I agree to participate in the R1 Digital Scholarship Program Study to be conducted by Cody Hennesy, Emily Janisch, Alexis Logsdon, Brian Vetruba, and Benjamin Wiggins of the University of Minnesota Libraries, Twin Cities. I may withdraw from the survey at any time without consequence. No means of identifying me will be provided to any future researcher in any event.

- □ Yes, I consent to participate
- □ No, I do not consent

Program Background

Q1. What is the name of your institution? _____ *(text entry)*
Q2. What is the name of your digital scholarship program or service? _____ *(text entry)*
Q3. What is your job title? _____ *(text entry)*
Q4. How many full-time employees dedicate at least 50% of their time to the administration or primary activities of your digital scholarship program?

- □ Faculty _____ *(number of employees)*
- □ Librarians, curators, and archivists _____ *(number of employees)*
- □ Technologists _____ *(number of employees)*
- □ Administrative staff _____ *(number of employees)*
- □ Postdocs _____ *(number of employees)*
- □ Other _____ *(number of employees)*

Q5. Across everyone involved in the program (whether formally or informally affiliated), at what percentage do the following job classes contribute to the core activities of the program? (Percentages should add up to 100%)

- □ Faculty _____ *(percentage of contribution)*
- □ Librarians, curators, and archivists _____ *(percentage of contribution)*
- □ Technologists _____ *(percentage of contribution)*
- □ Administrative staff _____ *(percentage of contribution)*
- □ Postdoctoral _____ *(percentage of contribution)*
- □ Graduate students _____ *(percentage of contribution)*
- □ Undergraduate students _____ *(percentage of contribution)*
- □ Other _____ *(percentage of contribution)*

Q6. List the name of all units (such as Office of Information Technology) or sources (for example, Mellon Foundation) that provide funding for your digital scholarship program:

- □ Funding source 1 _____ *(text entry)*
- □ Funding source 2 _____ *(text entry)*
- □ Funding source 3 _____ *(text entry)*
- □ *[Up to fifteen funding sources accepted]*

Q7. What is the rough percentage of overall funding that each unit has provided the digital scholarship program over the course of the past 12 months? (Percentages should add up to 100%)

- □ Funding source 1 (determined via text entry from Q6) _____ *(percentage of contribution)*
- □ Funding source 2 (determined via text entry from Q6) _____ *(percentage of contribution)*
- □ Funding source 3 (determined via text entry from Q6) _____ *(percentage of contribution)*
- □ *[Up to fifteen funding sources accepted]*

Program Activities and Engagement

Q8. What percentage of the following categories of activities and support does the digital scholarship program engage in? (Percentages should add up to 100%)

- □ Research _____ *(percentage)*
- □ Teaching _____ *(percentage)*
- □ Outreach and Engagement _____ *(percentage)*
- □ Other _____ *(percentage)*

Q9. For what topics do individuals most often seek support from your program? (examples: web design, data visualization, text mining) List up to five.

- □ Topic one _____ *(text entry)*
- □ Topic two_____ *(text entry)*
- □ Topic three _____ *(text entry)*
- □ Topic four _____ *(text entry)*
- □ Topic five _____ *(text entry)*

Q10. For what software applications, hardware, and/or programming languages do individuals most often seek support from your program for? (examples: WordPress, Raspberry Pi, Python) List up to five.

- □ Technology one _____ *(text entry)*
- □ Technology two_____ *(text entry)*
- □ Technology three _____ *(text entry)*
- □ Technology four _____ *(text entry)*
- □ Technology five _____ *(text entry)*

Q11. What are the most effective ways you share your program's activities, services, and events with your campus users? (examples: email newsletter, department visits, tabling) List up to five.

- □ Outreach one _____ *(text entry)*
- □ Outreach two_____ *(text entry)*
- □ Outreach three _____ *(text entry)*
- □ Outreach four _____ *(text entry)*
- □ Outreach five _____ *(text entry)*

Q12. Who uses your program? Estimate how much each of the following groups uses your program's service offerings. (Percentages should add up to 100%)

- □ Faculty _____ *(percentage of use)*
- □ Graduate students _____ *(percentage of use)*
- □ Undergraduate students _____ *(percentage of use)*
- □ Postdoctoral _____ *(percentage of use)*
- □ Librarians, curators, and archivists _____ *(percentage of use)*
- □ Technologists _____ *(percentage of use)*
- □ Administrative staff _____ *(percentage of use)*
- □ Community members _____ *(percentage of use)*
- □ Other _____ *(percentage of use)*

Q13. Please list any units on your campus that offer services or programs that are closely related to, or duplicative of, those you offer. List up to 10.

- □ Unit 1 _____ *(text entry)*
- □ Unit 2 _____ *(text entry)*

- □ Unit 3 _____ *(text entry)*
- □ *[Up to ten funding sources accepted]*

Program Perceptions

Q14. What would you identify as the major successes of the program in the past several years? _____ *(text entry, long form)*

Q15. What are the primary challenges your program currently faces or has recently overcome? _____ *(text entry, long form)*

Q16. Please describe how your program assesses its own impact, successes, and challenges. _____ *(text entry, long form)*

Q17. What do you envision as the most important priorities for your program across the next three to five years? _____ *(text entry, long form)*

Notes

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5. Bryson et al., *Digital Humanities*, 11.
6. Mulligan, *Supporting Digital Scholarship*, 45.
7. Bryson et al., *Digital Humanities*, 19.
8. Mulligan, *Supporting Digital Scholarship*, 36.
9. Bryson et al., *Digital Humanities*, 18.
10. Bryson et al., *Digital Humanities*, 50.
11. Mulligan, *Supporting Digital Scholarship*, 13.
12. Mulligan, *Supporting Digital Scholarship.*
13. Zorich, *A Survey of Digital Humanities Centers in the United States*, 34–35.
14. Ippoliti and ACRL Digital Scholarship Centers Interest Group, "Survey of Digital Scholarship Centers Final Report," 5–6; Mulligan, *Supporting Digital Scholarship*, 13.
15. Ippoliti and ACRL Digital Scholarship Centers Interest Group, "Survey of Digital Scholarship Centers Final Report," 10–11.
16. Bryson et al., *Digital Humanities*, 39–40.
17. Mulligan, *Supporting Digital Scholarship.*
18. Bryson et al., *Digital Humanities*, 42.
19. Mulligan, *Supporting Digital Scholarship*, 91.
20. Mulligan, *Supporting Digital Scholarship*, 91.
21. Bryson et al., *Digital Humanities*, 42; Mulligan, *Supporting Digital Scholarship*, 91.
22. Zorich, *A Survey of Digital Humanities Centers in the United States*, 32.
23. Mulligan, *Supporting Digital Scholarship*, 91.
24. Bryson et al., *Digital Humanities*, 42.
25. Mulligan, *Supporting Digital Scholarship*, 91.
26. Mulligan, *Supporting Digital Scholarship*, 28.
27. Bryson et al., *Digital Humanities*, 38.

28. Mulligan, *Supporting Digital Scholarship*.

29. Rebel Cummings-Sauls et al., "Transcending Institutions and Borders: 21st Century Digital Scholarship at K-State," *Kansas Library Association College and University Libraries Section Proceedings* 6, no. 1 (November 9, 2016), https://doi.org/10.4148/2160-942X.1059.

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40. Respondents often mentioned multiple discrete forms of email outreach in their answers (such as newsletters or personal email), which, when coded to the more general category of "Email," resulted in more responses for "Email" than the total number of respondents.

41. There is some likelihood that such "on campus" promotion was underreported because respondents completed the survey when most if not all universities in the survey were running reduced in-person operations in the midst of the COVID-19 pandemic.

42. An outlier here reported 100 percent use for the "Other" user category, but the same respondent failed to answer the preceding three questions or any of the following questions, so we suspect this was entered in haste. Nothing else in their response suggests they would fail to serve the primary categories of University constituents.

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Community College Students' Perceptions of Their Information Literacy Needs

Don Latham, Melissa Gross, Heidi Julien, Felicia Warren, and Lindsey Moses

Semistructured interviews were conducted with community college students in Florida and New York, two diverse states with robust community college systems, to explore their self-perceptions of their information literacy (IL) needs. Findings indicate that students value IL in their personal lives, their academic work, and their careers, though it means somewhat different things to them in each of those areas. They think of IL in terms of skills rather than threshold concepts, and they feel that the most important skill is finding information, followed by evaluating information.

Introduction

Community college students represent a significant portion of undergraduate students in the United States; according to the National Center for Education Statistics, approximately 5.6 million students were enrolled in public, two-year institutions in fall 2018, accounting for about one-third of all undergraduates enrolled in the United States.[1] Yet community college students have been studied far less than their four-year college and university counterparts, especially when it comes to information literacy (IL). This study sought to explore community college students' perceptions of their IL experiences and needs. Semistructured interviews were conducted with community college students in Florida and New York, two diverse states with robust community college systems. By gaining a greater understanding of community college students' perceptions of their IL needs, librarians—as well as instructors and administrators—will be in a better position to support students' IL needs both in school and beyond.

The reasons many students elect to begin their postsecondary schooling at a community college are primarily twofold: access and economics.[2] Community colleges typically provide open access enrollment and offer flexible course schedules.[3] Also, the tuition costs of attending a public community college are about one-third the cost of a public four-year institution.[4] Community colleges have a long tradition of providing educational opportunities to historically underserved groups,[5] but many students, regardless of race or ethnicity, are drawn to community colleges because of their life situations. Community college students are typically older than

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their counterparts at four-year institutions, and many are working full-time and have family responsibilities.[6] Students who enroll in community college have a variety of postgraduation goals. Some may be completing courses to earn a high school equivalency certificate. Others are current high school students who are dual-enrolled in a community college to get a head start on college-level coursework. Others are interested in vocational training and plan to enter the workforce after graduation. The majority of these students express a desire to transfer to a four-year college.

Unfortunately, many students who enroll in community college courses, regardless of their educational goals, never earn a degree or a credential.[7] Of students who began their community college studies in fall 2018, only 62 percent were still enrolled a year later; and, of those who began part-time, only half were still enrolled.[8] Even among those who do graduate, those whose goal was to transfer to a four-year college often do not achieve that goal. In 2013, for example, 80 percent of community college students reported plans to transfer to a four-year college, but six years later only 31 percent had done so.[9]

Literature Review

There is a wealth of research on IL among students in four-year colleges. Some of this research simply asks students to rate the IL instruction they have received. For example, Pinto et al. analyzed Spanish students' perceptions of IL instruction delivered through mobile technologies.[10] Other research examines students' IL instruction experiences more deeply. Yevelson-Shorsher and Bronstein interviewed students at an Israeli university and found that students felt that they lacked IL skills and did not view the university library as a source of help to develop that skill set.[11] Evaluating the efficacy of an IL certificate for business students at a university in South Africa, Omar and Davids found that students reported that IL instruction improved their information evaluation skills and academic work.[12] Pinto et al. analyzed Spanish university students' beliefs in the importance of IL skills and found mixed results; of particular concern were that specific skills favored by instructional librarians, such as using a library catalog, using databases, and knowing information search strategies, were rated relatively low by these students.[13] Gross and Latham found that university students did not see the value of IL and hence IL instruction, nor did they view IL as a distinct skill set.[14] Kim and Shumaker found that students who take a course that includes a significant IL assignment rate their IL instruction and their own IL skills higher than those students without an IL assignment.[15] Glowacka et al. found that university students rated the importance of IL skills higher than their own self-efficacy and skill levels.[16] Keba and Fairall, however, found that university students rated their IL skills highly, a finding that is more consistent with previous research.[17] Julien and Boon, in a study that tested student learning outcomes following IL instruction in universities and a community college, found that some IL instruction experiences increase students' knowledge, their confidence and sense of personal mastery, and the efficacy of their information search skills.[18]

There is considerably less research focused on students' IL experiences in the community college context. One multimethod study discovered that community college students overestimate their IL skills, even though the vast majority of them lack proficiency in IL as measured by a standardized IL test.[19] Interviews with community college students revealed that, in seeking information, they tend to focus on product rather than process, they prefer Google and other people as sources of information, and they often assess information qual-

ity in terms of what is good enough.[20] A focus group study found that, as far as instructional preferences, community college students highly value personal relevance, demonstrations, hands-on learning, and opportunities for interaction with the instructor and other students.[21] Further exploration is needed to determine what community college students perceive to be their IL needs, what skills and knowledge they value, and where they see their deficiencies.

These instructional and perceptual issues must be considered against the backdrop of changes in IL instruction in higher education in general. In 2016, the Association of College and Research Libraries adopted the *Framework for Information Literacy for Higher Education*, signaling a major change from a focus on skills to a focus on six threshold concepts ("frames"), each with associated knowledge practices and dispositions.[22] This more conceptual approach to IL has been embraced by many in higher education but has been met with mixed reviews among community college librarians. Some see the *Framework* as appropriate for community college students,[23] and there are reports in the literature of successful implementation at the community college level.[24] Yet others have expressed doubts about the suitability of the *Framework* for community college students,[25] and some have criticized the *Framework* for not making connections between IL and social justice issues.[26] Regardless of community college librarians' opinions about the *Framework*, a recent national survey found that a majority of them have had difficulties incorporating the *Framework* into their IL instruction.[27] It is thus unclear the extent to which the *Framework* may be informing community college students' experiences with IL instruction.

Methodology

This study sought to fill a gap in the research literature by exploring community college students' self-perceptions of their IL needs. It was guided by the following research questions:

RQ1. What are the self-perceptions of students concerning their IL needs?

RQ2. Do students' self-perceptions of their IL needs vary based on their educational and career goals?

RQ3. Do students' self-perceptions of their IL needs vary based on the type of instruction they received (skills-based vs. threshold concepts)?

To address the research questions, students from five community colleges in Florida and New York were recruited for semistructured interviews. These states were selected because both states have large community college systems with diverse student populations in terms of age, race, ethnicity, socioeconomic status, and urban vs. rural residents.[28] Human Subjects approval was obtained from the principal investigator's institution. Interview questions were developed by reviewing relevant literature and consulting with the project's advisory board (made up of community college librarians). The questions were then pretested. Students were recruited via flyers posted in the libraries and elsewhere around campus and classroom announcements in general education courses. Students were compensated with a $30 gift card for participating in a 45-minute interview. The interviews were conducted online, recorded, and transcribed. In the interviews, participants were asked about their educational goals; their experiences with IL (searching for, evaluating, and using information); their experiences with IL instruction both in college and previously; and their perceptions of their IL needs. (The interview questions are provided in the appendix.) A codebook was established based on potential responses to the interview questions. Two members of the research team coded the interview transcripts using thematic coding and employing NVivo Qualitative Data Analysis

Software.[29] Codes were added to the codebook as additional themes emerged from a review of the data. Initially, a small subset of interview transcripts was coded independently by the two researchers, who achieved a Kappa of 0.70. The remaining transcripts were then divided among them, with each completing coding on their own. Once coding was completed, the other members of the research team analyzed the coded transcripts to address the research questions.

Participants

Thirty-four students from five community colleges in the two states participated in interviews. Of these, 22 (65%) were from New York and 12 (35%) were from Florida. Females made up 68 percent (n = 23) of the participants and males 32 percent (n = 11). Fifty-three percent (n = 18) stated that they enrolled in community college right after they graduated from high school. Seventy-one percent (n = 24) reported that they were either in the middle or toward the end of their program of study. Among the participants, a variety of majors was represented. The most frequently represented majors (each with 9%) were computer science, nursing, and occupational therapy assistant. Other majors mentioned include accounting, biology, chemistry, education, humanities, journalism, mathematics, music, machinery, and mortuary science. When asked about their career goals, 79 percent (n = 27) of the participants stated they plan to pursue a bachelor's degree after graduating from community college, either immediately or sometime in the future. Most (n = 19, 56%) said they were motivated to attend community college to get a better job and make more money.

Findings

The findings are grouped according to the following major themes: experiences with finding, evaluating, and using information; perceptions of IL skills needed; preferred ways to learn IL; suggestions for improving IL instruction; and perceived value of IL at school, home, and work. It was not the purpose of this study to compare students between the two states; therefore, findings within each of these themes are presented as an aggregate. In the sections that follow, pseudonyms have been used in place of participants' real names.

Finding Information

Participants were asked about their experiences in finding information as well as the challenges they have encountered. Several mentioned the importance of choosing a topic that fits the assignment (meaning what the instructor wants) and the role of preliminary searching to identify a viable topic. Theo stated, "[O]nce I plot out where I want to go or what I want to talk about, I can find it a lot easier because I know exactly what I want to look up and I'll have relevant information right away." Developing effective keywords was frequently identified as another important component of the search process. Kate, for example, recognized that each discipline—indeed, each topic—has a unique vocabulary, and this is especially true with historical topics:

> [I]t's kind of like a game, just kind of bouncing back and forth. But after a little while, you get used to the terminology they used back then, and then once you know the terminology, therefore—you know, knowing some history and everything, you learn the terminology, and then it becomes a little easier to kind of find the little pieces that are hidden away.

Knowing what resources are available was also identified by several participants, and databases were mentioned specifically as being potentially valuable resources. More typically, though, students reported that they begin with Google because it is easier to use. For instance, Kate complained about the complexity of search commands in databases and added, "for me, it's easier instead of memorizing [those search commands] to just do the initial Google search of 'Google hacks' and then just copy/paste it onto whatever I'm looking for, especially with how fast Google is." Manolo explicitly connected search skills with computer proficiency: "If you're trying to look for information directly, like different search terms or whatever, you definitely have to be good with a computer." And Cindy described the initial stages of a recent research project: "I went straight into Google and put my topic in there, which I don't remember what it was, but I just put my vague topic in there and then I would just read a bunch of articles. I tried to stay more along articles that seemed legitimate and had reviews and stuff."

Students also discussed challenges they faced, including having trouble developing search terms, feeling overwhelmed by the information available, and being baffled by databases. While participants recognize the importance of keywords, some of them reported having trouble developing effective keywords for searches. Cathy said, "I can't think of enough ways to phrase what I'm trying to find or I'm just not finding anything close to it." Angelina noted that English was not her native language, which makes it difficult for her to find information. Sometimes, students said, they perform a search and find very little information; at other times, they find a lot, but much of it is irrelevant. Sandra explained, "[T]here's a lot of different sources. You really don't know which source to click. I mean you click one source and you could barely find anything in it. Or you can get stuff and it's not what you want. It can be very frustrating." Bradley talked about the difficulty of finding information that is not written at an expert level: "[I]f you need one particular piece of information, you have to sift through a bunch of stuff you don't understand yet in order to get at it, and it's hard to get to."

Databases are seen as difficult to use, and so the default source is Google. As Maria said, "I usually just use Google Scholar because I feel like when they've shown us the databases through the library, I don't—I don't want to say they're too hard to use but I feel like it's just like way too many steps, it's way too involved. It's more of a hassle." Yet participants also recognize that sources located through a Google search can be problematic. Vera stated, "I was afraid that it would be a little bit insecure to use Google because sometimes it may be a nice website but it may be something that I thought it's a legitimate website but it's actually not." Other challenges mentioned were finding enough information, relevant information, and information that is not biased.

Evaluating Information

Students described strategies for evaluating information and discussed key challenges as well. Credibility and authority are two issues that students consider. James said, "Well, when I evaluate a source, I try to go into detail to make sure it does come from a credible source. I don't always trust a site. Even if I kind of trust it, I want to see the primary source. That's the way I would probably know it is true…." Cathy explained, "I also do research on those people [authors] and see if they have been known to publicly claim something that would make their information biased…. I go to reputable sources that I know will have the right answers…." She also mentioned a concern that came up in a number of the interviews—bias and the desire to avoid it. When asked how they identified bias, participants offered various

somewhat vague strategies. For example, Bradley stated, "Looking at the name [of the source] can tell you a great number of things about the source. A lot of times fake sources or biased sources give themselves away immediately, just with their name." And Jessica offered this: "Oh, how do I identify bias? I don't know how to explain it, but I just know it when I read it. Like, if the author is, like, strongly supporting this idea, and, like, stuff like that."

Participants reported challenges as well in evaluating sources. Melanie said, "[I]t can be kind of confusing when you're first starting, knowing what's a credible source and what's not." Some students reported being confused by multiple viewpoints. Cindy stated, "Yeah, I've had times where I had just found information that's like one thing says another and they're all different. I kind of just go with probably what I think sounds most correct." Angelina indicated that difficulties with comprehension sometimes impede her ability to evaluate information: "I think I really need help with evaluating data to explain and paraphrase and understand the real meaning of that information that you are finding."

Information Use

In terms of using information, students described several strategies as well as challenges. Various participants spoke of the importance of using statistics, consulting multiple sources, and incorporating different opinions in their papers. On the issue of quoting vs. summarizing, Theo said, "So, depending on what it is, if it's like a really long list of stuff, I'll just summarize it and then cite it. But if it's just like a short, little sentence that I think is worded really well and really helps out my point, I'll quote it directly and elaborate on it."

Several participants used citation management apps. Generally, students found these apps to be quite useful. Grace said that she was delighted to learn about the availability of a citation management app: "I told [the librarian] I was having trouble putting my paper together APA style and she told me that there's these programs that they had where you can—if you're done with your essay you can put it in there; you just make an account, you put everything there, and then it will get all over your paper APA or MLA formatted." Cathy, however, urged caution in using these apps: "I remember a very brutal three months where all we did was cite documents…. I do sometimes still use EasyBib, which is just an easy way to put in a website and get a citation, but sometimes even EasyBib gets it wrong. So, most of the time, I'll write them myself." Most participants noted that they used these various strategies to ensure that they met instructors' expectations.

Participants also discussed challenges they faced in using information. One issue is balancing their ideas with information they have found in other sources. As Melanie explained, "If I'm trying to write a paper, I might find too much, and then it'll be too much of quotes and things that aren't from me in the paper, if that makes sense." Another frequently mentioned challenge was the actual writing of the paper, presenting the argument, and incorporating the research. Karla stated, "The hardest part was the actual research paper. I'm horrible at English. So that was the hardest part. Not the research part of it, but it's the jotting down the ideas and thoughts and everything, effectively communicating it to my professor to make sure they understand what I'm trying to say."

In addition to concerns about writing, students also discussed their fears about not properly citing their sources. Karla, when asked about challenges encountered, responded, "Citations, how are you going to implement this source into your paper? It's not easy, I would say. It's very challenging."

Skills Needed

Participants were asked about the skills they believe they need to be information literate and the skills they feel they need to improve. Several of them mentioned the ability to evaluate sources as an important skill to have. Angelina described the role of evaluation when looking at websites: "for example if you're using online resources it's really important to see from which site or which website you're using that data. Is it like a valid site? Is it like a site that someone just made it up?" Several students echoed this sentiment, stating that one should avoid getting information from sites found through Google, Wikipedia, and social media. This is why some students rely on databases, even though they often find them difficult to use. As Becky said, "Well, I think that's why people use the library databases. Because when you use Google,—you have to be a lot more skeptical. Then you have to do a lot more background information to find out that it's reputable. But the information on the databases you already know are reputable."

In other words, the database creators have already done the hard work of evaluation. The type of source is clearly an important element in the evaluation process for many students. Jennifer noted, "So [students] can learn how to look at information and see that maybe this isn't correct, because it's not from a newspaper, it's not from an article. It's some Jane Doe website." Clearly, much of students' sense of what is appropriate and what is not comes from their instructors. For example, Maria stated, "I feel like there's a lot of kids who they use .coms and blogs and stuff like that. I think, 'Oh my gosh, my English teacher would kill me if he saw that.' Not really but he would be mad."

While evaluation was the most frequently mentioned skill, other skills were identified as well, including writing skills and the ability to use information effectively, two closely interrelated things. Kate reported having difficulty being concise:

> Probably how to condense everything. Like I said, I have probably upwards of 15 sources by now. And so, I can either go through and use each source one or two times with this massive essay and/or, like I said earlier, I would be able to weave kind of through it. And being able to cut down on sources was definitely not something that was taught, because it was always taught "The more sources, the better." And then, now that I have all these sources I'm like "How am I going to make this all [fit]?"

Dennis described experiencing the opposite problem: "When there's not a lot of information to work with, it's tough to write more. A lot of times, I feel like I'm repeating myself when I write or I feel like I'm not getting enough information out based off of what I have, so just knowing how to navigate grammatically."

Not surprisingly, in today's information environment where so many things are available online, students also see technology skills as an important aspect of being information literate. Unfortunately, not every community college student has this skill set. Edward reported, "I'd just say basic understanding of whatever device they're using because you have—you would have something—I have an older classmate in my English class and we sometimes have to help him navigate the computer in the first place." Elizabeth talked about the value of learning computer skills in a course she took early in their program of study: "It was actually a pretty easy course, but it was really informative because most of that stuff, I had no idea. Before I started college, I really didn't know how to use computers very well, so all of that

just helped." For several students, computer skills are synonymous with information literacy; Karla attributed her success to "[p]robably the fact that I know how to I guess get on Google. 'Cause Google'll help you a lot. So that I know how to get on Google, look up what I want, and jot down exactly the books or whatever I need to go searching for…."

Students were also asked about what aspects of information they would like to improve on. They mentioned the ability to find information as being a skill they needed to improve because they see it as being important in their personal lives, their schoolwork, and their careers. Melanie felt that improved information searching skills would be useful in "applying that to day-to-day stuff, like politics and stuff like that, seeing different articles about that, and news, and all that kinda stuff."

In the school context, students focused on getting better at finding information. As Maria said, "Okay, so I guess basically just finding another option and learning how to use another source besides Google Scholar when that one gets worn out." Several mentioned a desire to improve their ability to search databases. Selecting relevant information was also a skill that some students identified; here is Ellen's response: "I guess like finding information that is most helpful to you and deciding which information to use and which information maybe wouldn't be as beneficial to whatever you're trying to accomplish, like to your specific area of research for whatever project or paper it is that you're doing at the moment."

Kate connected selection of information with critical thinking: "Even just critically looking at everything, because if a news article comes out that says, 'Oh, XYZ did this,' but then another news article comes out and says, 'No, they didn't; it's actually changed within the last ten minutes,' it's always best to be able to sift through that stuff." And for some, pulling everything together is a challenge; here's Dennis's response: "A big part of the project is the time it takes to do the project. So, when I'm struggling to even just write or collect my thoughts, maybe some methods of fixing that would be beneficial." Students also saw areas for improvement in information literacy related to their careers. Vera, who is planning to become a journalist, focused on evaluation and critical thinking: "But then if I provide any information that I'm not sure about and I don't like, you know, make sure if that's true like hundreds or thousands of people is [sic] going to get wrong information from me." And Cathy noted that improved skills in finding information would help with the job search.

Experiences with IL Instruction

Participants were asked how they know what they know about IL. While several stated they had received instruction in elementary or secondary school, most said their IL instruction occurred in college. Various venues for instruction were identified, including one-shot workshops, librarian visits to classes, one-on-one consultations with librarians, and in a couple of cases a standalone course on IL. When asked who provided the IL instruction they had received, students mentioned college instructors most often, followed closely by college librarians. Others who were mentioned included K–12 teachers, friends, classmates, and family. Dabir implied that he was largely self-taught: "I'm a natural-born researcher. There were many people who helped me along the way, but I like to put credit on myself."

Participants expressed definite preferences on how they like to learn IL. Seeing a demonstration and having an opportunity to practice were both important. As Sandra put it, "Yeah, I'm going to have to do it over and over again kind of thing for it to kind of stick…. And then, also, when we did that class with the reference librarian and they were showing us how to do

things, they had us on the computers with them." Jennifer talked about the value of getting consistent hands-on practice throughout schooling:

> So, I definitely think that hands-on is really important. But I mean, I guess reinforcing it when you're in the younger grades is just gonna make you more successful than when you're in college and all you're doing is research projects. So, I guess showing kids that this is how it has to be done and then building on it as they get older.

Some noted the importance of personal instruction and being able to ask questions. Grace, for example, said, "I had the one-on-one and I think that was better because it—like any questions I had, they helped me out." Students also mentioned appreciating passionate instructors, whether professors or librarians. Several discussed the value of peer tutors, with at least one, Angelina, expressing a preference for peer tutors: "I find tutors more helpful, more friendly and more like they're open to us than professors or librarians, people like that."

Generally speaking, students expressed appreciation for the help they have received from librarians, instructors, and tutors. But they also offered some recommendations for improvement. Grace wanted more specific instruction in how to find sources:

> They do mention that a lot of things, articles, it's like all online. So, they don't really tell you where, they just say, "Oh, in the library," but they don't say exactly where…. I think a better way would be like to have maybe certain days that they can be like—show you how to—like the steps to take to find the right sources and maybe narrow down.

A similar recommendation from Theo mentioned wanting more training in databases specifically:

> So, for our school, every database is different. So, they just—for the class that we had on it, they just picked one database and just showed us like the really barebones, pretty much, idea of how to use it…. [T]hey didn't really show us variety of databases or different examples. It really just focused on one and how to use just that one.

Ellen felt that students need to be made aware of the library and the resources it offers: "I guess maybe certain professors don't push that as much because I didn't know the resources that were available there. So, I guess maybe the library could be a little bit more advertised, if you will." Edward made the prescient comment: "Honestly, the one thing that I wish would have happened is I would have known this stuff earlier."

Value of IL

Students were asked to discuss the value of IL in their personal lives, for their schoolwork, and in their careers. IL in their personal lives involved finding various kinds of information—healthcare, cooking, parenting, hairstyles, politics, entertainment, and hobbies. The sources

frequently mentioned included Google, Facebook, Twitter, and YouTube. Evaluation is less of an issue for some students. Beth said, "I mean sometimes, I guess, I take like credibility into account, but it's usually just more of like a generic just quick little search for like my own personal information. Like if I was just—I would pay more attention to credibility like if it was like a—like more of a serious like topic that I was looking for." But others, like Marla, reported that they do evaluate sources, at least in some cases:

> If I was looking up something for my own personal knowledge, let's say I was doing something about the new virus or something, and I wanted to know if it was a credible source, rather than just someone putting in fake news, that would also be good in helping me decipher between a good source and something that isn't reliable or might have false information in it.

Participants are even more tuned in to the value of IL for their academic success. Theo noted its importance for success at a four-year school: "Then, going to a—transferring to a different school, it'll be really helpful just because I'm going to be asked to do a lot of those same things that would go with my career because of my degree. So, I'm going to have to do a lot of different research papers and presentations with the information that I've gathered up." Maria stated, "I definitely think that was a huge part in my success in college because I can—research paper sounds hard. But once you get the foundational skills or just being able to look up what you need to do and just put it into sources, citation page, bam, it's done. So, I feel like that was just vital to my success in college."

Elizabeth offered this comment: "You should always know what is good information, so I think that that's really important, just knowing where the information is coming from, why they're giving it out, all of those kinds of things." And Edward recognized the ongoing value of IL not just in school, but beyond:

> Oh, I'm sure I will never stop using it. Well, as far as the databases, obviously, when I graduate, I won't use those anymore, but as far as going and being able to—'cause they've shown us more than just the library. So, I'll be able to use the books that they have given us to be able to write just basic essays like APA, MLA, work citations and—that stuff will never go away.

Many participants recognized the value of IL in their future careers. Hasim explained what IL would mean to him: "Computer science student so, this is like, lifelong learning, I guess, this major. So, even after graduation, I would have to do research of—I will have to write papers and learn many things. So, writing papers is also a main thing—one of the main things—in programming, so this will help." In a similar vein, Maria said, "[I]n this profession, occupational therapy, there's—everything is always changing. Information is always building. So, I feel like the skills of just being able to research is vital for this professional [inaudible] I need to stay up on the most relevant topics and the best practice for my future clients."

Some participants, however, felt that the nature of information seeking is likely to change once they are in a job. Bradley, for example, felt that other people would be the best sources of information:

> [W]henever I start a new job or anything like that, I usually find that people are the most valuable source of information in that sense. I'm sure there's always some sort of ridiculously expensive employee handbook that covers way more than it needs to, but I really find that people who have experience and who know what they're talking about, that's really valuable in a situation like that.

Dennis worried that finding up-to-date information might be difficult in his field: "The way things are changing constantly in environmental engineering, maybe some articles just haven't been published to the websites yet that I might need to know about to stay on top of the game as far as being a progressive engineer." But, overall, participants felt that IL skills would be useful beyond the classroom. Cindy summed it up nicely: "The more knowledge you have, the more you're going to be able to use in the future for whatever career somebody is going into, or whatever they're trying to research. As long as they can get the right stuff, the right research, I think it's very important for any career."

Discussion

The students in our study see IL as an important part of their academic work, their personal lives, and their future careers. Findings indicate both some consistency but also some diversity among the students in terms of their perceptions of their IL needs and the relationship of those needs to their educational and career goals as well as to the type of instruction they have received. The three research questions posed at the beginning of the study provide a useful way of discussing the findings.

Students' Perceptions of Their IL Needs (RQ1)

Students discussed IL in terms of finding, evaluating, and using information. Overall, they have more confidence in their ability to find information for their personal lives than they do for their schoolwork.[30] A couple of issues appear to be relevant here. One is their lack of awareness or confusion about the myriad resources available to them. They are unsure about which resources to consult unless given specific direction. Another issue is their apprehension about using databases, which stems from not knowing what databases are available, what are the differences among them, and how to search them effectively. Contributing to this apprehension is a lack of confidence in finding sources that are relevant to the research topic and will meet the instructor's expectations. Whereas Google and various forms of social media might be fine for finding information for personal use, students recognize that more "serious" sources are needed for schoolwork.

While finding information is these students' greatest concern, they also understand the importance of evaluating information for credibility. Again, there appears to be a difference between information that is considered acceptable for personal use vs. information that is appropriate for school assignments. Interestingly, the students in our study rarely talked about the credentials of authors and how they would determine those; instead, they tended to focus on characteristics of the source itself or the content. For example, for school assignments, students are wary of "just any" website, as well as Wikipedia and Facebook. An appropriate source type is a newspaper or journal article or, in some cases, a book. Their feeling seems to be that these sources have already been vetted for credibility and authority by editors, publishers, and database creators, so no additional evaluation is needed.

The other concern is with content that reflects an opinion or bias of any sort; they gravitate toward "neutral" and factual content. While it is certainly important to be aware of bias, many of the students in our study do not seem to recognize that others' opinions can be useful to incorporate into one's own argument and also seem to equate what they call "bias" with expressing a point of view. And, of course, the fact that something has been published as a book or journal article does not mean that it is free from opinions and bias, but it appears that not all participants recognized that. Previous research has found that community college librarians consider evaluating information to be their students' greatest weakness and previous investigations of community college students found less concern among students about needing to vet resources.[31] The students in our study, however, indicated that it is an area where they feel they need to improve, but, overall, it seems a little less of a concern to them than being good at finding information.

In terms of using information, students feel that knowing how to cite sources correctly is important. But beyond that, several indicated that they needed more guidance in how to incorporate information from various sources and in various forms (quotations, summaries) into their writing. Overall, many felt they needed to improve their writing skills. Instruction in writing is something librarians have generally left to English instructors and writing center tutors, and understandably so. However, it should be noted that several students talked about the benefits of having easy access to writing tutors either inside or adjacent to the library. For them, the availability of librarians and writing tutors essentially in one place was considered a great convenience. Libraries and writing centers should also consider the extent to which cross-training among staff might be possible so that librarians can help with writing issues and tutors can help with research issues. Such an approach would be more seamless for students and thus, more student-friendly.

Students' comments about librarians—and tutors—were generally quite positive. In working with librarians one-on-one, students found them to be approachable and helpful, surely a testament to the commitment these librarians have to student success. In terms of IL instruction, as previous studies have shown, students prefer opportunities to watch search techniques demonstrated and then practice them with hands-on exercises.[32] They also like enthusiastic instructors and the opportunity to interact with the instructor and ask questions. Several indicated they wished they had received IL training much sooner in their schooling. Given that students saw areas where they would like to improve their IL skills and their positive experiences with librarians, there are opportunities for community college librarians to respond to these students' IL needs with innovative IL instructional programs. One way to accomplish this might be to move beyond the one-shot workshop and toward other instructional models, such as embedded librarians and credit-bearing standalone courses. Of course, such approaches require staff time and financial resources, but the findings of this study suggest these investments would pay dividends in terms of student success.

Students value IL, although to them it means somewhat different things in different contexts. Many of them mentioned the importance of IL in their personal lives, their schoolwork, and their future careers. As previous research has shown, they often accept information that is considered "good enough" for their personal use, but they recognize the necessity of having more authoritative sources for their schoolwork.[33] When they think about IL in their careers, some see it as being more closely aligned with the kind of IL skills they need for schoolwork, while others emphasize the importance of people over published sources.

Relationship of IL Needs to Educational and Career Goals (RQ2)

As noted earlier, the vast majority of students who participated in this study (79%) indicated that they plan to pursue a bachelor's degree. Not surprisingly, no discernible differences were noted among the students in terms of their perceptions of their IL needs for school. This was even the case for the students who planned to enter the workforce after graduating from community college. The only real differences, as discussed above, were found in how different students perceive their IL needs in their future careers. Some are convinced that the IL skills they are developing in their schoolwork will transfer into their career work as well. But others imagine less reliance on published sources in their careers because they do not believe published work will be up to date enough to meet their professional needs. They expect instead to rely on people for information, presumably colleagues and mentors.

Relationship of IL Needs to Type of Instruction Received (RQ3)

For the most part, all of the participants in our study discussed their IL experiences and needs in terms of skills rather than concepts. None indicated that they had received IL instruction based on the ACRL *Framework*. This may mean that the librarians at the community colleges represented here—at least the librarians these students have interacted with—have not yet incorporated the frames into their IL instruction. In some cases, this may be because they find it challenging to use the *Framework* in the community college context.[34] Or it could be that some of the librarians are using the concepts in designing their instruction but not using the terminology from the *Framework* in talking with students.[35] Another possibility is that some librarians are using the terminology, but the terms are not resonating with students or staying with them beyond the instructional sessions.

Conclusion

These findings indicate there is an opportunity for librarians to use the frames more extensively and more explicitly. For example, students are already focused on finding information, so librarians could make use of the frames "Research as Inquiry" and "Searching as Strategic Exploration" and connect those to something students are already concerned about. Students are also aware of the challenges involved in putting together a successful research paper, so librarians could use students' own experiences and concerns to talk about "Information Creation as a Process." These students recognize the importance of having authoritative sources even though they do not always know what that means or how to identify such sources. This presents an opportunity for librarians to discuss the idea that "Authority Is Constructed and Contextual." Students' wariness of sources that express opinions and their confusion in differentiating bias and viewpoint could be examined within the context of "Scholarship as Conversation." And, although students may rarely think of information as having economic value, they do express concerns about how to properly cite sources. These concerns provide an opportunity to discuss the concept of intellectual property and the frame "Information Has Value." Of course, time for IL instruction is always an issue, but these strategies, combined with other approaches such as embedded librarians and credit-bearing courses, may allow librarians to integrate the *Framework* into their instruction, with potentially transformative results.

The findings also have implications for future research. Building on previous research, interviews with community college librarians could provide an in-depth look at their experiences with skills-based vs. frames-based instruction and their perceptions of students' IL needs.[36]

Such research could help community colleges better meet the IL needs of their students. A longitudinal study of community college students who transfer to four-year colleges and those who enter the workforce can provide insight into how effectively students' IL experiences in community college shape their success once they graduate. And quasi-experimental studies could investigate the efficacy of new types of interventions, including both skills-based and frames-based interventions.

Limitations

The students who participated in our study were self-selected and may not be representative of community college students in general or even community college students in Florida and New York. Among the 34 participants in the study, five community colleges, three in New York and two in Florida, were represented. This is a small sample among the community colleges in the two states; students in other community colleges may have different perceptions of their IL needs and experiences. Also, students who choose to talk to a researcher about IL experiences may differ from those who do not.

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APPENDIX
Interview Questions

1. **Warm-up question.** Please share with me something about why you decided to attend community college and the steps you took to get here.

   Probes: Did you enter community college directly from high school?

   Have you attended community college continuously since you started?
2. What is your personal goal for your education? (for example: skills improvement, Associate of Arts [AA] degree, Associate of Science [AS] degree, specific kind of job, professional certification, transfer to college or university, lifelong learning, other?)
3. Tell me about what you are doing in school now.

   Probes: For example, what program or major are you in?

   What stage are you at?
4. What kinds of assignments or projects have you typically been asked to complete in your college classes?

   Probes: For example, tests, labs, essays, research papers, technical skills demonstration, presentations, group projects.
5. When you need to find information for a college assignment or project, how do you approach that?

   Probes: What steps do you take or what methods do you use to find that information? Examples are consulting with others (ask whom), online searching (databases, internet, library website, discussion forums), visit the library, class text, or other resources.

   What kinds of challenges have you faced along the way? What did you do?

   Who do you consult for information or turn to for help when you need information?
6. What do you see as the knowledge and skills you need to find that information?

   Probes: Ask about specific skills, the ability to access information (ability to search the internet, search databases, use the library, and so on) and understandings such as how to evaluate, use, and create information.

   Ask about foundational concepts (such as in the ACRL Frames), issues of authority, the value of information, information creation as a process, research as inquiry, scholarship as conversation, searching as strategic exploration.
7. How did you learn what you know about how to find, evaluate, and use information?

   Probes: Ask about each skill or knowledge mentioned in 6.

   Where/when did you learn these things? Did you learn these skills in school? At this college or another college or university?

   Who taught you what you know about finding, evaluating, and using information?

   What was the setting (formal or informal)? How was the training performed? (in a classroom, one-on-one, or other)
8. How helpful was the information training you received? (This is in relation to question 7 above.) What would have made your experience better?

   Probes: Can you provide an example of how the training helped or didn't help you with school assignments, on the job, or personal information needs?
9. What skills or knowledge do you think you might still need to learn or develop further to

help you get the information you need for school assignments, on the job, or for personal, everyday living?

Probes: Ask about each context: school, work, personal

How do you think you might learn or develop these skills further (through class instruction, lectures, personal research, books, help from others [who])?

10. How do you think your knowledge about information and your ability to find, use, and evaluate information will help or hinder you after graduation—at university, if you plan to transfer, on the job, or in your personal life?

Probes: Ask about each context: school, work, personal

11. Is there anything else you want to tell me about how you engage with information?

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Identifying Scholarly Search Skills Based on Resource and Document Selection Behavior among Researchers and Master's Students in Engineering

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This study focuses on differences in the scholarly search approaches of researchers and students in contemporary information environments by examining use of academic resources and elements in search results (such as title or abstract) to identify scholarly search knowledge and skills. To examine how users select documents for different search situations, an online survey of resource selection and the use of search result elements was conducted among 48 researchers and 40 master's students in the field of engineering in Japan. The results show that researchers use resources and search result elements differently for each situation, while students lack that ability.

Introduction

Literature reviews are an indispensable part of research. An effective scholarly search using bibliographic databases is important for finding academic papers related to the research topic. There are important differences between a scholarly search and an ordinary information search. They involve the use of different sources and different results assessments. When conducting an ordinary information search, users are often satisfied by reviewing several results from a search engine.[1] In the case of a scholarly search, users mainly access bibliographic databases and specific academic resources.[2] When carrying out a Web search, researchers understand reliable sources.[3] Researchers conduct an exhaustive search frequently to confirm the novelty of their study and evaluate all relevant documents.[4] After selecting appropriate databases, researchers need to check many search results[5] as well as the elements in those results (such as title, author name, or abstract) to decide which documents to read.

Changes in the digital environment and possible means of information access may affect how users select academic resources and check the search results. For example, these days,

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researchers also use Google in addition to various academic databases provided for scholarly search.[6] For search result elements, the full text is usually preferred in addition to the title and abstract.[7] This preference may be encouraged by some databases (such as Web of Science and Scopus), which display links to full-text versions in the search results. Google Scholar also provides PDF links for direct access to full-text versions, if available. This functionality has emerged through the spread of online bibliographic data and e-journals. Experienced researchers adapt their scholarly search approaches to the current digital environments; thus, full-text versions are easily accessible, and the use of search engines has expanded.

Some studies show that students who have just started research struggle to adjust to search environment changes. For instance, students find it hard to search for academic information using general search engines because of the large number of results and their uncertain reliability.[8] Other research shows that many students are overconfident in their search skills; in reality, they struggle to find proper resources.[9] They also lack research-related search skills such as checking documents from nonacademic resources or using important figures to identify and select relevant documents.[10] These difficulties may arise because students are familiar with ordinary information searches but lack the specific skills and knowledge needed for scholarly search. By studying and documenting the knowledge and skills used by experienced researchers, our work will support students in performing scholarly searches more effectively and efficiently.

The present study examines differences between the current scholarly search methods of researchers and graduate students. Researchers' behavior varies[11] in different academic fields: different databases are appropriate for each field. Our study focuses on engineering: it has the largest number of graduate students in Japan,[12] and engineering researchers tend to adopt the latest search technologies.[13] Among graduate students, we regarded doctoral students as researchers and master's students as research beginners. In Japan, master's students are expected to conduct research at a higher level than simply taking courses; they write a master's thesis for graduation in general. Thus, master's students are at the beginning of their careers and need to acquire the knowledge and skills to conduct scholarly searches. Accordingly, we compared those students with researchers. Our goal was to identify among research beginners the knowledge and skills necessary to undertake scholarly searches (such as understanding which elements need checking to efficiently select documents to read in full-text format among many search results). The ACRL Framework for Information Literacy for Higher Education[14] offers a comprehensive model for teaching students about evaluating information. However, our focus was scholarly search behavior. In a preliminary investigation,[15] we conducted an observational study with 10 researchers to explore their search behavior with academic databases. In the present study, we surveyed researchers and master's students: RQ1, to identify what information resources they used when searching for relevant documents; and RQ2, to determine how they selected which documents to read in full-text versions.

This study contributes to understanding current user behavior and contemporary issues in scholarly search. The results also have implications for the improvement of library services including information literacy education.

Literature Review

This study focused on two issues: 1) what information resources (that is, search engines or databases) the subjects used; and 2) what search result elements they used to select documents. Several previous studies have addressed the first issue in the areas of science, technol-

ogy, engineering, and mathematics. Survey results about database selection have revealed that researchers use Google in addition to academic databases.[16] Interview studies among researchers found they employed Google and Google Scholar in different situations, such as beginning a new research project,[17] conducting literature reviews,[18] and finding information related to specific problems.[19] Athukorala et al.[20] revealed that researchers use different databases depending on the purpose of their information search. They used interviews, the diary method, and observations to study six information engineering researchers and identified the following six search purposes: keeping up to date with research; exploring unfamiliar research areas; collaborating; reviewing literature; preparing lectures; and recommending materials for student reading. Subsequently, they conducted a survey of these search purposes among 76 researchers. According to their results, researchers use Google Scholar most for "staying up to date with research" and "collaborating" while they use Google the most for "exploring unfamiliar research areas" and "reviewing literature." The results indicated that different databases are used depending on the search purpose.

In the present study, we examined the use of databases for specific search purposes. In an observational study, we found that the search process appeared to be related to the research stage (such as beginning research and writing papers).[21] The questionnaire in the present study determined whether the purposes of the search and the research stage influenced the choice of databases; it also assessed the search results.

With regard to the second issue of assessing documents from their search result elements, the following three studies found that title and abstract were important. Hsin[22] interviewed three groups of researchers having different years of experience and found that experienced researchers tended to rely on title and abstract to choose documents relevant to their research. Wang et al.[23] revealed that the four elements most frequently used to assess document popularity and target audience were title, abstract, journal, and author. Macedo-Rouet et al.[24] observed researchers' search strategies using PubMed. This study showed that 84 percent of participants checked abstracts after reviewing titles, and 34 percent of them tried to access the full text of the reference list. Jamali et al.[25] also found that article content (in other words, figures/tables or methods) available from a full-text version was equally or more important than the publication journal and author in selecting a document. Thus, in an environment offering easier access to full-text versions, the process for evaluating search results might differ from the past. In this study, we include full text as a search result element and also explore which full-text structures researchers consider.

Many related studies on search result elements have investigated researchers and doctoral students. The present study also examined master's students, and it compared such students' results with those of researchers in terms of scholarly search skills. We considered that our approach would help identify information resources and document selection behavior based on the methods adopted by the users. We believed that our findings would help research beginners learn experienced researchers' techniques.

Methodology

Large-scale surveys are typically employed for the study[26] and log analysis[27] of scholarly search behavior. They are useful in identifying the overall situation related to such behavior. By contrast, the present study sought to determine scholarly search behavior with respect to research stage and search purpose. Thus, we conducted a preliminary observational study between

November 2015 and September 2016 among 10 researchers who demonstrated their document search processes with respect to their information needs.[28] We recruited those participants (five faculty members, five doctoral students) from the fields of information science and engineering.

From the results of that observational study, we developed questions concerning academic resources and checked elements among the search results. We also referred to questions used in related studies with respect to respondent demographics, background experience in scholarly searches,[29] and elements.[30] The questionnaire consisted of 14 items: respondent demographics (3 items), background experience in scholarly search (3 items), resources for obtaining documents (3 items), checked elements in search results (3 items), and others (2 items). Some question items were based on the observational study or on questions from related studies. See appendix for the full questionnaire. To understand respondent profiles, we asked about the following three items: academic position/doctoral program/master program, department, and period of research experience. For information on participants' search background, we asked three questions about their satisfaction with finding documents, their experiences participating in a library workshop, and their database search experience.

To learn about the respondents' use of resources, we asked about information resources used routinely and about databases used for scholarly search (multiple responses allowed for each question). From the observational study, we learned that participants distinguished search needs by the research stage they faced and chose information sources accordingly. We used the insights that emerged from interviews[31] to define three research stages: beginning research; considering appropriate methods (to solve problems); and writing papers. For example, one participant who had started a new project about half a year previously, explained, "I am unfamiliar with this field, so I will look for the standard literature cited in article references selected among the search results." We considered this beginning research. Another participant stated, "I'd like to use new materials for my experiments, so I'll search for methods that employ such materials." We regarded this as considering appropriate methods. Yet another participant commented, "I want to search for articles about patented devices because I am *writing my paper*"; that participant then selected a database to begin the search. We categorized this as writing papers. The observational study also revealed that most (7/10) participants searched several databases. Therefore, the relevant survey question included databases mentioned by participants, such as digital libraries run by academic associations (such as IEEE or ACM), Google Scholar, and Google in questionnaire options in addition to subscription databases (such as Web of Science).

To understand how researchers assess their search results, we asked about their use of different search result elements. These elements included bibliographic items (such as title or abstract) and other Web of Science result elements (such as research field or cited counts). Based on the observational study,[32] we included three additional elements. First, "full text" was a factor, which was also mentioned in prior studies.[33] Respondents who selected "full text" were then asked which structures or portion of the full text they reviewed, such as the introduction part, references, figures, or tables. Second, "image" was also identified as a factor, following a participant in the observational study who performed an image search with Google and used this to select documents he would read in full. Third, "online availability" was also indicated as a desirable feature because we found that some users decided to read only if they could access an online full text.

Respondents were asked to indicate their use of these options according to the purpose of their search. From the observational study,[34] we determined that the purpose of search

would influence which search result elements were important. For example, a participant in the study explained, "I'm looking for previous studies. Since I'm not familiar with this field, I don't know much about authors in this field. I use journal titles to judge whether their fields are related.". The survey offered three purpose options, elicited during the observational study: 1) "to identify appropriate research methods"; 2) "to find previous research in an unfamiliar field"; and 3) "to learn about a trend of research."

For reference purposes, we asked respondents about the order in which they used search result elements (multiple answers were allowed) and the frequency of their use of subscription database functions. Here we present characteristic findings of information resources and search result elements.

Respondents and Data Collection

The survey was conducted with two groups (a researcher and a student group) from the Graduate School of Information Science and Electrical Engineering, Kyushu University and the Graduate School of Electrical and Computer Engineering, Shinshu University. Both schools focus on research and education in information science and electrical engineering. The two universities have more than eight schools; thus, their libraries subscribe to databases in many fields; we assumed that would eliminate database selection bias owing to lack of access. That is why we chose those two universities.

Through the mailing list of each school, we sent an invitation to faculty members and graduate students to participate in our survey. Respondents were asked to fill out an online survey form (Google Forms) between October 20 and November 10, 2017. Informed consent (see appendix) was obtained individually from each respondent before they answered the questionnaire. We obtained 88 responses (48 researcher responses and 40 student responses), for an effective response rate of 10.4 percent (see table 1).

TABLE 1
Sample Size and Response Rate

	Number of Surveys Sent	Number of Respondents	Response Rate
Total	847	88	10.4%
Researcher	304	48	15.8%
Faculty	163	41	25.2%
Doctoral Student	141	7	5.0%
Master's Student	543	40	7.4%

Results

Resources for Obtaining Documents

Figure 1 shows the strategies used for finding documents (multiple answers were allowed). In the researcher group, the most highly selected item was "References in academic articles" (87.5%); it was followed by "Search engines (e.g., Google)" (70.8%) and "Google Scholar" (66.7%). Those items were also found to be popular in previous studies.[35] By contrast, in the student group, the most used strategy was "Recommendation by supervisors, colleagues, and/or laboratory members" (82.5%); that rate was overwhelmingly higher than among researchers. Students also used Google Scholar (72.5%) and Search engines (62.5%) at similar levels to researchers. Academic databases were commonly used by researchers (62.5%) but less so

FIGURE 1
Use of Resources for Obtaining Documents

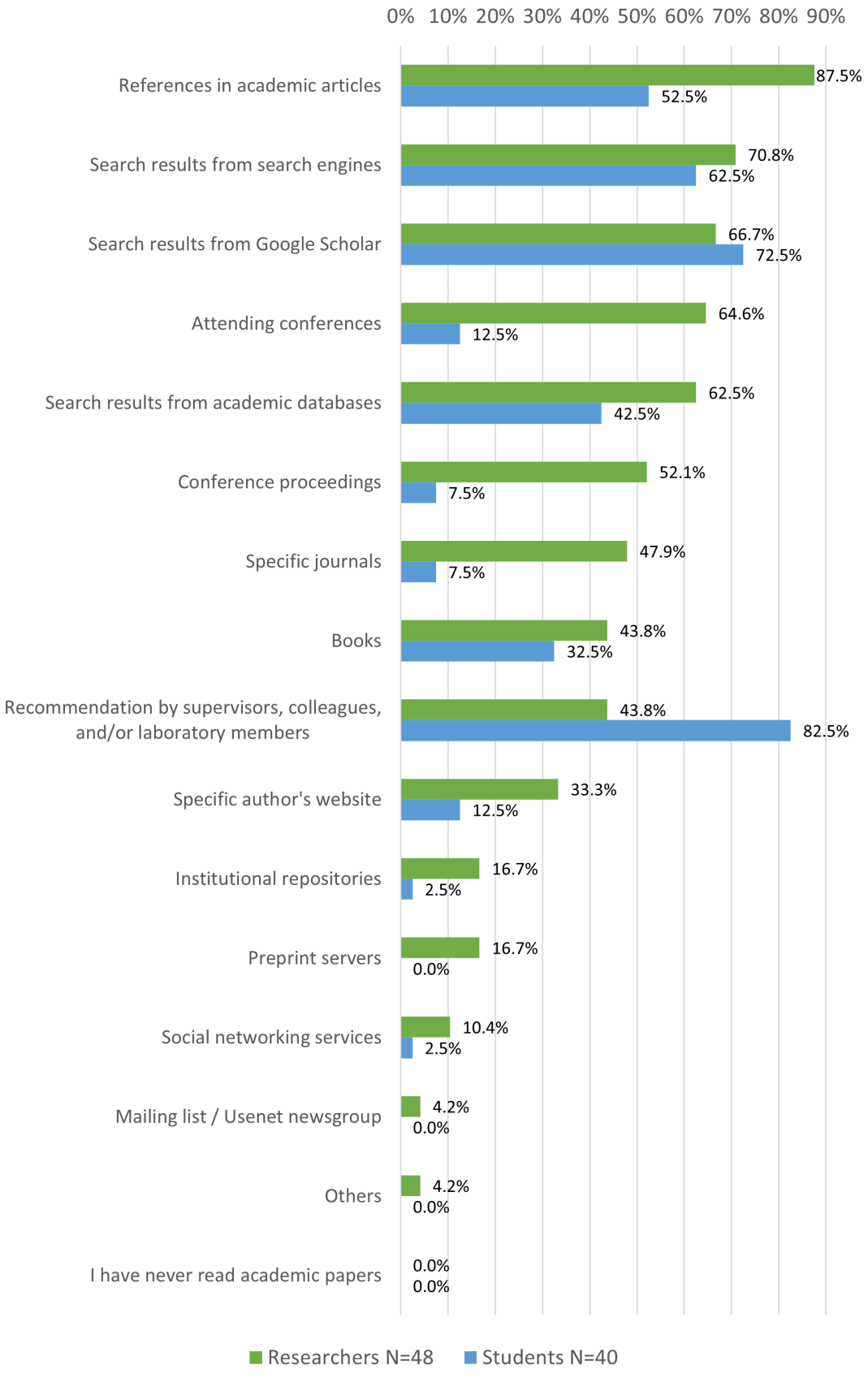
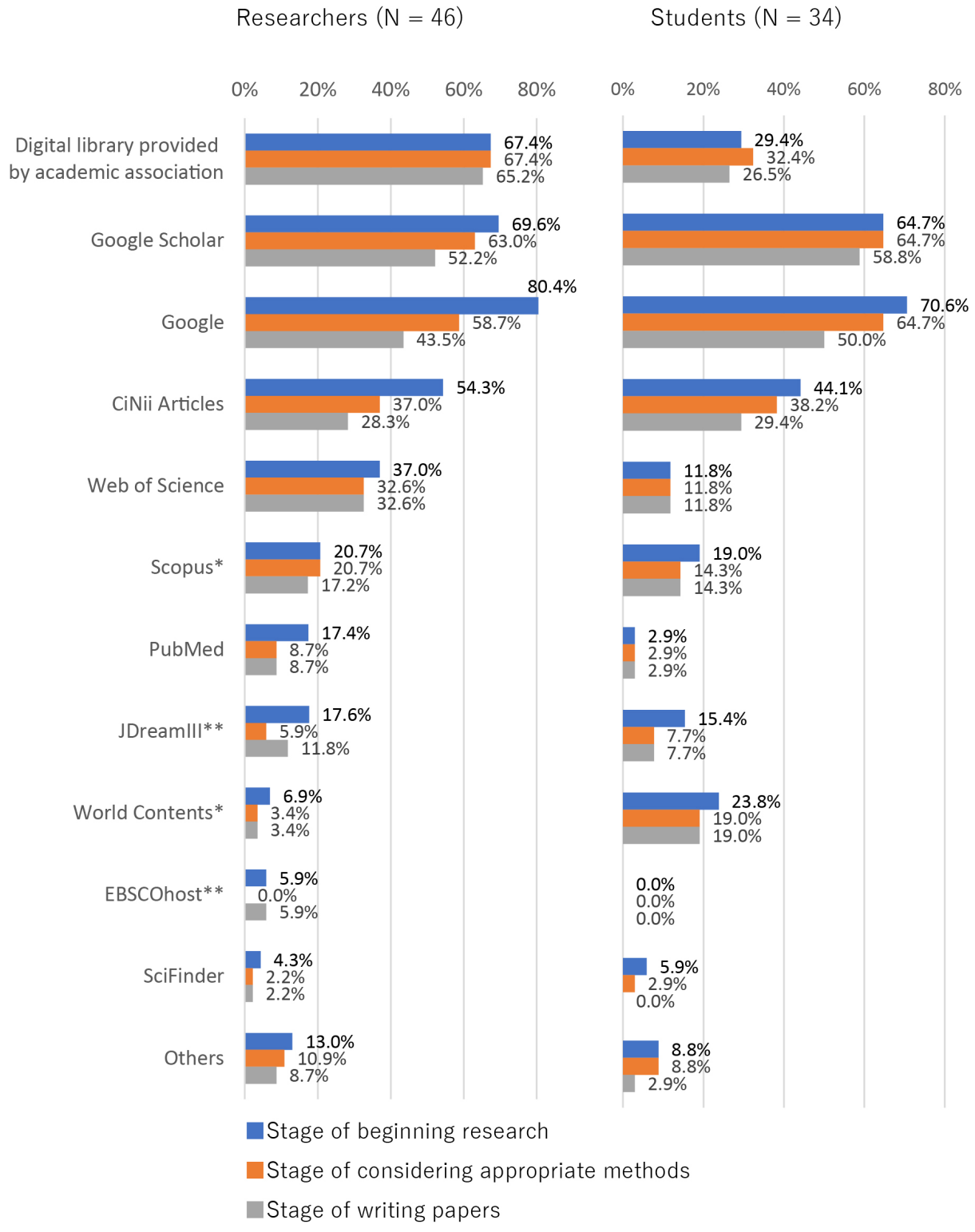


FIGURE 2
Primary Information Resources by Research Stage



*Scopus and World Contents are available only for Kyushu University members; accordingly, we asked such members about using them (29 researchers, 21 students).
**JDreamIII and EBSCOhost are available only for Shinshu University members; accordingly, we asked such members about using them (17 researchers, 13 students).

by students (42.5%). Moreover, researchers tended to seek out information through various resources that students largely overlooked. For example, 64.6 percent of researchers chose "Attending conferences," which means documents are found through attending presentations or through discussion at conferences, compared with only 12.5 percent of students; 52.1 percent of researchers chose "Conference proceedings" versus 7.5 percent of students; and 47.9 percent of researchers chose "Specific journals" compared with 7.5 percent of students. These results indicate that, in engineering, researchers use a wide variety of strategies; master's students use fewer. Instead, students obtained relevant documents recommended by supervisors and laboratory members rather than searching directly. These findings also suggest that students need to better understand how to use these research resources toward obtaining relevant documents by themselves. For example, students need to learn that academic databases, proceedings, and academic society journals are important resources for research.

Primary Information Resources by Research Stage

Figure 2 shows primary information resources for each group depending on the research stages. Note that only 80 of total 88 respondents had experience with database searches, so the rates are based on n=46 for researchers and n=34 for students.

At the beginning stages of research, both researchers and students use Google highly (80.4% and 70.6%, respectively). This is followed by Google Scholar (researchers; 69.6%, students; 64.7%). These findings are consistent with previous studies showing that Google is the most frequently used database among researchers[36] and employed for scholarly search when research is just getting started.[37] The same pattern is present in these results, but Google usage decreases with research progress. Researchers select digital libraries provided by academic or professional associations more often when exploring appropriate methods (67.4%), and when writing papers (65.2%).

Unlike researchers, students used Google and Google Scholar more than other sources at any stage of research, and they made limited use of digital libraries compared with these two popular resources.

Use of Search Results Elements by Search Purpose

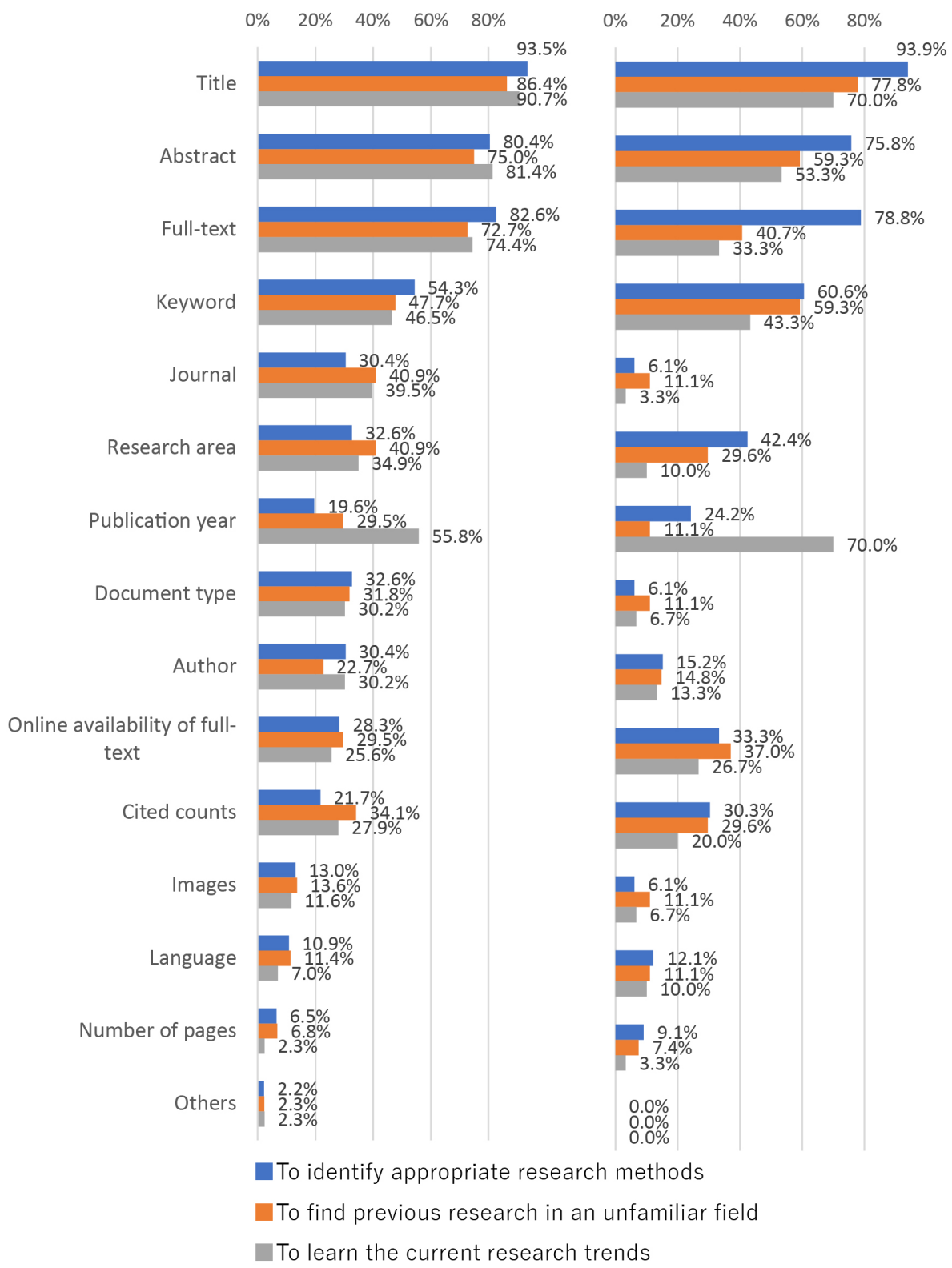
Figure 3 shows the findings related to elements in the search results when the respondents checked to select documents to read for three different purposes. The total number of respondents was different for each purpose and the rates are based on the respondent numbers shown in table 2. Separately, we have reported this result for researchers only.[38] As previous studies showed,[39] title and abstract are important elements for both groups, but here we highlight the differences between the practices of researchers and students.

When researchers want to explore research methods, they focus on search results with "Full-text" (82.6%) and then "Keywords" (54.3%). In exploring research methods, students

TABLE 2
Number of Respondents (Use of Search Result Elements per Search Purpose)

Search Purpose	Researchers	Students
Research methods	46	33
Unfamiliar field	44	27
Research trends	43	30

FIGURE 3
Use of Search Result Elements, by Search Purpose



made less use of the following elements than researchers: "Journal title" (6.1%) "Author" (15.2%), and "Document type" (6.1%). Because understanding the research field was required to assess document relevance by the journal title and author, students rarely used those two elements. Further, if students lack experience in reading academic articles, they may not have known what document types existed.

When seeking previous research in an unfamiliar field, researchers favor checking "Research area" (40.9%), "Journal title" (40.9%), and "Cited counts" (34.1%) to find core articles in a field. These elements are used less for other search purposes.

When examining current research trends, both researchers and students check "Publication year" (55.8% and 70.0%, respectively). This element is indispensable to consider when users wish to discover the latest articles. These results are not surprising; indeed, they support insight into the detail and trends of scholarly search behavior, even with the relatively small number of respondents.

Use of Full-text Structures by Search Purpose

Figure 4 shows the percentages of each full-text structure checked when deciding whether to read the document more carefully after seeing the full-text version. This question was asked of respondents who selected "full-text" as one of the search result elements that they typically checked, and the rates are based on the number of respondents shown in table 3. We have also previously reported this result for researchers only.[40] Here we focus on which full-text structures should be considered an important part of document selection skills for students.

TABLE 3
Number of Respondents (Use of Full-text Structures per Search Purpose)

Search Purpose	Researchers	Students
Research methods	42	30
Unfamiliar field	39	23
Research trends	39	20

Although students indicated that they check "Introduction" most frequently for any search purpose, researchers check different full-text structures depending on their search purposes. When searching for research methods, 78.6 percent of researchers check "Method" and 76.2 percent check "Figure, table, and formula." In other words, both skimming methods and checking charts seem to be useful to identify appropriate research methods. For finding previous research in an unfamiliar field, 89.7 percent of researchers check "Introduction" and 64.1 percent consider "Related work" compared with other purposes. When seeking information about current research trends, fewer than half of researchers consider "References" (46.2%). Because cited articles are older than the current article, they would rarely be suitable as a source for learning about the latest information on a topic.

These results indicated that the experienced researchers understand which structures are most relevant for each search purpose, in the same way that they consider the relevance of different information resources. In contrast, students demonstrate fewer skills for document selection.

Self-assessment of Scholarly Search Ability

We found differences between researchers and students in terms of their use of resources and their ability to use search result elements to evaluate documents for selection. Figure 5

FIGURE 4
Use of Full-text Structural Elements by Search Purpose

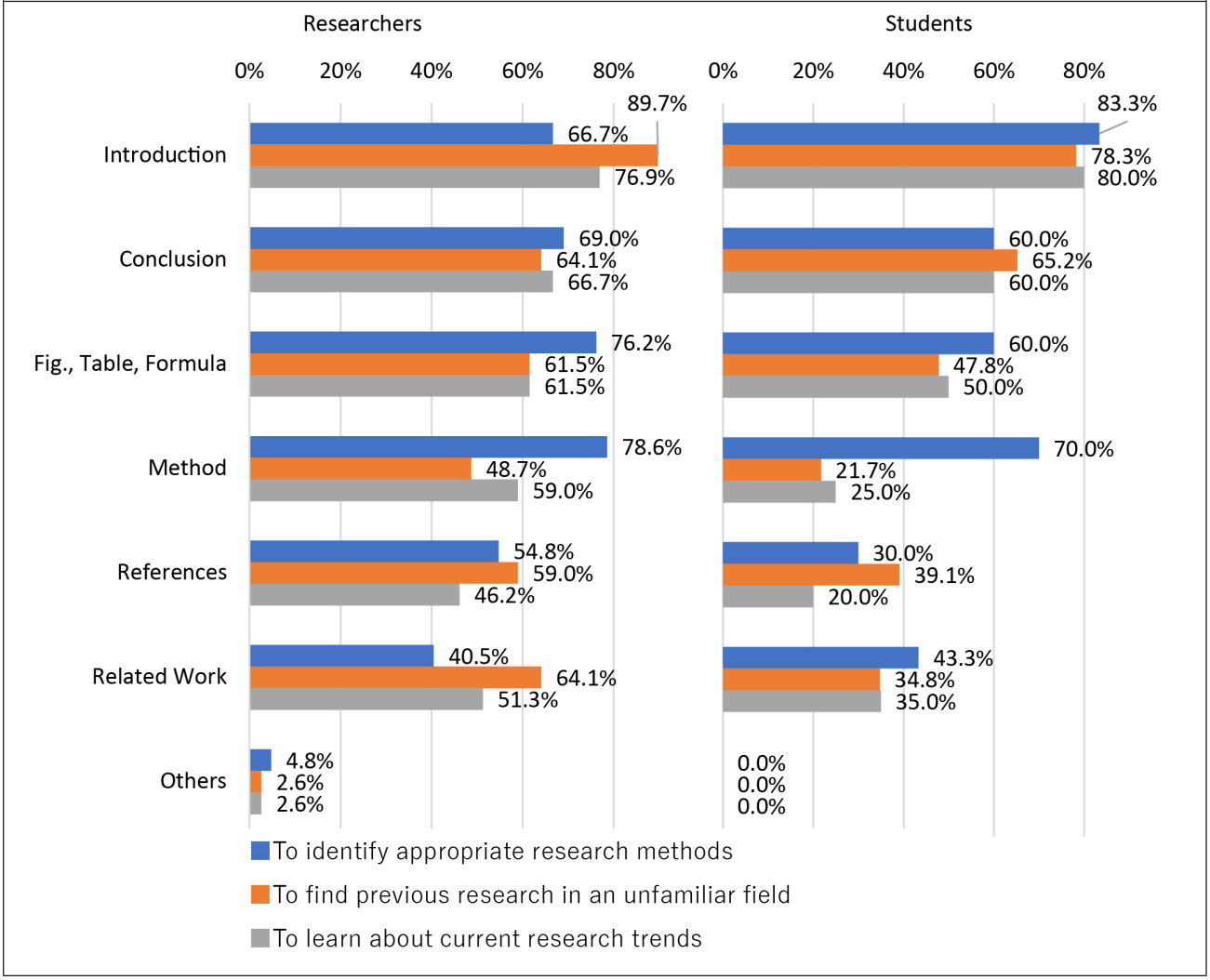
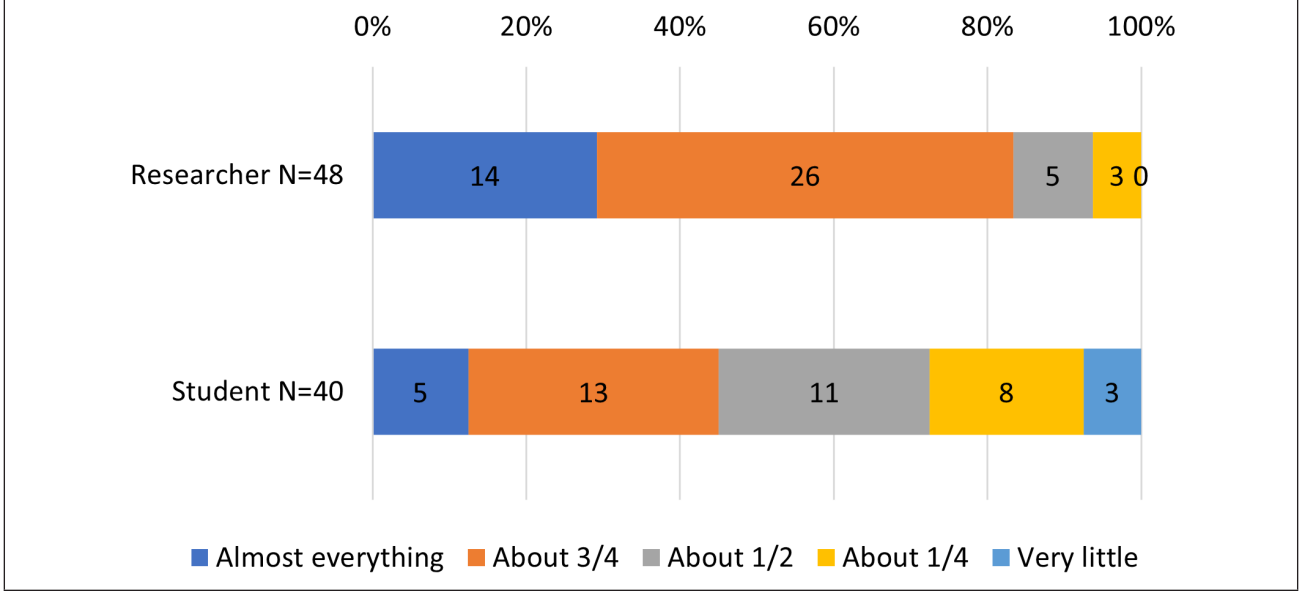


FIGURE 5
Self-assessment of Search Ability



shows the results of respondents' self-assessments about their ability to search effectively on their own. Students appeared to have more difficulty in finding relevant full-text documents. Among researchers, more than 80 percent claimed that they could find "Almost everything" or "About 3/4" of what they need, whereas less than 50 percent of student respondents felt the same. It is likely that, because students lack knowledge and skills to search effectively, compared with researchers, they are less satisfied with their ability to find suitable documents.

Discussion

We conducted this survey to examine resource use at each research stage and determined the search result elements for different purposes. The results showed differences between researchers and master's students.

In terms of information resources, researchers used digital libraries provided by academic associations for specific research stages (such as considering appropriate methods and writing papers); students tended to use Google and Google Scholar at any stage. Students might be satisfied with Google Scholar: it has links to access full-text versions if they are available. The results indicated that students need to understand the various resources that experienced researchers use: digital libraries, core journals, prominent authors, and preprint servers related to different research fields. Most digital libraries provide search functions for anyone, although they allow only their members to access full-text versions. Students need to know that digital libraries are important resources and can search them. The most popular resource among researchers was references; thus, it would be useful to teach students how to choose relevant documents from a reference list.

Students tended to confirm elements that could be judged easily, such as publication year. Researchers—unlike students—also typically checked different elements in the search results and full-text structures depending on the purpose of their search. It is necessary to explain to students why researchers reviewed certain elements and structures. Our results showed that a number of experienced researchers conducted image searches to find relevant documents; thus, image searches should be introduced as a way of locating documents. Such an approach would be valuable, especially for searches related to experimental devices and figure models. Most students have limited opportunity to practice selecting resources and documents because they largely rely on recommendations from supervisors and/or research collaborators for relevant documents. That is, they seldom have the chance to acquire the knowledge and skills of scholarly search, which researchers have learned through experience. Supervisors or senior laboratory members might be expected to train students in theory. However, it could be difficult for them to visualize and explain distinctive features of their methods[41] because they learned these methods tacitly through their own search experiences.

The following studies relate to how students acquire expertise. Lajoie noted that students need to be instructed about domain-specific techniques to attain expert competence.[42] Alexander cited the Model of Domain Learning, which lets students gain expertise.[43] Stenberg underlined the importance of gaining real-world expertise.[44] Their opinions are not consistent with our survey results. Without instruction, students cannot intrinsically understand how to search properly. It is necessary for them to develop a method for efficiently acquiring researchers' knowledge and skills related to scholarly searches.

Conclusion

This study focused on researchers' scholarly search approaches, particularly their choices of resources and how they evaluated documents based on search result elements, to identify knowledge and skills of scholarly search suited to different situations.

Our study involved a case study with specific targets in the engineering field. This method allowed us to examine how researchers conduct scholarly search by referring to their actual behavior. It also enabled us to compare how experienced and novice researchers find academic articles in the contemporary digital information environment.

This study revealed which resources researchers use most to find academic articles and how they select documents for relevancy. The findings have implications for choosing appropriate database subscriptions at university libraries and for improving database interfaces. The findings also can inform the development of library workshops to teach research knowledge and skills, creating opportunities to learn about other researchers' and/or laboratories' knowledge and skills. Although we focus on the engineering field in this research, it could be applied to other fields by considering databases relevant in those fields.

User studies focusing on user characteristics, needs, and behavior are important for developing future library services. Therefore, it is indispensable to communicate regularly with students and faculty. Accumulating further cases like our study will contribute to the enhancement of library services.

Acknowledgments

This work is based on a master's thesis submitted by the first author to the Department of Library Science, Graduate School of Integrated Frontier Sciences, Kyushu University and is supported by JSPS KAKENHI Grant Number JP15H01721. We would like to thank researchers who took part in the observational study. We also wish to express our gratitude to members of the Graduate School of Information Science and Electrical Engineering, Kyushu University, and the Graduate School of Electrical and Computer Engineering, Shinshu University, who cooperated on the survey and for being so generous with their time.

APPENDIX
Informed Consent for the Survey on Document Selection

Yasuko Hagiwara
Master's Program, Department of Library Science,
Graduate School of Integrated Frontier Sciences,
Kyushu University

If you agree to participate in the survey, please complete the consent form below. We would appreciate your cooperation once you understand the purpose and details of the study.

Purpose of the Study

The purpose of the study is to understand how researchers use databases for scholarly search and which search result elements they use to select academic articles to read in full. The results will be summarized as part of a master's dissertation. The study is supported by JSPS KAKENHI Grant Number JP15H01721.

Procedures and Duration

Please answer the following questions. The survey will take about 10 minutes.

Voluntary Participation and Right to Withdraw

Participation is voluntary. You may decline to answer any questions and may withdraw from the survey at any time. We would appreciate it if you could answer as much as possible.

Risk

There are no physical risks involved in participating in the survey. For students, your answers will not affect your grades in any courses you are taking.

Publication of the Survey Results

The results will be summarized as part of a master's thesis. We may also publish the results in conferences and/or journals.

Privacy and Data Storage

This is an anonymous survey, and individual participants will never be identified. The principal investigator of this research project will store the survey data for up to 10 years.

Contact Information

If you have any questions about the study, please contact the following:
Investigator: Yasuko Hagiwara (Department of Library Science, Graduate School of Integrated Frontier Sciences, Kyushu University)
Email: XXX@XXXXXXX
Supervisor: Emi Ishita
Email: XXX@XXXXXXX
Department of Library Science, Kyushu University
Tel: XXX-XXX-XXXX Fax: XXX-XXX-XXXX

Thank you for your time and cooperation. Please check your answer and write the date before participating in the survey.

Consent form

I understand the purpose and details; therefore, I agree to participate in the survey (Please check your answer).

- □ I Agree
- □ I Do Not Agree

Date: / /

1. What is your current position?
   - □ Professor
   - □ Associate Professor
   - □ Lecturer
   - □ Assistant Professor
   - □ Research Assistant
   - □ Post-doctoral Fellow, Research Fellow
   - □ Doctoral Student
   - □ Master's Program Student
   - □ Others ( )
2. What is your department/program?
   - □ Department of Informatics
   - □ Department of Advanced Information Technology
   - □ Department of Electrical and Electronic Engineering
   - □ Others ( )
3. How long have you been involved in research? (including master's program)

   _____ years
4. How do you typically find academic articles for your research? (Check all that apply)
   - □ Search results from academic databases (e.g., Web of Science, Scopus)
   - □ Search results from Google Scholar
   - □ Search results from search engines (e.g., Google)
   - □ Specific journals
   - □ Books
   - □ References in academic articles
   - □ Conference proceedings
   - □ Attending conferences
   - □ Specific author's website
   - □ Institutional repositories
   - □ Preprint servers
   - □ Social networking services (e.g., Facebook, Twitter, blog)
   - □ Mailing list/Usenet newsgroup
   - □ Recommendation by supervisors, colleagues, and/or laboratory members
   - □ I have never read academic articles
   - □ Others ( )
5. To what extent are you able to find academic articles that you need for your research? I can find…
   - □ Almost everything

- □ About 3/4
- □ About 1/2
- □ About 1/4
- □ Very little

6. Have you ever attended library workshops on conducting a literature search? (including instructions at laboratories)
   - □ Yes
   - □ No
7. Have you ever performed a literature search using databases and/or search engines?
   - □ Yes
   - □ No

[The following questions concern the use of databases. If you selected "No" to Question 7, you have finished the survey. Thank you for your cooperation.]

8. With which databases do you perform document search for each research stage? (Check all that apply)

	Stage		
	Beginning research	Considering appropriate methods	Writing papers
Web of Science	□	□	□
Scopus	□	□	□
SciFinder	□	□	□
PubMed			
Google Scholar	□	□	□
Google	□	□	□
Digital library provided by academic association (e.g., ACM, IEEE)	□	□	□
CiNii Articles*	□	□	□
World Contents**	□	□	□
Others	□	□	□

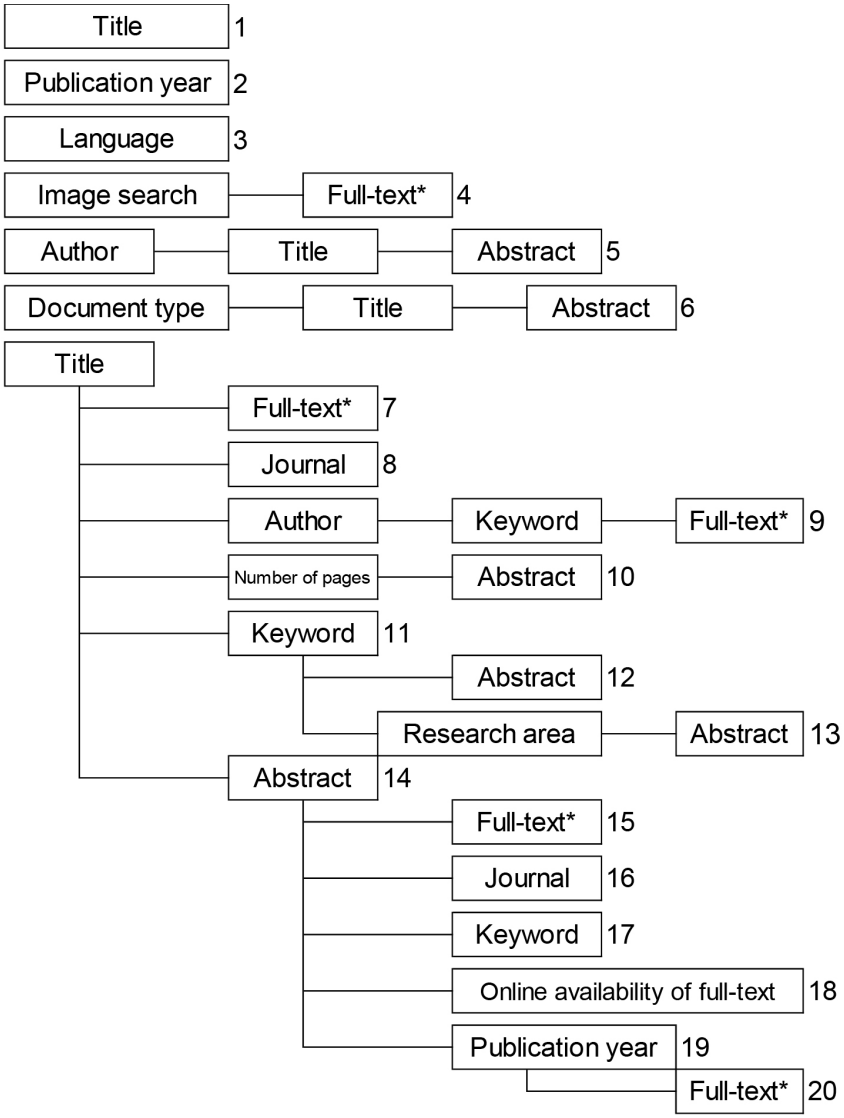
*CiNii Articles: A Japanese database service that can be searched with bibliographic information of articles.

**World Contents: Discovery service provided by Kyushu University Library (Summon).

9. If you use specific databases in addition to the three stages indicated in Question 8, please describe the databases you use for any stage.

10. Which search result elements do you use to select articles that you want to read in full-text version? Please select up to five patterns of elements from #1 to 20 (e.g., If you read the title followed by the abstract, please check #14).

*Full-text: i.e., checking necessary parts in full-text



Others ( ) → ( ) → ( ) → ( )

11. For each search purpose, which search result elements do you check to select articles to read in full? (Check all that apply)

	Purpose		
	To identify appropriate research methods	To find previous research in an unfamiliar field	To learn about current research trends
Title	□	□	□
Abstract	□	□	□
Full-text (i.e., checking necessary parts in full-text)	□	□	□
Publication year	□	□	□
Journal	□	□	□
Author	□	□	□
Number of pages	□	□	□

	Purpose		
	To identify appropriate research methods	To find previous research in an unfamiliar field	To learn about current research trends
Cited counts (Including sorting search results by times cited)	□	□	□
Keyword	□	□	□
Research area	□	□	□
Document type (e.g., article, review, proceedings paper)	□	□	□
Language	□	□	□
Online availability of full-text	□	□	□
Images (e.g., Google image search, graphical abstract)	□	□	□
Others ( )	□	□	□

If you checked "Full-text" in Question 11, please answer the next question.

12. Which full-text structures do you consider? (Check all that apply)

	To identify appropriate research methods	To find previous research in an unfamiliar field	To learn the current research trends
Introduction	□	□	□
Related Work	□	□	□
Method	□	□	□
Conclusion	□	□	□
References	□	□	□
Fig., Table, Formula	□	□	□
Others ( )	□	□	□

13. If you consider additional elements and structures for the three search purposes indicated in questions 11 and 12, please describe them and the search purpose.

14. Are you familiar with the following functions of Web of Science and Scopus? If so, how often do you use them?

14-1. Web of Science

□ I don't use Web of Science > Please move on to Question 14-2.

	Most of the time	Some of the time	Not very often	I know of the function but never use it	I don't know of the function
Confirm references	□	□	□	□	□
Confirm citing articles	□	□	□	□	□

	Most of the time	Some of the time	Not very often	I know of the function but never use it	I don't know of the function
Sort search results by times cited	□	□	□	□	□
Link through LinQ*	□	□	□	□	□
Link to publishers' website	□	□	□	□	□
Confirm impact factor	□	□	□	□	□
Export to bibliographic management software	□	□	□	□	□
Others ( )					

*LinQ: A link resolver icon of Kyushu University. It navigates to a website, providing full-text is available.

14-2. Scopus

□ I don't use Scopus

	Most of the time	Some of the time	Not very often	I know of the function but never use it	I don't know of the function
Confirm references	□	□	□	□	□
Confirm citing articles	□	□	□	□	□
Sort search results by times cited	□	□	□	□	□
Link through LinQ*	□	□	□	□	□
Link to publishers' website	□	□	□	□	□
Export to bibliographic management software	□	□	□	□	□
Others ( )					

*LinQ: A link resolver icon of Kyushu University. It navigates to a website providing full-text if available.

This is the end of the questionnaire. Thank you for your cooperation.

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Evaluating Map and Geospatial Academic Library Position Descriptions

Kimberly A. Plassche

Map librarianship, in the past incorporating duties involving acquisition, cataloging, or curation of physical map and atlas collections, has evolved into a profession often requiring knowledge of geographic information systems (GIS) software and data. This study examines descriptions for map and geospatial academic library positions from 2015 to 2020 with a goal of observing trends in requirements and specific duties for these roles. Institutions are recruiting individuals with strong backgrounds in geospatial technologies for some positions. However, a Master of Library and Information Science degree is still preferred for new hires in this field. Graduate library and information science programs can support future academic librarians by incorporating coursework related to geospatial data and traditional map resources into their curricula.

Introduction

Analyzing job advertisements can provide a valuable overview of the hiring landscape in librarianship. Uncovered trends in position descriptions can contribute to the development of education and training for future librarians and highlight recent changes in the field. Articles have been published specifically studying job advertisement trends for specialized librarianship areas including digital initiative, government documents, and cataloging librarians, to name just a few.[1] However, no study of geospatial or map librarian job announcements has been published in the peer-reviewed literature. This article seeks to examine requirements and position duties for professionals managing maps and geospatial data in academic libraries. Education and experience requirements for geospatial and map librarians are compared to those seen broadly in academic librarian position announcements. These observations build upon existing literature that highlights the evolution of the map librarian and historical need for library and information science education specifically for aspiring geospatial library professionals.

Literature Review

Job Advertisement Analysis Studies in Library Science Literature

Job advertisement analyses provide insights into current practices in hiring and can help predict where a profession is headed. Data revealed in such studies can be used to help students identify areas for study and degrees to pursue. Likewise, experienced professionals may review

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position announcements to stay abreast of new skills and technologies in the profession. This is particularly true for librarianship. As Meier points out, "the nature of a librarian's job is ever changing with new technology and the evolving information landscape. Librarians have adapted to fit new and expanded roles in this environment."[2]

Published articles that examine position openings focus on either specific roles or on the librarian profession as a whole. Some studies examine job advertisements across different library types or librarian roles, aiming to create a broader profile of the profession.[3] Conducting periodic reviews of job advertisements show trends over time, as in Triumph and Beile's comparison of 2011 academic library position announcements to data from 1996 and 1988.[4] Other research seeks to identify desired skills or typical duties for a specialty position, such as electronic resources librarians.[5] Regardless of the goal of the research, job advertisement analyses begin with identifying criteria for applicable positions and collecting announcements from a specified timeframe. With the sharing of job announcements to professional email listservs having become a common practice, the next step is to identify relevant listservs and search available archives. An analysis of specialized librarian positions can be done in a specific listserv for that type of librarian. For example, the listserv Code4Lib was searched for a 2017 analysis of digital initiatives librarian job announcements.[6]

The most important and difficult task in conducting a job advertisement analysis is defining criteria for announcements to be included in the final sample. For example, choosing positions that have the word "librarian" in the title may exclude many announcements for the same job at an institution where this title is not regularly used. Similarly, choosing only announcements for positions requiring an MLS/MLIS will miss postings from institutions that accept subject-specific graduate degrees in lieu of these traditional librarian degrees. A recent study analyzing cataloging job descriptions took a simple approach, focusing on the wording of position titles to identify a final sample. Those postings for cataloging, metadata, or metadata and cataloging were considered in the analysis.[7] Another approach is to consider the content of the job posting to find positions with similar duties or collections. In Sproles and Clemons' recent study of government information librarian position announcements, only advertisements including primary duties related to government documents were included.[8] Researchers must identify and refine their criteria for postings to include in the final sample, as we regularly witness special librarian roles being merged into more general position titles. This is noted by Sproles and Clemons, specifically in relation to government documents librarianship.

Subject Knowledge Requirements for Geospatial Librarians

Librarians working with maps, cartographic resources, and geospatial information are a specialized group and require advanced subject knowledge to fulfill their obligations. The Map and Geospatial Round Table (MAGIRT) of the American Library Association (ALA) identified core competencies for the profession in 2017.[9] The diverse set of skills and knowledge for geospatial librarians ranges from basic knowledge of map library equipment to understanding GIS programs. As stated in the Core Competencies for Map, GIS, and Cartographic Cataloging/Metadata Librarians, "most information professionals will need much more than their required courses in the typical MLS/MLIS program to master even Level 1 core competencies."[10] In an era when map librarians managed only paper collections, the lack of formal specialized courses for cartographic resources in graduate library degree programs was notable. B.M. Woods is-

sued a plea in 1952 for institutions to incorporate training for care, treatment, classification, and cataloging of maps in their curricula.[11] Eighteen years later, Woods noted the addition of sufficient cartographic resources coursework was not achieved.[12] By 1988, Gelfand found only six library graduate programs included map specialization courses.[13] In an attempt to identify other courses where map skills were taught, Gelfand distributed a survey to ALA-accredited programs in the United States and Canada.[14] Thirty-nine schools responded; they attested maps and cartographic information was covered in various courses including reference, government documents, preservation, conservation, cataloging, and management. As recently as 2015, Aber and Aber found only 10 of 59 accredited library schools in the United States and Canada offered map librarianship courses.[15]

In addition to working with traditional maps and atlases, map librarianship has now evolved to include geographic information system (GIS) data research and curation. Holstein surveyed 115 academic libraries to understand how they supported geographic data and technology use for their campuses in 2015.[16] The author found 85 percent of the libraries collected GIS and remotely sensed data, all libraries provided GIS software for campus use, and many library staff use GIS internally to help users locate library materials. In this new era of the profession, where applicants are expected to have advanced skillsets in traditional librarianship as well as geospatial concepts, dual degrees may be the answer. Appropriate training with GIS software and information can be achieved through M.A. Geography/MLS program, such as those offered at University of Maryland, College Park and University of Wisconsin–Milwaukee.[17] Aber also highlighted the program at the University of Wisconsin–Milwaukee offering a MLIS/MA Geography Coordinated Degree Program. UW–Milwaukee's website notes this prepares graduates "to assume positions as curators and staff in map collections of universities, governmental agencies, and industry."[18] Coursework offered by other schools or departments can also supplement the library program offering. The University of Oklahoma, for example, directs MLIS students to work with their advisor to take *GIS 5013: Fundamentals of GIS* as an elective.[19]

Rise of Geographic Information System Support in Academic Libraries

According to Bidney and Piekielek, there have been three "paradigm shifts" in map librarianship.[20] The first occurred approximately in 1992, when the Association for Research Libraries (ARL) joined forces with the producer of ArcGIS software, Esri, to initiate the Geographic Information System Literacy project.[21] The purpose of this collaboration was to support librarians as they became a trusted source for dissemination of spatial data. This marked a somewhat official beginning of GIS support in academic libraries. The second paradigm shift is identified by Bidney and Piekielek to have started circa 1995, with the onset of map digitization.[22] The third paradigm shift, occurring during the publication of the *Journal of Map & Geography Libraries* editorial in 2018, sees map librarians reshaping their roles in academic libraries. "In our limited view, the individuals hired into geospatial librarian positions seem, largely, to define the positions themselves rather than hiring for a specific skill set and/or set of interests."[23]

Mary Lynette Larsgaard's classic map librarianship textbook introduces common tasks map librarians encountered at the time of the publication of each of her three editions in 1978, 1987, and 1998.[24] Traditional map librarians' duties included acquisition, cataloging, preservation, in-depth research, collection development, map making, and instruction. Sweeping changes to the profession since Larsgaard's final edition, with a new focus on GIS resources

and services, are documented in Aber and Aber's more recent 2017 text.[25] Chapters outlining basic skills and knowledge related to work with GIS and remote sensing data and software are nestled among information about paper maps and charts, globes, aerial photography, and map library equipment needs. As noted by March and Scarletto in their own history of the profession, GIS librarians now may work in data curation and dissemination, technology troubleshooting and instruction, digital cartography, and data discovery.[26] Holstein's 2015 survey of 115 academic libraries attempted to highlight how academic research libraries support campus use of geographic information technology and data. Survey respondents responded to various questions regarding library GIS services. Thirty-six percent of the responding libraries indicated the dedicated geographic information services area is located alongside the paper map collection. The study found 65 percent of the 113 geographic services personnel at responding libraries had an MA/MS, MLS/MLIS, or PhD, and half of them held an MLS/MLIS specifically. As Holstein notes, "today's GIS professionals are just as likely to come from nonlibrary backgrounds, bringing their expertise and advanced geographic training to this nontraditional librarian role."[27]

An analysis of recent professional position openings for geospatial librarians should show a large percentage of institutions requiring subject-specific degrees and GIS experience. Based on recent trends of incorporating GIS support in academic library services, we may see fewer postings for individuals working with physical collections and more in a data creation or curation role. This author examined job postings for librarians working with maps and GIS to observe candidate qualifications and position duties during a period of five years.

Methodology

The author reviewed job postings in the United States that required the new hires to work with geospatial data or cartographic resources based on a search of the MAPS-L archives hosted on the University of Georgia website.[28] MAPS-L was selected since postings for map and geospatial librarians are most often shared or cross-posted to this list. The author searched the full text of listserv postings for the following string: job OR position. This search was intentionally general to ensure all position announcements to the listserv were included. Posts to the listserv for a period of five years (dating from November 1, 2015 to November 1, 2020) were searched, and 126 job announcements were discovered.

Each email was reviewed to become familiar with the general trends of the listserv postings, and those including duties with geospatial data or maps were marked for a second review. Each email from this broad initial search was reviewed as titles and email subject lines do not necessarily reflect all duties of the position. For example, postings for "Data Librarians" appear that include working with GIS data, as well as "Government Documents" librarians managing USGS topographic map collections. It is important to note that, although subscribers to MAPS-L are primarily map librarians, positions from members' home institutions that aren't specifically for map and geospatial librarians are shared on the list. The text of each email was examined in a first pass to confirm there was a geospatial or map component in the announcement. Those including duties with geospatial data or maps were marked for a second review.

Postings meeting the following criteria were selected for evaluation:

- Cataloging and metadata librarians
- Technology librarians

- Subject specialists or liaisons

A repeat of this initial review of the text in all discovered job postings was conducted to ensure no job postings with geospatial or map duties were missed from the selection. A third pass was then completed to further refine the list of final positions for analysis. Postings were removed from the sample if they were not for an academic library. Positions located outside the United States were also taken out of consideration.

The following types of positions were also eliminated:

- Cartographers, as these roles typically require no library background or education, and the job duties differ from any seen in the field of librarianship
- Library directors or department heads, unless it is clear they would work directly with the map or geospatial data collection, or if the specific department is a map/geospatial collection
- Duplicates of postings
- Part-time positions, since these positions tend to focus on a fraction of the duties full-time personnel are expected to conduct
- Government document librarian postings that did not specifically mention maps, geospatial data, or cartographic resources
- Fellowships or fixed short-term positions
- IT (information technology) professionals who provide administrative or technical support

GIS specialists and similar titles were included if the candidate would be specifically hired for the library.

When this process was complete, the author had selected 46 job announcements to evaluate. Eighty of the emails in the original set were deemed outside of scope due to the reasons detailed above.

Additional searching was required to locate complete postings for 17 percent of the positions, as the MAPS-L email announcements for these merely included brief summaries and links to the complete postings on the institutions' websites. Those links were no longer active. The author attempted to find complete postings using the archive.org Wayback Machine.[29] Only one full posting was found with this method. The author then searched Google with a combination of search terms for each job title and institution. Complete postings were found for three additional announcements in other listserv archives. Although complete postings for 9 percent of the positions were unavailable, the MAPS-L email announcements did provide limited information about the position. Information regarding required and preferred degrees, qualifications, and job duties were missing for these positions. To account for that missing information, the author coded data related to those areas as Unavailable. This should not be confused with the code Not Specified used by the author during data analyses. Not Specified indicates a certain piece of information is not included in the complete posting, but that doesn't necessarily mean the qualification or duty does not exist for that role. For example, some postings state whether a position is tenure-track or faculty. However, some may omit this information, and it cannot be assumed that those positions are not tenure-track. Similarly, responsibilities relating to collection development or supervision may be missing from job descriptions, but those duties may be omitted due to space restrictions or the task itself being a relatively minor task for the position.

Findings and Discussion

Dates of Job Announcements

The author chose a period of five years to search to capture a large sample of job announcements. The data gathering began in November 2020, so announcements posted for five years prior to this month were analyzed.

In the final sample, the oldest job announcement posted was December 7, 2015. The most recent was dated March 15, 2020. While we must consider the impact of the COVID-19 pandemic on the dates of our job announcement pool, speculation about the reasons for the absence of job postings between March and November 2020 is outside the scope of this research. The complete breakdown of the number of postings analyzed for each annual period can be seen in table 1.

TABLE 1
Frequency of Map and Geospatial Position Announcements in Academic Libraries

Time Period	Number of Postings in Final Sample
2015-11-01 to 2016-10-31	9
2016-11-01 to 2017-10-31	10
2017-11-01 to 2018-10-31	9
2018-11-01 to 2019-10-31	13
2019-11-01 to 2020-10-31	5

Location of Positions

The final study sample included positions at academic libraries in 26 states. Postings in California and Texas were most prevalent (Figure 1). Seventy-six percent of the hiring libraries were in public institutions. A majority of the positions were in research universities (91 percent); the remaining nine percent were in liberal arts colleges.

Job Titles

Fifty-nine percent of the position titles include the word "librarian." Additional words in those titles indicate whether the position is devoted to GIS/spatial data, maps, government information, cataloging/metadata, or is a subject liaison:

- Academic Services Librarian
- Business and Social Sciences Informationist/Data Librarian
- Cartographic Metadata Librarian
- Data and Information Visualization Librarian
- Data Librarian
- Geosciences and Maps Librarian
- Geospatial Data, GIS, and Maps Librarian
- Geospatial Information Librarian (Note: This title appeared in two distinct job postings)
- Geospatial/Data Visualization Librarian
- GIS and Geospatial Data Coordinator position (Librarian II)
- GIS Librarian
- GIS Librarian/Instructional Assistant Professor
- GIS, Data and Research Librarian
- Government Information Librarian
- Head of Map & Government Information Library and Map & Government Information Librarian
- Librarian—Spatial and Numeric Data
- Map & Geospatial Data Librarian

- Map Librarian
- Metadata Librarian
- Research Support and Instruction/Special Projects Librarian
- Social Sciences Data Librarian
- Social Sciences Data/Geospatial Information Librarian
- Spatial Data Librarian
- Spatial Data Science Librarian
- Special Collections Cataloging and Metadata Librarian
- Special Formats Description Librarian

Forty-one percent of the position titles specifically not containing the word "librarian" include verbiage to indicate the individuals work with GIS, geospatial, or spatial data in their jobs:

- Director, Maps Imagery and Geospatial Services
- Geographic Information Science (GIS) Specialist
- Geographic Information Systems Specialist
- Geospatial Consultant
- Geospatial Information Specialist
- Geospatial Services Manager
- GIS Library Outreach Liaison/Instructional Assistant Professor
- GIS Specialist
- Spatial Data Analyst & Curator
- Spatial Data Architect

Nine percent of the positions advertised are specifically for collection curators.

Tenure-Track Positions

Job advertisements were reviewed to ascertain the number of postings for tenure-track or faculty status librarians. As not all academic institutions use the phrase "tenure-track," descriptions that included the following phrasing are assumed to be tenure-track or continuing appointment positions:

- "Continuing appointment status"
- "Promotion and advancement"
- "Rank and promotion system"
- "Tenure-track"

Thirty percent of the advertisements were for tenure-track or similar status positions. Nine percent of the postings explicitly stated they were for non–tenure-track positions. Fifty-four percent of the job descriptions did not mention tenure-track or appointment status. It should not be assumed those 54 percent are not tenure-track postings, so the author simply coded this data as Not Specified. Data related to tenure-track or similar appointment status is Unavailable for 7 percent of the postings.

Supervisory Duties

Twenty-one percent of the job postings listed supervisory duties. These ranged from supervising work/study student assistants to managing a department with six full-time staff. Four percent of the postings listed supervisory experience as a minimum qualification but did not include details about such duties in the position description. The following supervisory duties were listed:

- "Supervises Instruction Specialists' delivery of training to faculty, students and staff in locating and using maps, imagery and geospatial data as part of research activities"
- "Supervises one library support staff and student employees"
- "Supervision of student interns"
- "Supervises three full-time librarians and three full-time staff members and assesses policies and programs to maintain awareness of issues pertinent to specific subject areas"
- "Requires the management of… student employees and interns"
- "The incumbent may supervise student employees"
- "Supervise the GIS Graduate Assistant"
- "Supervise cataloging library assistant (1.0 FTE)"
- "Oversees graduate students who work as Technical Assistants to provide GIS and Mapping instruction and reference support to the GSD community"
- "Manages one librarian, four staff members, and over a dozen student assistants"

Cartographic Resources Cataloging

Twenty percent of the postings are for cataloging and/or metadata professionals. Seventy-eight percent of those positions are for specific special format or cartographic catalogers, while 22 percent are for general catalogers working on several resource types.

- Cartographic Metadata Librarian (Note: This title appeared in two distinct job postings)
- Cartographic Resources Cataloger (Note: This title appeared in two distinct job postings)
- Map Metadata & Curatorial Specialist
- Maps Cataloging Specialist
- Metadata Librarian
- Special Collections Cataloging and Metadata Librarian
- Special Formats Description Librarian

The cataloging positions included in the final sample list cataloging and metadata duties related to several types of cartographic resources. Seventy-eight percent will work with paper maps and atlases, 11 percent specifically mention digital maps, and 56 percent include GIS datasets.

Previous Library Experience

Thirty-three percent of the sample postings specified a minimum requirement or preference for years of professional experience in a library setting. Two percent of the postings indicated new graduates were encouraged to apply. Data regarding minimum experience requirements is Unavailable for 8 percent of the sample.

Previous studies look at the requirement for candidates to have prior work experience. Triumph and Beile found 570 of 957 job announcements from 2011, or 59.6 percent, required work experience. Conversely, 14 of those advertisements (only 1.5 percent) were found to be entry-level. They note the "number and percentage of position announcements that required or preferred prior work experience in 2011 (n = 707, 73.9%) were lower than 1996 ads (n = 719, 79.9%) and 1988 ads (n = 932, 82.4%)."[30]

GIS Data versus Paper Maps

Forty-six percent of the postings are for professionals working specifically with GIS or geospatial data. Notably, these announcements do not mention work with traditional paper maps as

a job duty. Only 19 percent of the total postings specifically mention collection development in paper maps, while 41 percent expect hired individuals to acquire GIS data and/or software.

Sixty-five percent of the postings request applicants with GIS experience or knowledge. The level of importance placed on geospatial data and GIS varies. Forty-three percent of the postings indicate such skills are "required," a "basic" or "minimum" qualification, or are "mandatory." Twenty-two percent of the sample indicate GIS experience or knowledge is "desirable," "preferred," or "preferable."

Per the job position titles included in announcements, 75 percent incomplete job descriptions include work with GIS, but data regarding the requirement for GIS experience is Unavailable.

Highlighting the relatively fewer positions working with traditional paper maps, only 2 percent of the postings specifically listed archival experience or knowledge as a required or preferred qualification. This is the only posting for a map librarian in an archive or special collection in the sample. Data regarding archival experience is Unavailable for 9 percent of the postings.

MLS versus Subject-Specific Degree and Certifications

Fifty-nine percent of the postings require the successful candidate to hold an MLS, MLIS, or equivalent international degree (see figure 2). For comparison, as recently as 2011, the MLS degree was found to be a requirement in 862 academic librarian positions (90.1% of that study's sample).[31] This percentage shows a decrease from the number found in similar 1996 and 1988 studies of requirements for academic librarian jobs, which showed 90.6 percent and 98 percent requiring an MLS, respectively.[32]

Many of the 27 positions in this study offer an alternative means to fulfill the requirement for an MLS or MLIS, including a combination of an advanced subject-specific degree and professional library experience. As the wording related to that requirement varies greatly, examples for how this requirement is articulated include:

- "Professional degree from a library school or other advanced degree, or equivalent experience in one or more fields relevant to library science, and a concentration or advanced coursework in GIS"
- "OR significant graduate-level coursework toward such a degree OR equivalent education and experience (subject expertise combined with professional library education and/or experience)"
- "OR other advanced degree in a discipline working with GIS, geography, or spatial analysis"
- "OR relevant advanced degree in informatics or information management"

A qualification for a successful candidate to hold a subject-specific bachelor's or advanced degree in geography, social sciences, engineering, geographic information science, or similar fields is mentioned in 48 percent of the postings. Specific disciplines specified in degree requirements vary. Those mentioned include:

- Engineering
- Environmental Science
- Geographic Information Science
- Geography
- Geoscience

- Geospatial Discipline
- Math
- Natural Resources
- Sciences
- Social Science

The level of importance placed on subject-specific degrees varies. Twenty-eight percent of the postings indicate that a subject-specific degree (including when the degree is a replacement for an MLS/MLIS) is a minimum or required qualification. Two percent of the postings specifically mention GIS Professional (GISP) certification as a preferred qualification. The GISP certification is awarded to GIS professionals by the GIS Certification Institute (GISCI) following successful completion of a portfolio review and exam.[33]

Sixty-one percent of the announcements require or prefer successful applicants to hold an MLS or MLIS degree, while less than half specifically mention another subject-specific degree preference or requirement (48%, n = 23). Nine percent of those announcements require the subject-specific degree only as an alternative to an MLS or MLIS and not as a separate qualification. Data regarding specific degree requirements is Unavailable for 9 percent of the postings.

Triumph and Beile examined requirements or preferences for advanced degrees in addition to the MLS in 2011 academic library job advertisements. Their study found 16.6 percent and 6.6 percent preferred or required additional degrees, respectively.[34]

GIS Professionals in the Library

Overall, the data supports the theory that recently hired geospatial librarians are expected to work more frequently with GIS data than with traditional paper maps. Sixty-five percent of all postings mention GIS experience or knowledge. Notably, 46 percent of the announcements for geospatial library professionals include no paper map component in their job responsibilities. While it is tempting to assume librarians are being replaced by this new professional focusing on GIS exclusively, we must consider degree requirements as a way to define *librarian*. More than half of the postings require graduates from an MLS, MLIS, or equivalent international program. Likewise, the same percentage (59%) of position titles include the word "librarian." Of the postings for positions without a library degree requirement, only one has the word *librarian* in the title. The others are directors, consultants, specialists, catalogers, data architects, and specialists.

The postings in this five-year sample show GIS is important in academic libraries, as GIS librarians and specialists are expected to train users on the software, assist patrons in analyzing and storing data, create maps, and tackle other aspects of GIS project management in academic institutions. However, this does not suggest that traditional cartographic resources are going away. Nineteen percent of the postings include paper map responsibilities, which is fewer than the 65 percent incorporating GIS duties. However, we do not have data regarding existing map librarian positions, as this study looks solely at new postings. GIS specialists may be new positions added to these academic libraries, intended to complement the role map librarians have working with physical resources. An examination of how retirements are handled in academic libraries, specifically if physical cartographic resources are a component of the new librarian's job when replacing a retiring map librarian, would illuminate how the landscape of map librarianship is developing in conjunction with the growing number of GIS roles in the academic library.

The Role of Library Schools in Geospatial Librarian Training

The lack of training for work with cartographic and geospatial resources in accredited library schools has been noted. As the role of the geospatial librarian expands further into the digital realm, and the need for specialized knowledge increases, library schools should reexamine their course listings to incorporate more training for work with print maps, digital mapping, and spatial data. They may also consider the value of actively recruiting geography and GIS graduates to library graduate degree programs. These students would have the foundations necessary for work with geospatial resources and can learn necessary librarian skills in the MLIS program. More programs may also follow the examples set by University of Wisconsin–Milwaukee or University of Oklahoma and offer dual degrees or opportunities for coursework in Geography and GIS departments at the institution.

Bolstering map and geospatial coursework in library schools will help prepare all graduates for working with these resources. The findings of this study show more general or subject liaison librarians are working with geospatial data, in addition to those librarians with specific map or GIS management roles. Job announcements for general and specialist areas of librarianship including a geospatial component were advertised to the MAPS-L listserv. These positions titles include "Academic Services Librarian," "Social Sciences Data Librarian," "Government Information Librarian," and "Research Support and Instruction/Special Projects Librarian." These librarians are often asked to work with data in a broader sense, not solely data with a spatial component. It can be assumed individuals hired into these positions did not endeavor to become geospatial librarians specifically and may not have a strong interest or background in this aspect of their new positions. By incorporating cartographic and GIS coursework into their curriculum, library schools will ensure students not setting out to be map or geospatial librarians specifically are sufficiently familiar with these topics.

Knowledge of cartographic resources is also important in the cataloging field. Twenty percent of the postings in this study were for catalogers; 78 percent of those were for special format or map catalogers. None of these job announcements request a subject degree in geography or cartography, but familiarity with cartographic metadata and various cataloging rules such as AACR2 and RDA are mentioned. This study focuses specifically on jobs posted to the MAPS-L listserv and does not consider general cataloger positions that may eventually work with maps, although this aspect isn't fully disclosed in the job advertisement. Experience with maps and geospatial resources in library school will help prepare these catalogers as well.

Postgraduate Certification and Professional Development

Postgraduate certifications in GIS are available for professionals, including librarians, seeking a way to highlight their experience with GIS. The most well-known certificate is GISP, which is awarded by the GIS Certification Institute (GISCI). However, this certificate is available only to individuals with four years of full-time experience in the GIS field that meet specific education requirements and pass the GISCI Geospatial Core Technical Knowledge Exam.[35] According to the GISCI website, education points are awarded to those earning a degree from an accredited educational institution—those degrees may be in any field of study.[36] Certificates specific to GIS will also be considered in calculating educational point value. Accredited course points are given for coursework in "geography, GIS, remote sensing, databases, data analysis, programming, higher math (especially trig and stat), AutoCAD, computer science, and networking." Finally, educational points are awarded for nonaccredited coursework or

software-specific training, as well as conference and webinar attendance. Is earning this GIS certification feasible for a recent MLIS graduate or a working librarian? Although a librarian would earn educational points for holding a bachelor's and master's degree in any field, the requirement for four years of experience in a GIS work environment may be more difficult to satisfy if a librarian has been working in a nongeospatial library.

The Esri Technical Certification, awarded by the company responsible for ArcGIS software, is a newer certificate available for professionals tailored to individuals using or administering this proprietary software. Individuals have the option to take one of several exams, each with their own education and experience requirements. Of particular interest to many of the librarians managing university ArcGIS licenses is the ArcGIS Online Administration Specialty (EAOS19-001). However, according to the Esri website, Administration Specialty exam takers "must already hold an Esri certification."[37] The ArcGIS Desktop Entry (EADE19-001) exam is offered to candidates having "less than two-years of applied experience and should be proficient in best practices and uses of Esri's ArcGIS technologies."[38] This exam is appropriate for recent library school graduates or practicing librarians, as they are not likely to have more than two years in the GIS working environment, if any at all.

Preparing and sitting for certification exams can be time-consuming, especially for working professionals or students in degree programs. There is also a monetary cost involved. As of March 2021, sitting for the EADE19-001 exam costs $250, and the EAOS19-001 exam adds $150.[39] The GISCI Geospatial Core Technical Knowledge Exam carries two hefty fees: a $100 application fee and a $250 exam fee for United States and Canada ($300 for international candidates).[40] As pointed out on the website GISGeography.com, online certifications from well-known universities are available.[41] These are available through Coursera; and, while certification does involve varying costs, online learners may choose the "Audit the course" option and view lectures and materials for free.

Librarians and library school graduates often turn to professional associations and conferences to learn new skills or expand on what they learned in their degree programs. Luckily, there are two map librarian associations in the United States meeting annually: Map and Geospatial Round Table (MAGIRT) of the American Library Association (ALA) and the Western Association of Map Libraries (WAML). In addition to these groups specifically for map and geospatial librarians, cartographic and geospatial skills may be enhanced through attendance at conferences for cartographers, geographers, and GIS professionals, such as North American Cartographic Information Society (NACIS), University Consortium for Geographic Information Science (UCGIS), American Association of Geographers (AAG), and local GIS user groups.[42]

While bolstering their skillsets via professional development and advanced certification is possible, librarians will need to find time and funding to complete this training in addition to their other obligations. Basic knowledge of cartographic and geospatial resources gained in library school will help prepare a map or geospatial librarian for their initial steps into the profession. Robust graduate library school programs can ensure graduates have this foundation in map and GIS resources.

Conclusion, Limitations, and Future Research

The main purpose of this study was to analyze the degrees, knowledge, and experience institutions desire when hiring librarians to work with maps and geospatial information. A

secondary goal was to observe trends in job titles and duties in job advertisements. While 41 percent of the postings did not include the word "librarian" in their titles, more than half of the postings specifically requested applicants with an MLS/MLIS (61%, n = 28). The data suggests library graduate degrees remain an important qualification for map and geospatial librarians. More than half of the job postings prefer or require GIS knowledge or experience (65%, n=30). The postings in the final sample also highlight the need for specialized metadata and cataloging librarians working with maps and geospatial data. Seventy-eight percent of the cataloging positions posted to MAPS-L in the five-year period were for individuals who would be working specifically with paper maps, digital maps, or geospatial datasets. Library school programs incorporating GIS education into their curricula will support students endeavoring to enter geospatial librarianship. The addition of coursework related to geospatial data and technologies will prepare all librarians for work with geospatial data and technology, as work with these resources is seen in librarian postings for cataloging, general reference, subject liaison, and data specialist roles.

As noted in the Methodology section, a limitation to this study was the availability of complete job announcements and descriptions for all postings in the final sample. Complete data is unavailable for four of the 46 postings in the final study. The author chose to include the limited data available and notes where it was missing. Future researchers might conduct a more thorough study by picking a date to begin collecting job advertisements live in real time and saving all files related to the announcement for future analysis. To gain a clear view of how geospatial librarianship is evolving beyond the timeframe examined in this study, future research focusing on postings beyond 2020 is needed. Such a study could include postings from this article, resulting in a larger sample population.

The author sought to search postings to GIS4LIB, an email list focusing on GIS and libraries hosted by University of Washington.[43] This double-check would confirm that all relevant positions from the timeframe were examined. However, as of August 2021, the listserv's archives only date to October 2019. While using one listserv could be viewed as a limitation, the author's personal experience is that positions related to map, geospatial, and data librarianship are consistently posted directly or cross-posted to the MAPS-L listserv. This study focuses on positions announced to this list.

This study relied on qualifications and responsibilities as articulated in position announcements. Some institutions may post general position announcements for reference librarians or subject specialists and will add duties with geospatial data or maps as the new librarian is onboarded. It is suspected there are many more geospatial librarians working in academic libraries today who did not interview specifically for a map librarian job. As academic institutions restructure and revamp their service models, more librarians may find themselves "accidental" map librarians. A survey of hiring managers regarding the qualifications they look for when hiring geospatial librarians may present another side of the story that isn't immediately apparent from a job advertisement analysis. An additional survey of active geospatial librarians can also provide further insights regarding the direction of map and GIS services in academic libraries. Finally, an examination of how map and geospatial librarian retirements are handled by institutions—specifically if new geospatial librarians are hired in their places—would determine how much the map librarian role is changing and if a new GIS specialist position is taking its place in our academic libraries.

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Developing Competencies for Outreach Work in Academic Libraries

Rebecca Metzger and John M. Jackson

This research study investigates the behaviors, knowledge, and skills necessary for academic library outreach work. Through a review of published literature, job advertisements, and a survey of library practitioners conducted in the fall of 2020, the authors define and prioritize 18 competencies for outreach. Hiring managers, LIS instructors, and practitioners can use the results of this study to structure and lay out the essential areas of outreach work in academic libraries.

Introduction

Academic libraries increasingly recognize the need to position themselves as outward-facing organizations that can demonstrate their contributions to the academic success of their faculty, students, and staff. Accordingly, outreach positions in academic libraries have been on the rise in recent decades.[1] However, job postings for these positions fluctuate in how they describe the role. Some libraries devote a full-time position to outreach, while others combine outreach duties with other primary roles. Few jobs require the incumbent to have previously held a similar title. To say the least, the nature of academic library outreach work varies widely.

Despite the proliferation of outreach jobs, as well as articles about outreach librarianship, over the past few years, competencies for the outreach librarian remain undeveloped in the literature and profession. This is an unfortunate deficiency given the needs of the contemporary academic library. Managers can use professional competencies to write job descriptions, define organizational best practices, and assess individual and program performance. Individuals can employ competencies to track personal progress toward proficiency in a field and identify gaps for further training. Library schools and continuing education programs can use competencies to develop courses that educate the next generation of practitioners that libraries need.

This research study attempts to contribute to the literature through an investigation of the competencies necessary for academic library outreach work. *Competencies* are defined as a set of knowledge, skills, and behaviors that are teachable, measurable, and/or objective, and that are consistently and effectively demonstrated by excellent performers. In particular, the research questions for this study are as follows:

- R1: Based on published literature in LIS and job descriptions, what are the competencies necessary for academic library outreach work?

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- R2: How does feedback from outreach practitioners impact the interpretation and organization of the competencies developed in R1?

The authors of this study define "outreach practitioners" as library employees who develop creative programs and communications that promote library collections, services, and staff to target audiences as their primary job duty. Job titles in this role may include words such as "engagement," "outreach," "communications," "marketing," "first-year experience," "liaison," and "student success." This work is often paired closely with, but is distinct from, instruction and reference work. Outreach practitioners in academic libraries can be librarians (MLIS degree holders) or paraprofessional staff, although these positions are most often assigned to librarians.

It is worth noting that any set of professional competencies is aspirational in nature; it is unlikely that any individual or job would encompass the entire list. The authors of this study take a descriptive approach to identify the knowledge, skills, and behaviors necessary for outreach work. Drawing on published literature in the field of library and information science, as well as posted job descriptions, the authors suggest a set of common competencies for academic library outreach and then gather feedback from outreach practitioners to further inform and contextualize those competencies.

Literature Review

When reviewing competencies research in LIS, it is useful to note methodologies. The majority of the library literature the authors reviewed used either mixed methods or at least two data sources to formulate a list of competencies. However, some studies relied on a single source or single method. For example, Hartnett[2] and Xia and Wang[3] relied exclusively on job descriptions to formulate their respective competencies. Hartnett reviewed job advertisements for positions at academic libraries with the words "electronic" or "e-resources" in the title and analyzed those ads using ATLAS.ti and a codebook developed by a previous study.[4] Xia and Wang examined job advertisements for social science data librarians posted from 2005 to 2012 and analyzed the frequencies of term occurrence and co-occurrence in job qualifications and responsibilities.[5]

However, a mixed methods approach or the use of a variety of data sources was more common. Fisher analyzed position announcements for acquisitions-related jobs across three decades to develop a set of competencies that were then reflected upon by participants at the Acquisitions Institute at Timberline Lodge and further compared with published literature.[6] Similarly, Jordan created an initial list of competencies for library leadership using content analysis of professional literature and then used the Delphi method with library directors from a wide geographic area to refine the competencies.[7] Jordan returned to this competencies list three years later to survey public library managers about their most frequent weekly activities, as well as the qualities needed, for public library leadership.[8] Both Saunders[9] and Bishop, Cadle, and Grubesic[10] used surveys to assess the validity of competencies derived from, respectively, RUSA's guidelines related to reference and the ALA's Map and Geospatial Information Round Table Core Competencies. Federer distributed a survey via listservs and Twitter that asked respondents to rate the importance of various pre-identified skills and expertise related to data librarianship.[11] The author additionally performed cluster analyses on the final dataset to discover subgroups of similar respondents. Bronstein and Nebenzahl examined job advertisements, course syllabi, and interviews with library directors to develop

46 competencies for LIS professionals.[12] They conducted an additional survey to test the viability of the derived competencies as items in multi-items scales.

Understandably, the formation and distribution of competencies also happens through the channels of professional organizations. Evans et al. described their method of working through the Association for Library Collections and Technical Services (ALCTS) to develop competencies for cataloging and metadata librarians.[13] Through the formation of a task force, the Cataloging and Metadata Management Section (ALCTS CaMMS) reviewed job descriptions and professional literature, solicited feedback from members at the American Library Association's annual conference, and successfully passed a core competencies document through continuous community involvement. For a list of examples of notable competencies adopted by library professional organizations, see appendix A.

Perhaps the lack of competencies for library outreach in both the literature and via professional associations is due to the myriad and hard-to-define nature of the work itself. Fontenot claimed, "there is no such thing as a typical year in outreach."[14] Five years later, Fontenot reiterated that message, stating, "it is always advisable to keep rethinking how and why we do outreach."[15] The need to clearly define the scope and character of academic library outreach, even while it is a moving target, is a common theme within the published literature. As Carter and Seaman point out, the activities that libraries use for outreach "run the gamut."[16] The authors go on to say, "while libraries ascribe to professional standards and have many commonalities, they express their outreach activities, goals, and philosophies in a range of ways."[17] Polger and Okamoto reinforce the variety of responsibilities an outreach librarian might encounter in the course of their work based on responses to a questionnaire of 215 academic library workers.[18] As they note: "Some of these librarians specifically promote information literacy instruction or new emerging technologies within the library. Others are responsible for devising promotional strategies for the entire library."[19]

Recent research has helped to bring academic library outreach work into focus through rigorous analysis of outreach assessment strategies, outreach and engagement programs, and definitions. Writing for *In the Library with the Lead Pipe*, Farrell and Mastel reviewed library literature and academic and public library websites and surveyed colleagues to develop six broad categories of outreach work defined by its intention (such as collections-based, instruction and service-based, and "whole person" outreach).[20] LeMire, Graves, Farrell, and Mastel published a 2018 SPEC Kit that provided a contemporary snapshot of how ARL libraries define, assess, structure, plan, and measure their outreach and engagement programs.[21] Blummer and Kenton reviewed published literature from 2008 to 2019 to identify common themes in academic library programming work, not only related to the types of events produced (such as instruction, cooperation, and special programming), but skill-based elements as well, such as the need for flexibility and the importance of collaboration.[22] Diaz further clarified the use of the term "outreach" using concept analysis to create a nuanced and multifaceted definition within the context of academic librarianship.[23]

Methodology

The authors of this study employed a mixed-methods sequential exploratory design composed of two phases: 1) a content analysis of professional literature published by academic library outreach practitioners and job advertisements for outreach-related positions in academic libraries; and 2) a survey of practitioners about the results of Phase I.

In Phase I, the authors reviewed and inductively coded two bodies of content, professional literature and job advertisements, to identify emerging themes that delineate the type of work expected of academic outreach librarians. They discussed and resolved any discrepancies, redundancies, and outliers to create the competencies.

The authors limited the published literature under review to scholarly works of the last 10 years published by library outreach practitioners and containing "outreach" in either the subject heading or abstract. Using the database "Library, Information Science & Technology Abstracts," they used the following query:

> "((AF outreach OR AF liaison OR AF engagement OR AF marketing OR AF communications OR AF first year experience OR AF student success)) AND AB ((AB outreach OR SU outreach))."

The authors limited results from this query to 1) the years 2010–2020 and 2) scholarly publications. They excluded articles published in the area of health/medical librarianship. Additionally, they included only articles published in the area of scholarly communication if 1) one of the author's job titles indicated their primary role was outreach and/or 2) the article primarily dealt with outreach as a topic of research/discussion. This resulted in 32 articles for review.

The authors collected job advertisements via the ALA and ARL job list search engines. They used the following keywords to locate relevant job titles: outreach, student success, engagement, marketing, communications, liaison, and first-year experience. They limited results to positions posted in February and March of 2020. This resulted in 25 advertisements for review.

In Phase II, after the authors reviewed the literature and job advertisements and developed a draft list of competencies, the authors developed a survey for practitioners to assess the efficacy of the proposed competencies. They designed and pretested the survey in Qualtrics in September 2020. After the authors incorporated feedback from the pretesting group, both UCSB and LMU's institutional review boards reviewed and approved the final survey instrument.

Using a five-point Likert scale, the survey asked respondents to rank the level of importance for each of the 18 competencies relative to their academic library work. Additionally, the survey asked respondents to identify any competencies they felt were missing or needed further clarification. Finally, the survey asked respondents to provide demographic data, including their employer/institution, job title, years working in academic library outreach, race/ethnicity, and whether their current position requires an MLIS or equivalent degree.

Library outreach work is conducted by a wide range of individuals within any given institution,[24] and thus the authors determined the best way to survey practitioners was to solicit feedback via the online communities where academic library outreach work is frequently discussed. The survey was available between November 5 and 20, 2020, and distributed to the following listservs: University Libraries Section List (uls-l@lists.ala.org), College Libraries Section List (collib-l@lists.ala.org), Information Literacy Instruction List (ili-l@lists.ala.org), and ACRL Library Marketing and Outreach Interest Group List (acr-iglmo@lists.ala.org). Additionally, the authors shared the survey on Facebook with the ACRL Library Marketing and Outreach Interest Group, the Library Marketing and Communications Conference (LMCC) Discussion Group, and the Programming Librarian Interest Group.

Results of Phase I

The initial literature search query discovered 79 potential articles for review. Of these, the authors identified 32 articles as meeting the criteria of being published in the last 10 years by library outreach practitioners and primarily focused on outreach activities. As noted above, the majority of articles selected for exclusion were focused on medical librarianship work, an area of experience the authors decided was beyond the scope of this research study. Other excluded articles were those focused on outreach needs for specialized work (such as data librarianship) and those published by outreach practitioners focused on nonacademic contexts (such as public library programs). The authors reviewed an additional 22 articles that were not discovered through the initial search but that met the criteria for inclusion. Appendix B lists the publication titles included in this review.

The authors examined the selected articles for statements that indicated the assumption, need, or presence of professional competencies. For example, the following three quotes illustrate the need for assessment and research, networking and intentionality, and understanding stakeholders, respectively, in outreach practitioner work.

> "Assessment strategies are needed to demonstrate a return on investment for our constituents, and to improve our marketing, public relations, advocacy and ultimately library patronship."[25]

> "Generally, an outreach librarian is responsible for 'reaching out' to a library's clientele to actively educate them as to the services a library may offer, as opposed to passively waiting for them to come to the library."[26]

> "A more significant level of user engagement will not only help enhance collections but enable librarians to collaborate more deeply with their liaison departments in different ways."[27]

By reviewing the selected published literature and noting statements that presumed or suggested the need for particular skills, behaviors, or knowledge, the authors produced 16 draft competencies: assessment and research, communication, cultivating external connections, cultural competence, developing programming, flexibility, higher education contexts, internal marketing, library values, maintaining online identities, networking and intentionality, orientation, professional growth, promotion, understanding stakeholders, and values diversity.

The review of job advertisements posted between February and March of 2020 revealed 25 positions that included outreach work as a significant duty. While most of the job advertisements were for outreach positions that combined functional duties, instruction was the focus of eight of these positions. Seven of the positions were what the authors describe as student success positions, meaning the positions focused on engagement with specific user populations like first-year students or Latinx students, or on developing programming and outreach to student-centered campus units like Campus Life and Engagement, Educational Opportunity Program, University Freshman Center, or Writing Center. Four of the job advertisements were for management or administrative positions. Three of the positions were for specific subject liaison roles (Education, Latin American and Iberian Studies, Public Policy

and Administration). Two of the ads were generalist positions for reference, instruction, and outreach librarians, with no particular emphasis in any one area. Only one of the positions focused on marketing and communications. Appendix C lists the job titles included in this review.

The authors analyzed the job advertisements for statements that indicated the assumption, need, or presence of professional competencies. For example, the following three quotes illustrate the need for collaboration, marketing, and programming, respectively, in outreach practitioner work.

> "Ability to work in partnership with other units on campus to promote the library's role in teaching and learning" (University of Southern Maine, Instruction and Outreach Librarian)

> "Coordinates all library communications to the Elon community and external audiences to promote and deliver information about the library and its brand. Manages the library's social media and online presence. Develops print and digital promotional materials that effectively communicate the library's mission, services, and news to a variety of audiences" (Elon University, Outreach and Marketing Librarian)

> "The FYE Librarian will lead outreach initiatives tailored to undergraduates, particularly students in their first two years, and work with library colleagues and stakeholders across campus to provide meaningful, welcoming, and fun activities and services that foster student engagement and a sense of belonging" (San Francisco State University, First-Year Experience and Undergraduate Student Success Librarian)

By reviewing the selected job postings and noting statements that presumed or suggested the need for particular skills, behaviors, or knowledge, the authors produced 13 competencies, including: budget management and grant writing, collaboration and partnerships (relationship management), communication, creativity, cultural competence, emotional intelligence, instructional design, marketing and program development, project management, public speaking, strategic planning and assessment, technology fluency, and user/community engagement.

The authors compared the two sets of themes identified in the reviews of the literature and the job postings, as well as the text selections that contributed to the identification of those themes, to produce a list of 18 combined competencies and definitions. The authors used these competencies, along with their definitions, in Phase II of the study; they are as follows:

Advocacy: Understands the unique ecosystem of colleges and universities, especially of their particular institutions, and can leverage this knowledge to effectively advocate for the role of the library in academic and student success. Also advocates within the library to promote and harness support for outreach activities.

Assessment: Sets programmatic goals aligned with library and institutional goals. Ethically uses qualitative and quantitative methods and tools to understand diverse user needs and experiences, measure impact, incorporate feedback

toward improving programs and services, and demonstrate the value of the library to the institution.

Collaboration: Collaborates effectively with individuals and teams throughout the library and beyond to define mutually beneficial goals, marshal resources toward those goals, and participate in shared decision-making.

Communication: Has superior, persuasive, clear, and organized verbal and written communication skills. Constantly seeks new and customized ways to connect with diverse audiences through communication channels used by those communities.

Creativity: Draws on their own creativity and other creative resources in designing unique programs and marketing materials that can reach target audiences in a competitive information landscape.

Diversity and Inclusion: Is aware of and seeks to continually learn more about the diverse and multicultural communities their libraries serve as well as the intersectional identities of library users. Strives to create inclusive and welcoming spaces, programs, and communications, as well as provide platforms for a diversity of voices in the library's outreach efforts.

Emotional Intelligence: Outreach work can be stressful, involving competing deadlines, high-profile activities, and constant social interaction. Practices self-awareness and self-care to manage their emotions and bring empathy to their professional interpersonal relationships.

Marketing: Creates ads, print and digital media, and marketing deliverables using specialized design tools and services. Cultivates and maintains the library's online image by using best practices for branding and reputation management.

Networking: Cultivates and maintains trusted relationships outside the library. Actively networks with campus constituents and reaches out to potential ambassadors and partners to identify connections and support for achieving common goals.

Professional Growth: Stays abreast of emerging trends, especially in the areas of student success, library pedagogies, social media, communication, programming, and assessment and integrates this knowledge into their daily work.

Programming: Develops and presents programs and activities that promote library collections and services, and position the library as a vibrant cultural, educational, and civic center within its community.

Project Management: Is able to plan and deliver complex events and projects by breaking them down into discrete tasks with deadlines and assigned responsibilities, effectively using organizational and communication tools to enable teams to achieve desired goals.

Research and Policy: Uses market research, industry trends, published literature, and needs assessments to develop relevant organizational policies and plan outreach strategies.

Resource Management: Harnesses, organizes, motivates, and manages staff and/or volunteers from within and without the library to work toward library outreach goals. Manages funds responsibly by projecting, spending, and tracking outreach expenses in accordance with institutional, state, and federal policies, and ensuring fair and timely compensation for vendors and talent.

Service: Uses a patron-focused approach to meeting the needs of their students, faculty, and campus community members through both traditional and emerging library service models.

Teaching: Employs pedagogical methods to design, deliver, and assess instructional experiences that promote library services, collections, and staff to distinct groups, especially lower-level undergraduate students.

Technology: Is comfortable learning, using, and teaching new technologies that help connect users to library resources and programs, as well as working with technology specialists to design and implement connected spaces and experiences.

User Engagement: Ventures outside the doors of the library to reach students, faculty, and other community members where they are.

Results of Phase II

The authors distributed a survey instrument developed based on the findings in Phase I in November 2020 to four listservs, including uls-l@lists.ala.org, collib-l@lists.ala.org, ili-l@lists.ala.org, and acr-iglmo@lists.ala.org, inviting outreach practitioners in academic libraries to participate. The survey asked participants to respond to questions about the 18 competencies identified above.

Of the participants who agreed to complete the questionnaire, 69 percent (n = 123) fully completed it and 31 percent (n = 55) partially completed it. Eleven out of 178 participants (6%) started the survey but did not progress past the consent portion of the questionnaire; therefore, they were excluded from the analysis.

Demographics

The survey invited participants to share some demographic information. Of the 121 responses (note: there were two missing responses), 86 percent identified as "White" and 8.3 percent selected "Prefer not to respond." A mere 5.9 percent identified as one or more of another race, but because the *n* is so small, the authors chose not to break out the data for publication.

Current Institution

The survey also asked participants to identify their current institution. The authors compared the responses with Carnegie classifications for each institution as reflected in the broad categories of table 1 (note: there were 28 missing responses):

TABLE 1
Participants' Current Institution (n = 95)

Current Institution	n	%
Associate's Colleges	10	10.5
Baccalaureate Colleges	11	11.6
Master's Colleges and Universities	23	24.2
Doctoral Universities	51	53.7
Total	95	100

Note: Carnegie classifications do not apply to Canadian institutions. For the two respondents from Canada, the authors categorized those institutions using the criteria outlined by Carnegie.

Years Worked in Outreach-related Position

Of the 123 participants who completed the questionnaire, 119 individuals responded to the question "How many years have you worked (or did you work) in an outreach-related position in

academic libraries?" Their experience ranged from one year to 25 years. The average number of years was 7.74 years (SD = 6.15).

Job Titles

The job titles of the survey respondents are grouped as follows:

- Thirty-three of the respondents reported titles associated with instruction, such as "Information Literacy Librarian" and "Outreach and Instruction Librarian."
- Twenty of the survey respondents were liaison librarians. Titles in this category include disciplinary liaison roles like "Humanities Librarian," as well as subject-specific roles like "Business Librarian."
- Seventeen respondents were in generalist outreach positions, with titles like "Outreach Librarian" or "Outreach and Reference Librarian."
- Sixteen of the respondents who provided job titles were in management roles, like "Head of Communications and Engagement" and "Manager, Library Academic Services and Outreach."
- Fifteen of the respondents were in positions that could be categorized as student success positions, with titles like "Student Engagement Librarian" and "Undergraduate and Student Success Librarian."
- Marketing and communications were the focus of only four of the respondents' job titles; examples include "Communications & Outreach Librarian" and "Coordinator of Marketing and Engagement."
- The remaining eight job titles were miscellaneous, meaning the authors could not tell from the titles much about the nature of the position (like "Professional Librarian"), or outliers (such as "User Experience Librarian").

Competencies

Table 2 illustrates how respondents answered the question "How important is XX to your work in academic library outreach? (1 = Not important, 2 = Rarely important, 3 = Neutral, 4 = Somewhat important, 5 = Very important, and 6 = Absolutely necessary)."

TABLE 2
Descriptive Statistics of 18 Competencies (n = 123)

No.	Competencies	N	M	SD	Min	Max
1	Advocacy	123	5.10	0.78	2	6
2	Assessment	123	4.54	1.03	2	6
3	Collaboration	122	5.48	0.81	2	6
4	Communication	122	5.62	0.58	4	6
5	Creativity	123	4.79	0.75	2	6
6	Diversity and Inclusion	123	5.24	0.81	3	6
7	Emotional Intelligence	123	4.80	1.06	1	6
8	Marketing	123	4.81	1.00	2	6
9	Networking	122	5.25	0.76	3	6
10	Professional Growth	123	4.76	0.78	3	6
11	Programming	123	4.68	1.06	1	6
12	Project Management	123	4.73	1.06	2	6

TABLE 2
Descriptive Statistics of 18 Competencies (n = 123)

No.	Competencies	N	M	SD	Min	Max
13	Research and Policy	123	3.70	1.06	1	6
14	Resource Management	123	3.86	1.27	1	6
15	Service	123	5.05	0.96	2	6
16	Teaching	122	4.93	1.05	1	6
17	Technology	123	4.80	0.88	2	6
18	User Engagement	123	5.13	0.82	2	6

The highest mean rated competency reported was Communication (M = 5.62, SD = 0.58), followed by Collaboration (M = 5.48, SD = 0.81), Networking (M = 5.25, SD = 0.76), and Diversity and Inclusion (M = 5.24, SD = 0.81). The lowest mean rated competency reported was Research and Policy (M = 3.70, SD = 1.06), followed by Resource Management (M = 3.86, SD = 1.27).

Reliability and Item Analysis

Guided by the definition of competency, the authors binned the 18 competencies into three constructs: Knowledge, Skills, and Behaviors. There were six items in each construct. The items included in each construct, along with their mean, standard deviation, and Cronbach's alpha are shown in table 3.

TABLE 3
Summary Statistics and Reliability Coefficients of the Three Constructs

Constructs	Items	N	M	SD	Cronbach's Alpha (α)
Knowledge	Advocacy	122	4.75	0.52	.606
	Diversity and Inclusion				
	Professional Growth				
	Research and Policy				
	Technology				
	Teaching				
Skills	Assessment	122	4.71	0.67	.745
	Communication				
	Marketing				
	Programming				
	Project Management				
	Resource Management				
Behaviors	Collaboration	121	5.08	0.56	.714
	Creativity				
	Emotional Intelligence				
	Networking				
	Service				
	User Engagement				

George and Mallery revealed the following rule of thumb to interpret reliability coefficients: Excellent ≥ .9, Good ≥ .8, Acceptable ≥ .7, Questionable ≥ .6, Poor ≥ .5, and Unacceptable ≤ .5.[28] Considering this, the Skills and Behaviors constructs had acceptable coefficients, while Knowledge was questionable. In addition, the summary statistics revealed that Behaviors was the top mean rated construct, followed by Knowledge and Skills.

Simple Linear Regression

Three separate simple linear regression models were performed to determine if the number of years working in an outreach-related academic position could effectively predict each construct in each model: Knowledge, Skills, and Behaviors, respectively. The assumptions were checked. The results from the three regression analyses were not statistically significant and reported as $F(1, 117) = 0.926$, $p = .338$, with an R^2 of .008 for Knowledge; $F(1, 117) = 0.109$, $p = .742$, with an R^2 of .001 for Skills; and $F(1, 117) = 0.223$, $p = .638$, with an R^2 of .002 for Behaviors.

One-Way MANOVA

Correlations were performed to examine relationships among the three constructs. The results indicated statistically significant correlations between Knowledge and Skills ($r = .470$, $p < .001$, N = 123), Knowledge and Behaviors ($r = .630$, $p < .001$, N = 123), and Skills and Behaviors ($r = .584$, $p < .001$, N = 123). Based on Cohen's guideline to interpret the strength of relationship, $r = .10$ is considered weak, $r = .30$ is considered moderate, and $r = .50$ is considered strong.[29] These strong relationships among constructs confirmed that a MANOVA would need to be performed to determine differences among affiliated institutions and constructs.

A one-way MANOVA was performed to take into account the correlations among the dependent variables (Knowledge, Skills, and Behaviors) and to determine if there were significant differences among institutional profiles: Associate's Colleges (n = 10), Baccalaureate Colleges (n = 11), Master's Colleges and Universities (n = 23), and Doctoral Universities (n = 51). The results indicated no statistically significant difference among the different classifications of institution in Knowledge, Skills, and Behaviors, $F(9, 217) = 1.479$, $p = .157$; Wilks' $\Lambda = 0.865$, partial $\eta^2 = .047$.

Open Text Responses

In responding to the question "Which competencies need additional clarification?" participants had the option to provide an open text response. Forty-eight participants completed this question. In addition to the 119 participants who did not respond to this question, 13 participants answered to the effect of "none" or "everything is clear." The authors noted the competencies mentioned in those responses, and the frequencies of each are shown in table 4.

Advocacy, Assessment, Networking, Programming, and Technology were each mentioned once.

The authors further divided the responses into four broad categories (defined by the authors below):

TABLE 4
Competencies Mentioned as Needing Clarification

Competency	# Respondents
Creativity	5
Teaching	5
User Engagement	5
Marketing	4
Service	4
Collaboration	3
Research and Policy	3
Emotional Intelligence	2
Project Management	2
Resource Management	2

splitters, chunkers, removers, and modifiers. Some respondents commented on more than one competency in their response.

"Splitters" (n = 5) are defined as those responses that recommended creating two or more competencies in place of a single competency. For example, one respondent suggested, "In technology, maybe consider adding or mentioning virtual outreach as virtual outreach needs, methods, and trends can be different from in-person outreach. Virtual outreach could also be [its] own category." Similarly, in responding to the Research and Policy competency, a respondent noted, "When I think research I do not think of research about outreach specifically, I think of it more generally and while the research I do does play into outreach that is because the communities I serve are interested in it not because it is about outreach. Also policy seems like it should be its own thing as library policy does play a role in my outreach."

"Chunkers" (n = 7) are defined as those responses that recommended combining two or more competencies into a single competency. For example, one respondent noted, "Creativity: the statement is too broad. Marketing and Programming are already both listed, so it feels redundant." Another respondent suggested combining four competencies into two: "Marketing and Communication as well as Project Management and Resource Management seem very closely related. It could be helpful to better highlight the differences between these items, if they are not combined into one competency."

"Removers" (n = 3) are defined as those responses that recommend removing one or more competencies altogether. For example, one respondent suggested removing Teaching: "For me, teaching is separate from outreach. I think because it's so core to the university's mission whereas outreach is a core library thing." Another respondent recommended removing Service because "I feel like this is just librarianship."

"Modifiers" (n = 21) are defined as those responses that suggested changes to existing titles or definitions of the competencies, but not to the extent of creating or eliminating any in particular. The majority of responses to this question fell into this category. For example, in responding to Service, one respondent noted: "Service might not only be to patrons, but also to other stakeholders on campus and/or library workers." In responding to User Engagement, another respondent said: "When I think of user engagement I think of engaging with library users—but the definition is about non-users, or about going beyond the doors of the library. I spend a lot of time meeting people where they are, talking with faculty in their academic buildings, with students at clubs, things like that—but I wouldn't define that as user engagement because I think of user in a UX sense. Maybe community engagement."

In responding to the question, "Based on your experience, what competencies are missing from the list?" participants had the option to provide an open-text response. Sixty participants completed this question. In addition to the 107 participants who did not respond to this question, 21 participants answered to the effect of "No competencies missing" or "None." The authors inductively coded and grouped the responses to the question as shown in table 5.

Respondents who identified subject or domain knowledge as a missing competency indicated that the library outreach worker needs to deploy a librarian's trained understanding of information processes or develop knowledge of the communities they serve, whether that is a specific academic discipline or population.

Time management was seen as missing by four respondents. Among these, there were suggestions that time management could be included in the descriptions for Project Manage-

TABLE 5
Competencies Proposed or Listed as Missing

Proposed Competencies/Themes	# Respondents
Subject/Domain Knowledge	6
Time Management	4
Flexibility/Resiliency/Resourcefulness	3
Getting Others on Board/People Management	3
Leadership	3
Administration Support	2
Motivation/Tenacity	2
Responsiveness to Current Events and User Needs	2
Social Media	2
Strategic Planning	2
Virtual Outreach	2
Writing	2

ment or Resource Management. As one respondent noted, "We often have very little money to spend on outreach, so the main resource in our control is time."

"Resourcefulness," "flexibility," "resiliency," and "adaptability" were words used by respondents to describe skills that library outreach practitioners often need to deploy because of the fast pace of change in libraries and a general lack of budgetary resources. Additional phrases used by these respondents included "doing more with less" and being "quick on [your] feet."

People management was called out as missing by three respondents. In particular, these respondents seemed to refer to people they do not directly manage but whose support they need in some way. As one respondent voiced, "I rarely do projects on my own, and therefore I find I need to build consensus to ensure everyone is on board with an outreach project, even those not directly working on it but those affected by it as well." Another respondent referred to this work as "outreach/advocacy/marketing within the library" and "getting other librarians on board."

Leadership and management skills were identified as missing by three survey respondents, but these open-text responses did not provide any additional elaboration of these skills.

While not a competency, support from administration (presumably, library administration) was raised by two respondents as missing and as being necessary to successful outreach work.

Motivation and tenacity were identified by two respondents as missing competencies. These responses illuminate the daily struggles of some outreach practitioners who work alone. One respondent mused, "Most times I am the only person working on outreach on the library's staff and a lot of time I am creating my own job descriptions and tasks. If you can't stay motivated and self-start, you won't make it as an outreach librarian." Another wrote, "I can think of several occasions where I succeed long after other quit [sic]. You have to keep trying to reach students."

Two respondents mentioned responsiveness as a missing competency, referring to responsiveness to both current events and user needs. As one of these respondents explained, "It's

something between advocacy, networking, service, and professional growth. It's the ability to respond to user needs and create programming and services that meet those needs. It includes developing the skills necessary to meet those needs or finding others who have those skills."

Social media was specifically named as missing in the competencies by two respondents. One respondent elaborated that the library outreach worker does not just use and manage social media accounts as a marketing and outreach tool but "develops social networks and communities as a librarian by using either official library accounts or personal professional profiles."

Two respondents believe that strategic planning should be described as part of an existing competency, such as Assessment or Project Management, or added as its own competency. One respondent specified, "while possibly covered under project management, strategic planning covers more how outreach is integrated into the library's/organization's overall mission and vision."

Virtual outreach was called out as missing by two respondents, with one commenting, "virtual outreach needs, methods, and trends can be different from in-person outreach."

Writing was identified by two respondents as missing from the set of competencies. One respondent specified that outreach writing refers to "the ability to convey ideas in a succinct written form. This includes emails, pamphlet information, etc." The other respondent referred to the type of writing that is required as "technical writing."

In response to this question, there were a number of ideas and themes that were mentioned only once among all respondents as missing. These are: accessibility, budget, collegiality, communicate decisions, evaluate collections/resources, graphic design, listening, political acumen, professionalism, research support, team dynamics, user experience, using data to inform services, and website management.

Discussion

The primary goal of this project was to develop a list of competencies for outreach librarian work, based on the experiences described in professional literature and the requirements outlined in job advertisements. The authors described the most significant results of that initial analysis, the 18 competencies and their definitions, in Phase I above.

While not meant to encompass the entirety of academic library outreach work, this list condenses the most common behaviors, knowledge, and skills necessary for a wide range of outreach needs. Interestingly, based on the responses in the survey (Phase II), there was no correlation between either the Carnegie classification of the institutions that employed the respondents or the years of experience in outreach and how respondents ranked these competencies. Furthermore, the mean of the three binned constructs did not statistically differ. One possible interpretation of this result is that these 18 competencies are indeed firmly entrenched and widely diffused throughout academic library work, regardless of institution or experience. Responses to the question "Which competencies need additional clarification?" confirm this conclusion, given that only three respondents recommended removing a competency from the list, the vast majority preferring to slightly modify, split, combine, or leave unchanged the original 18 competencies.

Prioritizing the Competencies

The secondary goal of this project was to identify how outreach practitioners prioritized those competencies. Communication was the most highly rated competency, followed by Collabora-

tion, Networking, and Diversity and Inclusion. Additionally, Communication had the lowest standard deviation and was the only competency ranked exclusively between "somewhat important" and "absolutely necessary." The lowest mean rated competency reported was Research and Policy, followed by Resource Management. Additionally, Resource Management had the highest standard deviation, suggesting strong disagreement among respondents.

While it was not surprising to the authors that competencies such as Communication and Collaboration rank so highly among respondents (especially given the prevalence of these themes in the literature and job advertisements), it was surprising to see items such as Research and Policy, Resource Management, and Assessment rank so low. This is especially true given the volume of professional literature on library outreach dedicated to working with limited means and advocating one's value. One possible, albeit unlikely, reason for the first two is survey fatigue since the survey listed the competencies in alphabetical order. Another potential reason is that the majority of the respondents are not in leadership positions (as defined by whether their job titles included words like "director," "head," or "dean"), and thus do not typically engage in these types of activities. Alternatively, it could be argued that the competencies that ranked most highly are also those most necessary for success in any academic library position (for example, communication is important in any position).

When the 18 competencies were binned together into three constructs (Knowledge, Skills, and Behaviors), Behaviors was the most highly rated category, followed by Knowledge, then Skills. One possible inference from this result is that success in academic outreach is more about how one approaches the job (and the people) and less about the specific knowledge and skills used in that job.

Competencies Needing Clarification

The competencies most mentioned as needing additional clarification were Creativity, Teaching, User Engagement, Marketing, and Service. These competencies had neither the highest nor the lowest rated means but fell somewhere in the middle. In other words, the competencies for which respondents sought the most clarification did not correspond to the competencies identified as the most or the least important to them.

One could infer several reasons that respondents requested clarification on the above competencies. Respondents may have been confused by the definitions provided with these competencies; therefore, alternate wording might result in reducing the need for clarification. A follow-up survey or focus group with library outreach workers about these five competencies could tease out additional information.

The authors did not ask a question about which competencies should be removed, but three respondents suggested the removal of two competencies in this category: Service and Teaching (these were the only requests for removal among all the respondents' comments). It is possible that a request for clarification and even removal of these competencies is related to the job responsibilities and use of these competencies by specific respondents. Many library outreach workers have other—usually public service—duties combined with their outreach roles. Some may identify those duties as more or less related to their outreach work. For example, some respondents consider teaching skills important to their outreach work, while others consider teaching important but unrelated to their outreach work.

Initially, the authors hesitated whether to include Emotional Intelligence and Professional Growth in the list of competencies identified in Phase I. While those concepts were present

in both the job advertisements and the professional literature, their frequency of occurrence compared to competencies like Advocacy and Collaboration was noticeably lower and less explicit. The mean rating by respondents for both competencies is notedly low (though not the lowest). However, respondents who chose to comment directly on Emotional Intelligence recommended expanding the definition to include empathy; and multiple respondents recommended adding competencies that touch on similar ideas (such as resilience). No respondents commented directly on Professional Growth, though numerous respondents discussed the need for increased subject expertise. The authors recommend additional studies on how these two competencies support academic outreach work.

The lack of a standardized job description for academic library outreach is one of the motivating reasons for conducting this research. The authors imagine that some level of disagreement about the competencies will arise for this reason and is inevitable. Another research study might look at the use of these competencies by individuals in their work rather than the importance that they ascribe to the competencies. A comparison of the two datasets could be illuminating.

The authors acknowledge that there can be overlap among the competencies in library outreach work. For example, Creativity might be applied in multiple arenas of the library outreach worker's portfolio. The authors highlighted Creativity as its own competency based on the literature review and analysis of job postings, but another set of researchers might come to a different conclusion. It is important to remember that the largest set of responses (13) to the question of "Which competencies need additional clarification?" indicated that no clarification was needed to the competencies.

Identifying Additional Competencies

The knowledge, skills, and behaviors most often mentioned as missing from the original list of 18 competencies included subject/domain knowledge, time management, flexibility/resiliency/resourcefulness, getting others on board/people management, and leadership. Most of the areas identified as missing could be incorporated into the definitions of the existing competencies, as they are closely related. For example, subject/domain knowledge could be incorporated into the User Engagement competency. Time management could be described within the Resource Management competency. Flexibility/resiliency/resourcefulness could be worked into the definition for Emotional Intelligence. Getting others on board/people management is already implied in Advocacy, Collaboration, and Resource Management, but the definitions could be tweaked to make this more explicit.

The authors chose not to include leadership in their set of competencies because it did not surface from the literature or job postings. Most of the academic library outreach jobs included in the Phase I analysis do not include direct management of other people. The authors acknowledge that leadership can be exercised by library employees located anywhere within an organizational hierarchy, especially if they have sole responsibility for a program or set of duties. However, this study aims to include only those competencies that are specific to library outreach jobs as they are most commonly conceived. A library outreach worker might still want to bring in competencies from other sets of relevant published competencies that apply to their positions, such as ALA's Core Competences of Librarianship, LLAMA's Leadership and Management Competencies, and ACRL's Roles and Strengths of Teaching Librarians.

Organizing the Competencies

For the most part, feedback from outreach practitioners affirmed the authors' choice of competencies as developed from the literature and job advertisements. As suggested, a follow-up survey or focus group could probe some outstanding questions related to the wording of the competencies and their definitions.

In presenting the competencies in the future, the authors recommend listing them in order of importance to respondents and binned by construct, with the strongest (in other words, highest mean rating) constructs listed first.

Behaviors Necessary for Academic Library Outreach Work (M = 5.08)
Collaboration (M = 5.48)
Networking (M = 5.25)
User Engagement (M = 5.13)
Service (M = 5.05)
Emotional Intelligence (M = 4.80)
Creativity (M = 4.79)

Knowledge Necessary for Academic Library Outreach Work (M = 4.75)
Diversity and Inclusion (M = 5.24)
Advocacy (M = 5.10)
Teaching (M = 4.93)
Technology (M = 4.80)
Professional Growth (M = 4.76)
Research and Policy (M = 3.70)

Skills Necessary for Academic Library Outreach Work (M = 4.71)
Communication (M = 5.62)
Marketing (M = 4.81)
Project Management (M = 4.73)
Programming (M = 4.68)
Assessment (M = 4.54)
Resource Management (M = 3.86)

Alternative ordering might abstain from using the three broad categories or consider standard deviation as a factor in the ranking.

Limitations and Areas for Future Research

The authors want to acknowledge the limitations of the data and suggest areas for future research. While the number of years of experience and institutional profiles were explored as possible indicator variables, other variables that could have been considered include the subjects' current and recent position descriptions; access to resources (such as technology, staffing, and budget), including professional growth opportunities; professional identification; and perceived level of support from library administration.

Most academic library outreach workers have other duties in their job descriptions, and individuals may define their outreach work in different ways. For example, one subject li-

brarian may categorize their liaison work to academic departments as outreach work, while another would not. A reference and instruction librarian may identify a portion of their work in these functional areas as outreach work, while another would not. The authors attempted to define outreach practitioners for this study and in the survey as "library employees who develop creative programs and communications that promote library collections, services, and staff to target audiences." However, the overlap between outreach and areas of reference, instruction, collection development, and liaison work is not always clear.

Soliciting information about the frequency to which practitioners perform or actively engage in these competencies in their outreach work could help clarify whether responses were guided by requirements and expectations in comparison to passion for a given competency. An individual may have evaluated a competency as "absolutely necessary" to outreach work, yet they may rarely engage or practice that competency. With this in mind, the authors could have additionally explored the differences between how important each competency is to an individual and how often they engage in that knowledge, skill, or behavior.

One particular case repeatedly stood out from the rest of the sampling population. This individual had fewer than five years of experience and rated constructs generally low, whereas, in most cases, individuals with few years of experience rated the competencies higher. A future mixed-method study would grant researchers an opportunity to examine these unique cases and, through a qualitative approach, gain in-depth understanding as to why these individuals responded in the way that they did.

Another limitation is related to the time frame of the job advertisements the authors reviewed compared to the literature in Phase I. The authors examined articles published between 2010 and 2020. However, the authors retrieved the job postings between February and March 2020. The job descriptions represent a more current but also more limited snapshot in time.

The survey was open from November 5 to 20, 2020, during the COVID-19 pandemic when many academic library buildings were partially or fully closed, and the majority of services had moved to virtual spaces. A few respondents suggested including virtual outreach more explicitly in the competencies, presumably because of the rise in expectations during this time for library outreach workers to perform outreach virtually. It remains to be seen whether outreach work has been transformed by this period of virtual interactions. The survey could be conducted again post-pandemic to determine whether the timing influenced the responses and whether virtual outreach is here to stay.

The authors collected demographic data on survey respondents, including asking about their race and ethnicity. While the demographic data reflects the racial makeup of the wider library field, which is overwhelmingly white, future research could focus specifically on the skills and experiences of outreach librarians of color. Competencies by their very nature are an attempt to standardize and elevate professional expertise, and the authors recognize that their research may be unwittingly encoding elements of the whiteness of the LIS field and its professional associations and organizations. Focusing on the experiences of outreach librarians of color could reveal burdens that some of these competencies carry or illuminate new competencies.

Conclusion

This study reviewed the language of published literature and job advertisements to identify core competencies for outreach work in academic libraries. The 18 competencies that the authors defined were presented to academic outreach practitioners for assessment through

a survey instrument. The authors analyzed the results of that survey to provide additional context and identify areas for future research.

As of the publication of this article, there is no set of approved competencies for outreach librarianship in the same way that there are competencies for e-resources, special collections, and reference librarians. The authors of this study encourage future researchers and, most notably, the Association of College & Research Libraries to formulate and codify competencies for academic library outreach work. As outreach work continues to grow and adapt to new needs in higher education, having a set of core competencies will help library deans and directors plan strategically for future positions. Moreover, a standard set of expectations for the behaviors, knowledge, and skills necessary for outreach work will help LIS instructors develop curriculum for LIS students. Above all, it will help current practitioners to benchmark their own work and professional growth against a standard metric.

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APPENDIX A
List of Professional Competencies (Selected)

- ALA: Core Competences of Librarianship (2009): http://www.ala.org/educationcareers/careers/corecomp/corecompetences
- FLICC: Competencies for Federal Librarians (2011): http://www.loc.gov/flicc/publications/Lib_Compt/2011/2011Competencies.pdf
- NASIG: Core Competencies for E-Resources Librarians (2013): https://www.nasig.org/Core-Competencies
- ACRL: Competencies for Special Collections Professionals (2017): http://www.ala.org/acrl/standards/comp4specollect
- ACRL: Proficiencies for Assessment Librarians and Coordinators (2017): http://www.ala.org/acrl/standards/assessment_proficiencies
- ACRL: Roles and Strengths of Teaching Librarians (2017): http://www.ala.org/acrl/standards/teachinglibrarians
- ALA RUSA: Professional Competencies for Reference and User Services Librarians (2017): http://www.ala.org/rusa/resources/guidelines/professional
- ALCTS: Core Competencies for Cataloging and Metadata Professional Librarians (2017): https://alair.ala.org/handle/11213/7853
- LLAMA: Leadership and Management Competencies (2017): http://www.ala.org/llama/leadership-and-management-competencies
- NASIG: Core Competencies for Scholarly Communication Librarians (2017): https://www.nasig.org/Core-Competencies
- ALCTS: Core Competencies for Acquisitions Professionals (2018): https://alair.ala.org/handle/11213/9058
- ALA National Impact of Library Public Programs Assessment: Nine Competencies of Programming Librarians (2019): https://nilppa.org/phase-1-white-paper/what-competencies-and-training-are-required/

APPENDIX B
List of Publication Titles in Phase I

- *Reference & User Services Quarterly (6)*
- *Public Services Quarterly (5)*
- *College & Research Libraries (4)*
- *Journal of Library Administration (4)*
- *Journal of Librarianship and Scholarly Communication (3)*
- *The Journal of Academic Librarianship (3)*
- *College & Research Libraries News (2)*
- *Partnership: The Canadian Journal of Library and Information Practice and Research (2)*
- *Pennsylvania Libraries: Research & Practice (2)*
- *Reference Services Review (2)*
- *Advocacy, Outreach, and the Nation's Academic Libraries: A Call for Action (monograph)*
- *Against the Grain*
- *Digital Library Perspectives*
- *Diversity Programming and Outreach for Academic Libraries (monograph)*
- *Education Libraries*
- *Evidence Based Library and Information Practice*
- *In the Library with the Lead Pipe*
- *Journal of Information Literacy*
- *Journal of Interlibrary Loan*
- *Library Leadership & Management*
- *Library Management*
- *Library Philosophy and Practice*
- *Library Trends*
- *Mid-Career Library and Information Professionals: A Leadership Primer (monograph)*
- *Portal: Libraries and the Academy*
- *Public Library Quarterly*
- *Serials Review*
- *SPEK Kit Outreach and Engagement (monograph)*
- *Technical Services Quarterly*
- *The Library Marketing Toolkit (monograph)*
- *The Library Outreach Casebook (monograph)*

APPENDIX C
List of Job Titles in Phase I

The following table lists the outreach positions included in Phase I. The authors grouped the job advertisements into categories, based on the primary focus of the job duties:

Primary Job Category	Job Titles
Generalist (2)	Reference & Outreach Librarian Research, Instruction, & Outreach Librarian
Instruction (8)	First-Year Experience Librarian Instruction & Outreach Librarian Instruction & Outreach Librarian Student Success Librarian Student Success Librarian Undergraduate Engagement Librarian Undergraduate Student Success Librarian Undergraduate Teaching & Outreach Librarian
Liaison (3)	Education Liaison Librarian Liaison Librarian Research & Engagement Librarian
Management (4)	Associate Dean for Teaching, Learning & Engagement Associate Library Director for Research, Learning, & Outreach Head of Learning, Research, & Engagement Public Services & Outreach Manager
Marketing & Communications (1)	Outreach & Marketing Librarian
Student Success (7)	First-Year Experience and Undergraduate Success Librarian Inclusion & Outreach Librarian Librarian for Academic Engagement Outreach & User Engagement Librarian Student Success Librarian Student Success Librarian User Engagement Librarian

Notes

1. Colleen Boff, Carol Singer, and Beverly Stearns, "Reaching Out to the Underserved: More Than Thirty Years of Outreach Job Ads," *Journal of Academic Librarianship* 32, no. 2 (2006): 137–47, https://doi.org/10.1016/j.acalib.2005.12.007; Sarah LeMire et al., and Association of Research Libraries, *Outreach and Engagement* (Chicago, IL: American Library Association, 2018).

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4. Hartnett, "NASIG's Core Competencies for Electronic Resources Librarians Revisited."

5. Xia and Wang, "Competencies and Responsibilities of Social Science Data Librarians."

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37–46, https://doi.org/10.1177%2F0340035211435074.

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14. Mitch Fontenot, "A 'Typical' Year in Outreach Services at Louisiana State University," *Louisiana Libraries* 69, no. 3/5 (2007).

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16. Toni M. Carter and Priscilla Seaman, "The Management and Support of Outreach in Academic Libraries," *Reference & User Services Quarterly* 51, no. 2 (2011): 163–71, https://doi.org/10.5860/rusq.51n2.163.

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25. Farrell and Mastel, "Considering Outreach Assessment."

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Reflection and Analysis of Implementing a Free Asynchronous MOOC to Build Competence in Biomedical Research Data Management

Julie Goldman and Nevada F. Trepanowski

This article reports on the development and evaluation of a massive open online course (MOOC) that provides instruction on best practices in research data management (RDM). The course was developed in response to the growing need for data management professional development for LIS professionals and to promote data management to researchers. In just 18 months of the course launch, the course reached more than 1,000 people from across the world and was effective in building student competency in RDM. The success of this course illustrates the value and utility of free online professional development as a tool for both library and research staff.

Introduction

Traditional in-person continuing education is a great resource for professional development. However, the time and expense associated with in-person education can pose barriers to many Library and Information Science (LIS) professionals looking to increase their knowledge of data services. Massive Open Online Courses (MOOCs) offer flexibility and affordability via asynchronous instruction to ensure the LIS professionals can build the skills required to become effective research data management (RDM) partners.

In 2015, the National Institutes of Health (NIH) launched the Big Data to Knowledge (BD2K) Initiative to address data science challenges, including lack of appropriate tools, poor data accessibility, and insufficient training. As a result, multiple groups received grant funding[1] to expand research education: Georgetown University, to develop a MOOC focused on Big Data; Rutgers, to create open educational resources (OER) "Enabling Data Science in Biology"; Johns Hopkins University, to build OER to "Facilitate Sharing of Next Generation Sequencing Data;"[2] and New York University (NYU) School of Medicine, to establish online training for "Medical Librarians to Understand and Teach Research Data Management."[3]

The research presented in this article focuses on the outcomes of a course funded by one of these grants, a library-developed MOOC focusing on comprehensive training for managing biomedical data for a broad research audience. The developed course, *Best Practices for*

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Biomedical Research Data Management,[4] addresses the learning gaps identified in both the LIS curriculum and at institutions that foster scientific research. This article reports on the analysis of 18 months of course survey and assessment data to examine the effectiveness of the course, understanding the educational and professional diversity of participants, and student success at achieving their personal goals. Three research questions were used to guide the analysis:

1. *What types of professionals and nonprofessionals participate in the course?*
2. *What are the participants' motivations for enrolling in the course?*
3. *Does the course address the participants' data management needs?*

Literature Review

During the past decades, research funders have realized the need for public sharing of funded research results[5] and the importance of research data management planning.[6] However, these data management skills were noticeably lacking in the biomedical education curriculum.[7] In response to shifts in how research is conducted and researcher needs, librarians have emerged as key stakeholders, offering data services and training.[8] This literature review looks at RDM training offerings and how the curriculum can be assessed to meet learners' needs.

In 2010, the National Library of Medicine (NLM) funded the development of the New England Collaborative Data Management Curriculum (NECDMC) for teaching data management best practices to undergraduates, graduate students, librarians, and researchers in the health sciences, sciences, and engineering disciplines.[9] NECDMC includes presentation slides and static documents for activities and research cases, intending to provide curricular content that can be adapted for any discipline and learning environment. Nationwide feedback regarding NECDMC was very positive. Librarians used NECDMC at their institutions and praised the case-study approach, the use of hands-on exercises, and incorporating different settings and populations. Participants felt the examples and case studies worked well but wanted more emphasis on a librarian's role in data management consulting. NECDMC was seen as beneficial to many audiences because of its adaptable and flexible framework.[10] However, pilots of the NECDMC identified areas for improving the curriculum:[11]

- Providing answer keys for cases and activities
- Incorporating encryption and security for biomedical data
- Inviting guest speakers from other campus groups, e.g., Office of Research, Institutional Review Board, and Information Technology
- Offering the curriculum as an online course

Similarly, the National Science Foundation (NSF) funded a collaborative education effort that focuses on the needs and practices of RDM for the environmental sciences. DataONE education modules[12] offer a series of eight modules composed of instructional slides. These modules were reviewed and updated in 2016 and migrated to GitHub to increase community engagement.[13] However, DataONE does not offer interactive activities or quizzes, and modules do not include specific concerns for biomedical data, such as confidentiality of human research data.

Other early online training programs include two well-known Coursera MOOCs. "Research Data Management and Sharing" from The School of Information and Library Science and the Odum Institute at the University of North Carolina-Chapel Hill and EDINA at the University of Edinburgh[14] serves as an introductory course to RDM, only focusing on five broad topics. The "Data Management for Clinical Research" offered by the Department of

Biomedical Informatics at Vanderbilt University[15] focuses on clinical research and is geared toward anyone working in medical research, rather than directly targeting librarians and early-career scientists.

More recent developments have expanded on these early online offerings, in addition to the education created through the BD2K Initiative. In 2019, the National Network of Libraries of Medicine Training Office (NTO) developed an eight-week online course to address key concepts in RDM.[16] Most recently, the Research Data Management Librarian Academy (RDMLA) launched in 2020 as a unique partnership between a LIS academic program, academic health sciences and research libraries, and a publisher.[17]

As RDM training transitions to interactive online platforms, instructors must understand how to develop and assess online courses. MOOCs have expanded in the past eight years, to bring high-level education to a larger and wider audience.[18] Although MOOCs provide open and accessible education, they still face some critiques; most notably, they enhance the digital divide and are dominantly Western-centric.[19] Additionally, low student retention rates[20] may not outweigh the cost of MOOC production. These types of courses traditionally have high drop-off rates,[21] and the majority have completion rates of less than 10 percent, not improving during a six-year period.[22] To combat these known limitations, Koutropoulos and Hogue[23] offer recommendations for designing MOOCs that facilitate student interaction at all stages:

- Pre-Course: Provide a clear website with essential information about the course. This ensures that participants understand the course objectives, and commitment, enabling them to make a well-informed decision on joining the course.
- During Course: The instruction platform should be easy to use and understand, allowing participants to focus their time on the content and building connections with other participants instead of troubleshooting technological issues.
- Post-Course: Students should be encouraged to maintain a connection with the materials and anyone they interacted with during the course.

Additionally, effective instruction hinges on understanding how students engage in online learning and how to evaluate the success of their course experiences. One way to evaluate course success is to evaluate student knowledge before taking the course and then again after taking the course. For example, Macleod et al.[24] suggest the inclusion of pre-course and post-course standardized questions. Additionally, data derived from pre- and post-course surveys can help evaluate the success of a MOOC by using the evaluation method developed by Douglas et al.[25] of determining whether participants have achieved their unique learning goals.

Through this literature review, it is clear there is a demand for library and research professionals to develop data skills. This demand has driven the expansion of free online training in these areas. Despite this growth, there are still limited formal proofs of competency. Therefore, this article serves as one example for building a MOOC based on gathered practices for teaching RDM and a framework for evaluating the effectiveness of a course through participants' behaviors.

Course Development

Through funding from the NIH BD2K Initiative Research Education MOOC on Data Management for Biomedical Big Data, the NECDMC curriculum was transformed from static documents into an open online course.[26] To convert these fixed materials into dynamic online

content, instructors were identified to record video presentations, and the online platform Canvas was chosen to facilitate interactive learning activities. Complete course development can be found on the project OSF site: https://osf.io/ac9kg.

To incorporate the suggested improvements of NECDMC[27] and to address new opportunities in biomedical research, the pre-existing seven NECDMC modules were expanded into nine modules for the Canvas course. For example, the course added a tour of a biomedical engineering research laboratory, an example of implementing electronic lab notebooks in a research lab setting, a presentation detailing specific legal policies related to biomedical data, demonstrations of digital tools for data sharing and reusability, and testimonials highlighting research projects that support the discoverability of biomedical digital data.

The nine modules contain a combination of the following elements (see table 1): ungraded pre-module Practice Quiz; video lectures on various data management topics; case study that addresses certain aspects of data management; short activities for the hands-on experience; required and supplemental readings and resources; discussion forum; and post-module Concept Quiz to measure short-term learning outcomes (a full course outline is available on the Open Science Framework, https://osf.io/q4czf). Students could only attempt the ungraded Practice Quiz once but were given two attempts on the Concept Quiz since it contributed to their final grade.

TABLE 1
Best Practices for Biomedical Research Data Management MOOC Curriculum Outline

Module Topic	Case Study	Activity	Assessment
Course Introduction	–	–	Welcome Survey†
1: Introduction and Overview	Identifying Types and Stages of Data*	Research Lifecycle	Practice Quiz Concept Quiz
2: Research Lifecycle	Regeneration of Functional Heart Tissue in Rats*	Data Types, Formats, and Stages*	Practice Quiz Concept Quiz
3: Contextual Details	Combining Data from 10 Years of Research*	Identify Metadata*	Practice Quiz Concept Quiz
4: Data Storage and Security	Studying Vitamin D*	Data Checklist*	Practice Quiz Concept Quiz
5: Data Management Policy	Who Owns Research Data?*	Data Policy Examples	Practice Quiz Concept Quiz
6: Biomedical Ethics	Share and Share Alike?*	De-identifying Data*	Practice Quiz Concept Quiz
7: Data Sharing and Reuse	–	Sharing and Citing Data*	Practice Quiz Concept Quiz
8: Curation and Preservation for Data	Enumeration and Gene-Sequencing*	–	Practice Quiz Concept Quiz
9: Scientific Research Team	–	Apply for an Informationist Grant	Practice Quiz Concept Quiz
Course Conclusion	–	–	Course Assessment Survey User Experience Survey†

*Indicates materials already developed for NECDMC.
†Indicates survey content provided by Canvas (included in appendices A and D).

Methods

To evaluate the success of a MOOC, Douglas et al.[28] recommend focusing on whether learners achieved their own learning goals. Descriptive statistics of course analytics alone do not capture the success of a MOOC since both student characteristics (such as learning goals and demographics) and course characteristics (such as instructional design) influence a learner's behaviors.

Course data were analyzed using the recommendations of Douglas et al.[29] for the enrollment period of January 8, 2018, to July 10, 2019. The quantitative approach of using nonparametric descriptive statistics to generate micro and macro analytics from participant responses to course surveys and pre- and post-assessments supported the evaluation of student success and experiences. A quantitative-based method was used over a qualitative approach because it is a cost- and time-efficient method for analyzing the large amounts of student activity that spans an asynchronous MOOC. The evaluation of a single MOOC is, by nature, a nonrandom sample of convenience in that one can analyze the data only from students in the course. However, since the goal of this analysis was only to determine the success of the course, there is no pressing concern over not being able to generalize the analysis to other MOOCs.

Macro-level course analytics were used to examine total enrollment, active participation percentage of total enrollment, diversity of students reached by country and education level, and knowledge achievement. Micro-analytic summaries[30] were used to contextualize the course's impact on students' goals via pre- and post-course surveys as a method to interpret both motivations for enrollment and knowledge achievement. The process of using learner goals and motivation to contextualize course outcomes is suggested by Koller et al. and Douglas et al., who propose that learner intentions provide valuable context to traditional macro-level MOOC metrics.[31] Additionally, micro-analytics are used to capture participant feedback on the course.

Three core questions guided the analysis of the course survey and assessment data:

1. *What types of professionals and nonprofessionals participate in the course?*
2. *What are the participants' motivations for enrolling in the course?*
3. *Does the course address the participants' data management needs?*

Research questions were explored by compiling and visualizing data summaries using Tableau. Anonymized course data was extracted from the Canvas platform; data did contain unique participant ID allowing for response and assessment data for individual students to be linked across course modules and surveys. Participants agreed to data use by Canvas and the instructors through the course service agreement. Exported data were validated and coded in Microsoft Excel. The data validation process is detailed in the Data_Validation_Methods document included in the data analysis files in OSF.[32] Open response data from course surveys were coded to respect participant privacy. Both authors reviewed response coding for congruence. Survey questions are available in appendices A and D, and categories derived from coding are available in appendices B and C. All analysis data files have been deposited in the Open Science Framework.[33]

Macro-Level Analytics

Total Enrollment and Active Participation Percentage of Total Enrollment

Course participation was classified into three categories based on participant activity: 1) *No course content completed*; 2) *Completed one or more modules but not all course content*; and 3) *Com-*

pleted all course content. Participants were classified as having *No course content completed* if all scores in the course grades data set were blank or 0. As stipulated by the category name, participants classified as *Completed one or more modules but not all course content* means the participant may have skipped one or multiple course activities, discussions, or assessments. Additionally, it should be noted that, because the course runs on an asynchronous and continuous schedule, this category does contain participants who are still actively completing the course.

Diversity of Students Reached by Geographic Location and Education Level

Choice-based response data from the course Welcome Survey was used to determine the geographical and educational diversity of participants who enrolled in the course. Responding to the course Welcome Survey was optional; the visualizations produced on geographic and educational diversity only used active response data. Geographic diversity was assessed with the question "Where do you live?" and participants were given the choice of six geographical regions—North America, Asia/Pacific, Europe, Sub-Saharan Africa, the Middle East/North Africa, Latin America—as response options. The educational background of the participants was determined by asking, "What is your highest level of education?"; seven choices—High School or College Preparatory School, Some College but Have Not Finished a Degree, Completed 2-year College Degree, Completed 4-year College Degree, Some Graduate School, Master's Degree (or equivalent), PhD/JD/MD (or equivalent)—were provided.

Knowledge Achievement

Participant knowledge achievement was assessed at a macro level using course assessment data that was analyzed for each of the nine modules and the final course survey. Module assessment data was used to produce score distributions for the practice quiz and the concept quiz, both attempt one and attempt two. Additionally, visualizations were created to capture the overall question success, the percentage a question was answered correctly, for the 10 quiz questions of each module (attempt one and attempt two, independently), and for the final course assessment (attempt one and attempt two, combined). Concept quiz attempts were treated as independent sets for question success, as participants were given all 10 questions in each attempt. Question success data were combined for the final course assessment attempts as participants only completed a random selection of questions from each module in the final assessment. To provide a more robust picture of the participants' mastery of the content, final assessment attempts were combined. Final course assessment data was used to create score distributions for both attempt one and attempt two. Together, the score distribution and question success provide a picture of whether the course content supports participants' gaining knowledge of best practices for data management.

Micro-Level Analytics

Motivations for Enrollment

Data on participants' motivations for enrollment was derived from course Welcome Surveys. Both multiple-choice and open survey questions were used as using data from multiple-choice questions, and open response data together can provide a fuller view of participants' motivations for enrolling in the course. Participant motivation for enrollment was assessed using a choice-based Welcome Survey question: "Question ID 141829: What is your primary reason

for taking an open online course?" Participants were provided with 10 response options: 1) I enjoy learning about topics that interest me; 2) I hope to gain skills for a new career; 3) I like the format (online); 4) I hope to gain skills for a promotion at work; 5) I enjoy being part of a community of learners; 6) I want to try Canvas Network; 7) I am curious about MOOCs; 8) I am preparing to go back to school; 9) No answer provided; 10) I am preparing for college for the first time.

Participants' specific goals for enrolling in the course were assessed with an open response question: "ID 141832: How will this course help you meet your personal or professional goals?" Response data were evaluated and organized into 12 categories. A table of the 12 categories and a brief explanation of the parameters of each are provided in appendix B.

The combined goal responses for *General Knowledge* and *Skill Development* were then classified using a separate "Application" category to capture the setting in which the respondent would use the knowledge or skill gained from the course. Four settings were identified after assessing responses: 1) Educational Setting, 2) Professional Setting, 3) Personal growth—response specifically mentioned personal growth, and 4) Unspecified—the response did not include a setting of where the skills or knowledge gained from the course would be applied. For responses categorized as *Skill Development*, the primary skills described were documented as stated for each response. The described skills were then standardized into 17 categories, listed in the table in appendix C.

Course Efficacy at Meeting Participants' Data Management Goals

Data on the course's efficacy at meeting participants' data management goals was assessed at the end of the course User Experience Survey using an open response question: "Question ID 141845: In what ways has this course helped you meet your personal or professional goals?" Responses were grouped using the same method described in the Motivation for Enrollment section. Categorized data was then linked to individual participant responses from the course Welcome Survey for all participants who completed both surveys using the participants' unique ID to examine if participants successfully achieved the goals they identified at the beginning of the course.

Results

Macro-Level Analytics

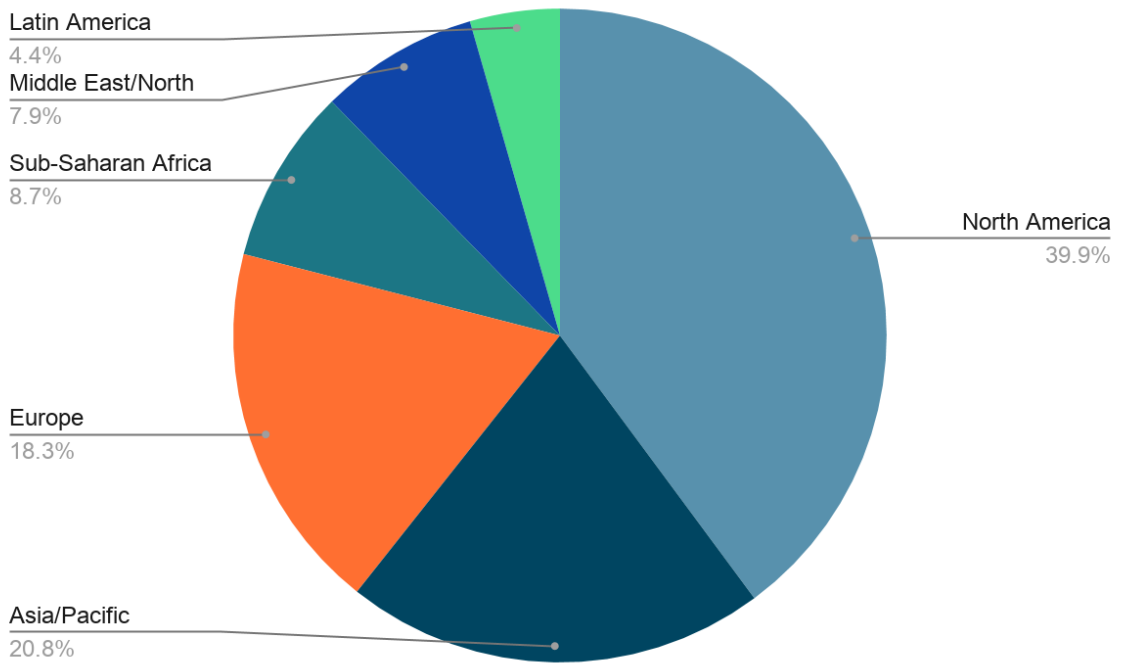
Total Enrollment and Active Participation Percentage of Total Enrollment

From January 8, 2018, to July 10, 2019, 1,308 participants enrolled in the course. No course content was completed by 33.87 percent (443 participants) of the total enrolled participants. At least one module was completed by 61.31 percent (802 participants). All course content was completed by 4.82 percent (63 participants) of the 1,308 participants enrolled. The greatest proportion of course participants are from North America (see figure 1), and the majority of course participants hold an advanced degree, with a master's degree being the most common (see figure 2).

Knowledge Achievement

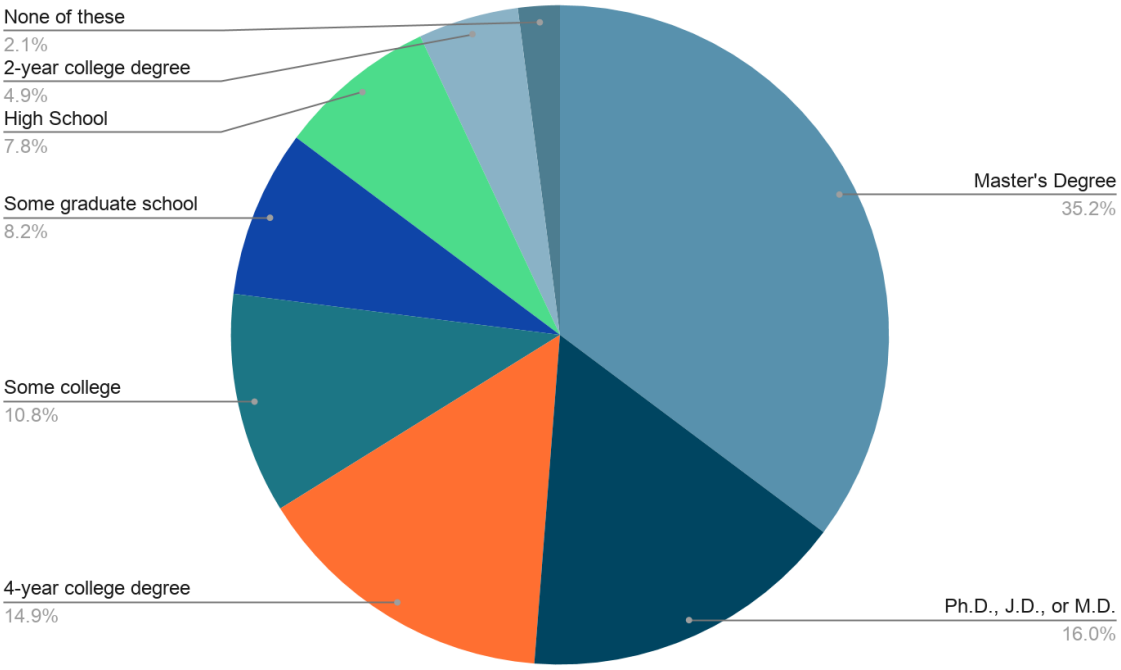
This was the original research question for module data: *"Does the course address the participants' data management needs?"* This question cannot be answered fully from the dataset alone. Individual participants' specific data management needs are likely too multifaceted to an-

FIGURE 1
Geographic Diversity of Students Reached by Country Who Provided Biographical Data in the Course Welcome Survey*



*Six geographic locations were provided, and respondents self-reported their location. Responses were received for 728 students.

FIGURE 2
The Highest Level of Education of Course Participants*



*Seven education levels were provided, and respondents self-reported their credentials. Responses were received for 730 students.

swer with any granularity without in-depth interviews of each participant. That having been said, the research question intended to examine whether the course content was effective in helping participants develop competency in the best practices for biomedical research data management. Table 4 depicts module summary data for both assessment attempts 1 and 2 for all nine modules, including any modules completed by participants. The module assessment data support the assertion that the course content is effective in helping participants master the course learning objectives. The median scores increase for all modules from attempt 1 to attempt 2. Across modules, attempt 1 median scores have a flat trend, with a range of 40 to 61 percent and an average of ~53 percent. However, attempt 2 median scores have an upward trend with a range of 64.2 to 87.9 percent and an average of ~79 percent. The growth seen across the modules in attempt 2 scores over attempt 1 scores indicates that participants did improve their understanding of the topics presented in the modules. Additionally, the theory of improved understanding building throughout the course is also supported by the final course assessment scores. Both attempts of the final course assessment have a median of ~65 percent, only slightly lower than the 70 percent required for a passing score, with 25 percent of students in both attempts scoring above 80 percent.

TABLE 2
Data depicted in the table includes the median assessment score and interquartile range (IQR) of the scores for both attempts 1 and 2 of the nine modules of the course

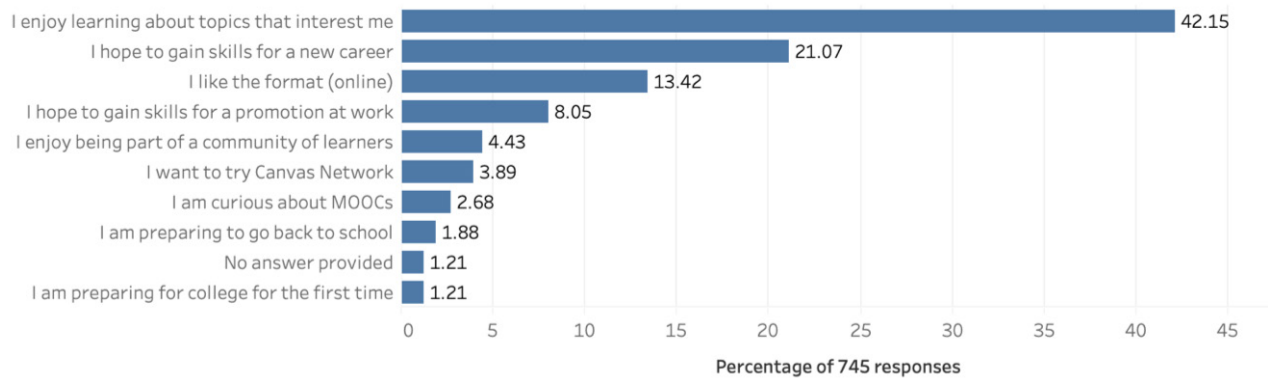
Module	Attempt 1			Attempt 2		
	Total Participants	Median Score	IQR	Total Participants	Median Score	IQR
Module 1: Introduction and Overview	233	51.7	39.1	161	64.2	50
Module 2: Research Lifecycle	164	56	41.3	114	77.5	39
Module 3: Contextual Details	139	61.1	43.7	87	86	23.3
Module 4: Data Storage and Security	130	54.8	33.4	92	83.1	21.7
Module 5: Data Management Policy	126	40.5	44.8	83	80.9	18.5
Module 6: Biomedical Ethics	76	59.6	38.7	47	87.9	20
Module 7: Data Sharing and Reuse	116	41.5	39.4	78	76.8	31.9
Module 8: Curation and Preservation for Data	112	54.4	38	75	75.5	33
Module 9: Scientific Research Team	111	60	43.3	69	82.4	29.6
Final Course Assessment	105	66.7	44.5	38	65.3	32.6

Micro-Level Analytics

Motivations for Enrollment

The course Welcome Survey question "141829: What is your primary reason for taking an open online course?" assessed the students' motivation for enrolling in the course via a multiple-choice question. The three most common participant motivations for enrolling in the course comprise ~76 percent of the total response pool (see figure 3). *The enjoyment for learning about topics that interest the participants* was the most common response. *The hope for gaining skills for a new career* and *a preference for an online instruction format* were the second and third most frequent responses, respectively.

FIGURE 3
Participant Enrollment Motivation Derived from an Open-Response Question in the Course Welcome Survey*



*Reported as a percentage of 745 total responses

Participant Goals

Participant motivation for enrollment is mirrored in the three most prevalent goals participants believed would be supported by the course. Course goals were assessed via an open response question—"141832: How will this course help you meet your personal or professional goals?"—in the course Welcome Survey. *General knowledge*, *Skill development*, and *Career growth* comprised the top three specific participant goals and account for ~62 percent of responses. The qualifier "specific goals" is used because the second most common response was "no answer." Additionally, it is important to note that this was an open-response question and not a standard-choice question; therefore, some respondents may have been deterred from answering. The goal of *General knowledge* is in alignment with the most common participant motivation from the previous section, an enjoyment for learning. Similarly, *Skill development* and *Career growth* are closely associated with the second most common motivation, *Hoping to gain skills for a new career*.

Setting in Which Course Goals of General Knowledge or Skills Would Be Applied

To determine the types of professionals and nonprofessionals enrolled in the course, goal responses for general knowledge and skill development were analyzed to determine the setting in which participants would apply the knowledge or skills gained from the course. It is important to note that participants were not specifically asked about the setting for applying their achieved goals. However, after reviewing the responses, many respondents did include a setting. Thus, the decision was made to pull settings out from the responses when possible, to provide additional depth to the data. Settings identified included *Professional setting* (relating to a work environment), *Educational setting* (related to school at any level of education), and *Personal life* (only used when participants directly specified "personal or private life").

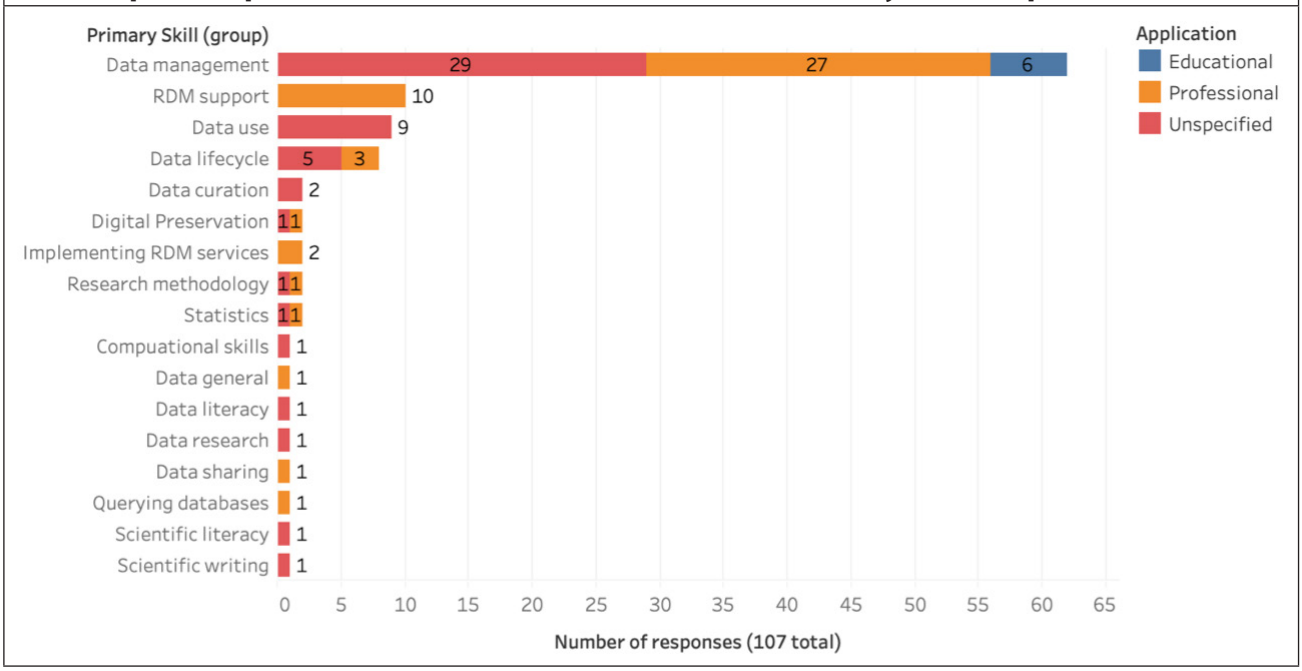
General Knowledge Application Setting

The majority (~52%) of goal responses did not identify a specific setting in which they would apply the *General knowledge* gained from the course. However, of those who did provide a setting, a *Professional setting* (31.78%) was the most common by nearly a factor of 3 from the second most common response of an *Educational setting* (10.85%), followed by *Personal life* (4.65%).

Skill Application Setting

Figure 4 depicts the skills participants hoped to gain by completing the course and the setting in which they would apply the skill. Since setting was not directly asked for in the Welcome Survey question, we derived this from responses that explicitly stated a place they would use the skill. Similar to the general knowledge goal data, many of the skill-oriented responses did not identify a setting (49.53%) for applying the specific skills gained from the course. Likewise, the respondents who did include a setting also identified a *Professional setting* (44.86%) as the most common response by a factor of nearly 8 to that of an *Educational setting* (5.61%).

FIGURE 4
Skills Identified and Setting in Which Skill Would be Applied as Described by Participants in an Open-Response Question in the Course Welcome Survey (107 Responses Received)



Skills Identified by Participants

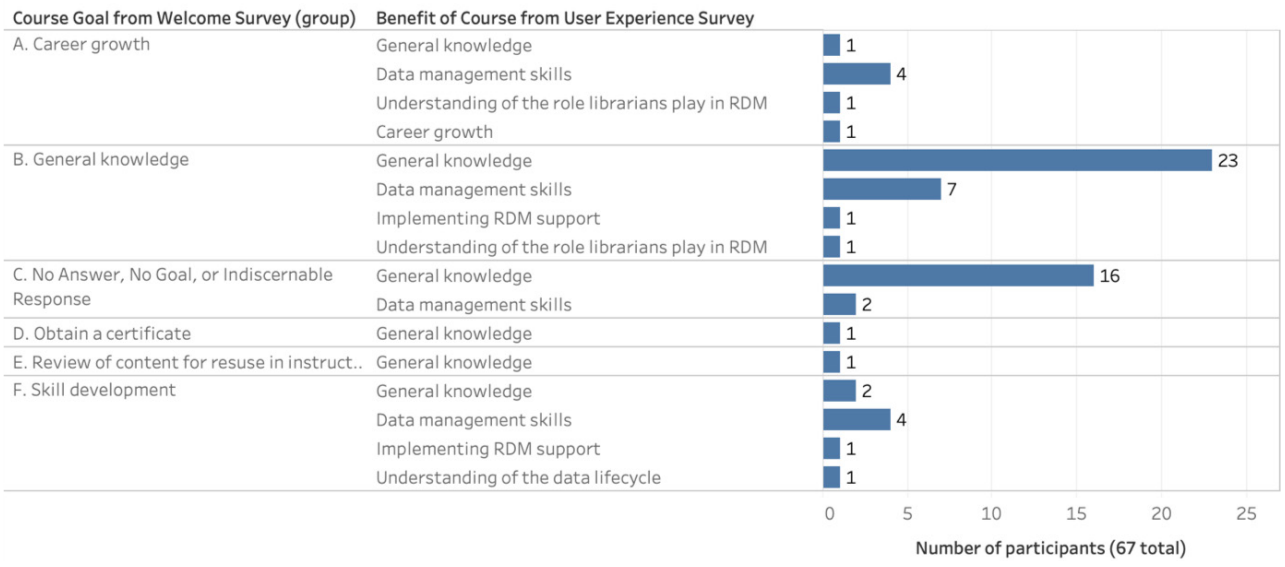
Specific skills were also identified and grouped for respondents specifying skill development as a course goal to determine the types of skills participants hoped to gain from the course. Additionally, the identified skills were then linked to the setting in which the skill would be used as described by the participant. The most common skill identified in all settings (professional, educational, and unspecified) was *Data management*. All *Educational setting* responses identified *Data management*. The second most common skill for a *Professional setting* response was *Research data management (RDM) support*.

Course Efficacy at Meeting Participants' Data Management Goals

To determine whether the course content supported participants in achieving the goals they identified at the beginning of the course, goals from the Welcome Survey were linked to participant-identified benefits in the User Experience Survey. The goals that would be supported by the course included: A) *Career growth*; B) *General knowledge*; C) *No answer, no goal, or indiscernible response*; D) *Obtain a certificate*; E) *Review of content for reuse in instruction*; and F)

Skill development. Nonspecific goals of "*No answer, no goal or indiscernible response*" were kept in the analysis because the linked participants provided benefits in the User Experience Survey. In the User Experience Survey, participants identified six benefits derived from completing the course: *General knowledge*, *Data management skills*, *Understanding of the role librarians play in RDM*, *Career growth*, *Implementing RDM support*, and *Understanding the research data lifecycle*. For 67 participants who completed both surveys, combined open-answer responses from the course Welcome Survey and the User Experience Survey have been linked (see figure 5).

FIGURE 5
Participant-identified Course Goals (Letters A–F) from the Welcome Survey Were Mapped to the Course Benefit the Participant Identified in the User Experience Survey*



*Data is presented only for the 67 participants who completed both surveys. Data were grouped by initial course goal to examine the alignment between the participants' goal and realized benefit

Group A's goal is *career growth* and matches four benefits: *General knowledge*, *Data management skills*, *Understanding of the role librarians play in RDM*, and *Career growth*. The three benefits that do not specifically state career growth are still easy to associate with professional development that would support career growth.

Group B's goal is *General knowledge* and corresponds to four benefits: *General knowledge*, *Data management skills*, *Implementing RDM support*, and *Understanding of the role librarians play in RDM*. This group has the largest alignment between initial course goal and derived course benefit, with 23 participants setting and achieving a goal of general knowledge on the best practices of biomedical research data management. Data management skills had the next largest benefit response in the group. While this response is not explicitly oriented toward general knowledge, it could be argued that skills development requires general knowledge and the more advanced task of applying knowledge.

Group C included all nonspecific goals, including responses with answers (no answer), no goal specified but contained answers (no goal), and answers that could not be discerned because they were in another language or included nonstandard characters (indiscernible response). Two benefits were mapped to this initial course goal including *General knowledge*

and *Data management skills*. These responses were included in the visualization because they illustrate that, even when the participant began the course without a specific goal, they were still able to identify a benefit after the course.

Group D is made up of a single participant whose initial course goal was to *Obtain the course certificate*. The benefit identified at the end of the course was *General knowledge*; while this is not a perfect match, one could make the argument that the certificate of completion is proof that the participant has amassed a general knowledge on the best practices of biomedical research data management.

Group E, like group D, is made up of a single respondent. The participant's course goal was *a Review of content for reuse in instruction*, and the participant identified the benefit of *General knowledge* at the conclusion of the course. While there is no way to know if the participant's need for course instruction was met, having a general knowledge of the course would give the best information for making any decisions on reuse.

Group F's initial course goal was *Skill development*; participants identified four benefits after the course: *General knowledge*, *Data management skills*, *Implementing RDM support*, and *Understanding the research data lifecycle*. Similar to groups A and B, the benefit that matched the goal for the category had the largest number of participants' responses. Additionally, the benefits of *Implementing RDM support* and *Understanding the research data lifecycle* can certainly be argued to have a connection to skills development in that the benefit would either actively require the use or understanding of data management skills.

The alignment seen in the course goals and benefits across the groups makes it clear that the course is effectively supporting the participants' identified research data management needs.

Discussion

Based on the module and assessment data, it is reasonable to assume that participants were successful in internalizing and connecting course material across modules to develop an understanding of the best practices for biomedical research data management. A total of 1,308 participants enrolled in the course during that period. Active enrollment accounts for 865 participants (~66.2% of total enrollment) who completed at least one module of the course; 443 participants (~33.8% of total enrollment) enrolled but did not complete any course content. Approximately 18 months after the course was first launched, 99 participants have completed the course; 75 of those participants achieved a passing score of 70 percent or higher. The data indicates that the course curriculum was effective at supporting participants in building competency in biomedical data management practices. Furthermore, the final course pass rate among participants who completed at least one module was 17 percent, a value that is above the standard 10 percent seen in MOOCs.[34]

Analysis of the course data indicates that course participants are primarily professionals from North America, Asia, and Europe who hold at least four-year college degrees, with approximately half holding an advanced secondary degree. Primary motivators for enrolling in the course are the enjoyment of learning followed by skills for a new career and a preference for the online format. The most common course goals were centered around advancing the participants' professional lives, either by gaining general knowledge of biomedical research data management or by building data management skills.

Analysis of the course assessments, final grades, participant-identified goals, and derived course benefits indicate that the course is meeting the data management needs of participants

who complete the course. Participants' scores across modules support the assertion that participants are increasing their understanding of the topics presented in the modules. Additionally, the question success rate from the modules is sustained for the majority of questions in the final course assessment, indicating that participants retained the knowledge gained in the modules. Of the participants who completed the course, three quarters achieved a passing score. Mapping of initial course goals to participant-identified derived course benefits indicates that the majority of participants who provided this data gained the skills or knowledge required to support their goal. Thus, it is reasonable to surmise that the course is effective in providing participants with tools to build an understanding of the best practices for biomedical research data management.

In keeping with the recommendations from Koutropoulos and Hogue,[35] participants retain access to the course on Canvas, even after they have completed the course. This allows participants to access valuable reference materials to help them in their work or additional studies and interact with other students from the class. Additionally, a Course Wiki Guide has been created and shared with anyone interested in referencing or reusing the curriculum in the future.[36]

Limitations

As mentioned earlier, the evaluation of this individual course is an instance of convenience sampling, in that only data from students in the course were analyzed. However, since the goal of this research was to determine the educational success of a single sample group, there is no pressing concern over not being able to generalize this analysis to other MOOCs. Instead, the goal of the work presented here is to serve as an example of how MOOCs on research data management can be developed. Additionally, this paper serves as a model for evaluating the success of a MOOC through the lenses of traditional macro-level analytics such as course completion rate and micro-level analysis of whether students achieved their self-identified course goals.

Another limitation relates to the course development and curriculum focus of the course. This course was developed by librarians to transform current standalone RDM training materials into a more comprehensive online course. Repurposing the existing curriculum limited the topics covered in the course. When the course was created, there was a substantial gap in the availability of online RDM training for the biomedical sciences; designing a new curriculum would have increased development time and inadvertently contributes to the void in resources.

Follow-up Research

The substantial monetary and time investment for developing and managing a MOOC, coupled with a course's ability to extend the reach of the university's mission to a wide audience of learners, highlights the necessity of thorough evaluation. However, in the process of planning the evaluation methodology for this course, it became clear that the majority of literature on MOOCs centers largely from a research perspective where multiple MOOC courses are evaluated to explore elements related to knowledge creation and learner retention. Future research efforts will be directed at expanding the methodology used in this paper into an evaluation framework designed for use by practitioners interested in assessing the efficacy of a single MOOC. The need for this type of evaluation framework stems from three

key factors: 1) MOOCs continue to grow in popularity in the modern education landscape; 2) MOOCs require extensive institutional resources for successful development and maintenance; 3) MOOCs have institutional value and impact as tools for extending the reach of their sponsoring organization's mission.

Conclusions

The content in *The Best Practices for Biomedical Research Data Management* addresses the variety of areas involved in data management. The course was successful in using feedback from previous RDM training to offer a free online course aimed at building the data skills of the research community. In 18 months, the course successfully reached more than 1,000 people around the world, increased their understanding of data management topics, and successfully supported participants' learning goals. The success of this course shows how free online content can have an impact on data services knowledge.

Since the release of this course in 2018, additional reports have been published on the skills that librarians should develop to provide data services. While technical skills are important for offering targeted and in-depth services, soft and traditional library skills allow for high-quality and successful implementation of data services.[37] This landscape is still evolving. As the library's role related to data services evolves, it is more important than ever to find ways to develop effective free, online, interactive professional development opportunities and to evaluate the success of those courses in helping participants achieve their goals.

Declarations

Data Availability: The datasets generated and/or analyzed during the current study are available in Open Science Framework at https://osf.io/vncxq.38

Disclosure: The authors report no competing interests.

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APPENDIX A

Welcome Survey (Required by Canvas Network)

141829: What is your primary reason for taking an open online course?

- □ I like the format (online)
- □ I enjoy learning about topics that interest me
- □ I enjoy being part of a community of learners
- □ I hope to gain skills for a new career
- □ I hope to gain skills for a promotion at work
- □ I am preparing to go back to school
- □ I am preparing for college for the first time
- □ I am curious about MOOCs
- □ I want to try Canvas Network

141830: Not everyone has the same participation and learning goals. We welcome the diversity. Which type of online learner best describes you?

- □ An observer. I just want to check the course out. Count on me to "surf" the content, discussions, and videos but don't count on me to take any form of assessment.
- □ A drop-in. I am looking to learn more about a specific topic within the course. Once I find it and learn it, I will consider myself done with the course.
- □ A passive participant. I plan on completing the course but on my own schedule and without having to engage with other students or assignments.
- □ An active participant. Bring it on. If it's in the course, I plan on doing it.

141831: How many hours a week are you planning to spend on this course?

- □ Less than 1 hour
- □ Between 1 and 2 hours
- □ Between 2 and 4 hours
- □ Between 4 and 6 hours
- □ Between 6 and 8 hours
- □ More than 8 hours per week

141832: How will this course help you meet your personal or professional goals? [open ended]

141833: What is your highest level of education?

- □ High School or College Preparatory School
- □ Some college, but have not finished a degree
- □ Completed 2-year college degree
- □ Completed 4-year college degree
- □ Some graduate school
- □ Master's Degree (or equivalent)
- □ PhD, JD, or MD (or equivalent)
- □ None of these

141834: Is English your primary spoken language?

- □ Yes
- □ No

141835: Where do you live?
- □ North America
- □ Latin America
- □ Europe
- □ Middle East/North Africa
- □ Sub-Saharan Africa
- □ Asia/Pacific

141836: What is your gender?
- □ Male
- □ Female
- □ Other

141837: How old are you?
- □ 13–18
- □ 19–24
- □ 25–34
- □ 35–44
- □ 45–54
- □ 55–64
- □ 65 or older

141838: How did you hear about this Canvas Network Course? (select all that apply)
- □ Through a social media site (like Facebook or Twitter)
- □ From a news story (print, online, radio, or TV) that mentioned the course and/or Canvas Network
- □ From a friend or colleague
- □ I clicked on an ad
- □ From a web search
- □ From the instructor
- □ From a Canvas or Canvas Network communication
- □ From the sponsoring institution (newsletter, institution's website/blog, or flyer)

141839: Where have you taken an online course before? (Select all that may apply)
- □ Never taken an online course
- □ At school
- □ Canvas Network
- □ Coursera
- □ EdX
- □ Udacity
- □ FutureLearn
- □ Other

141840: If you have any general feedback you'd like to provide, please do so here: [open ended]

APPENDIX B

Categorization of Participant Open Response Answers to question 141832: How will this course help you meet your personal or professional goals?

#	Category	Parameters
1	Career growth	The response specifically mentions taking the course to advance the respondent's current or future career goals.
2	Gain experience with Canvas Network	The response explicitly states Canvas as being the motivation for taking the course rather than the course content.
3	General knowledge	The response includes themes of learning and/or mastering content without focusing on a specific skill.
4	Indiscernible answer	The response was either already categorized as indiscernible from the validation stage or was found to be irrelevant to the question being asked.
5	No answer	The response was left blank.
6	No goal specified	The response did not specify a goal or fit within the parameters of the other categories.
7	Not in English	The response was in a language other than English.
8	Obtain a certificate	The response states the end of course certificate of completion as their primary goal.
9	Required to take course	The response stated that taking the course was a required activity for another course or work.
10	Review of content for reuse in instruction	The response stated that the goal of taking the course was to assess it for inclusion in another course or training.
11	Reviewing course design	The response stated that their primary goal was to learn and/or assess the course design.
12	Skill development	The response identified developing a specific skill as being their primary goal.

APPENDIX C
Skill Categories Identified from Open Participant Responses

#	Skill	#	Skill
1	Computational skills	10	Digital preservation
2	Data curation	11	Implementing RDM services
3	Data general	12	Querying databases
4	Data lifecycle	13	RDM support
5	Data literacy	14	Research methodology
6	Data management	15	Scientific literacy
7	Data research	16	Scientific writing
8	Data sharing	17	Statistics
9	Data use		

APPENDIX D

User Experience Survey (Required by Canvas Network)

141842: How strongly do you agree or disagree with the following statement: The course materials (lectures, videos, documents) have a positive impact on my learning experience.

- □ Strongly Disagree
- □ Disagree
- □ Neither Agree nor Disagree
- □ Agree
- □ Strongly Agree

141843: How strongly do you agree or disagree with the following statement: The course activities (discussions, assignments, projects, quizzes) have a positive impact on my learning experience.

- □ Strongly Disagree
- □ Disagree
- □ Neither Agree nor Disagree
- □ Agree
- □ Strongly Agree

141844: How many hours a week are you spending on this course?

- □ Less than 1 hour
- □ Between 1 and 2 hours
- □ Between 2 and 4 hours
- □ Between 4 and 6 hours
- □ Between 6 and 8 hours
- □ More than 8 hours per week

141845: In what ways has this course helped you meet your personal or professional goals? [open ended]

141846: How likely are you to recommend a course on Canvas Network to a friend?

- □ 0 – Not Likely
- □ 1
- □ 2
- □ 3
- □ 4
- □ 5 – Neutral
- □ 6
- □ 7
- □ 8
- □ 9
- □ 10 – Extremely Likely

141847: Please give this course an overall rating on a scale of 1 to 5 with 1 being the lowest and 5 being the highest rating.

- □ 1 star
- □ 2 stars
- □ 3 stars
- □ 4 stars
- □ 5 stars

141848: How much instructor involvement do you like to have in your online learning experiences?

- □ I like to learn on my own
- □ I prefer peer-to-peer interactions with my classmates (social learning)
- □ I prefer to communicate only with the instructor
- □ I like variety
- □ I do not interact with my instructor

141849: Ideally, how long should Canvas Network Course last?

- □ 0–2 weeks
- □ 2–4 weeks
- □ 4–6 weeks
- □ 6–8 weeks
- □ 8 weeks or more

141850: How strongly do you agree or disagree with the following statement? I have a positive user experience when I access my course on my smartphone (e.g., iPhone, Android phone).

- □ I do not use a smartphone to access my course
- □ Strongly Disagree
- □ Disagree
- □ Neither Agree nor Disagree
- □ Agree
- □ Strongly Agree

141851: How strongly do you agree or disagree with the following statement? I have a positive user experience when I access my course on my tablet device (e.g., iPad, Nexus).

- □ I do not use a tablet device to access my course
- □ Strongly Disagree
- □ Disagree
- □ Neither Agree nor Disagree
- □ Agree
- □ Strongly Agree

141852: If you'd like to provide any general feedback on the course, please do so here: [open ended]

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Book Reviews

Abram Foley. *The Editor Function: Literary Publishing in Postwar America.* Minneapolis, MN: University of Minnesota Press, 2021. 224p. Paper, $25.00 (ISBN: 978-1517911676).

In *The Editor Function: Literary Publishing in Postwar America*, Abram Foley, a lecturer in English with a background in editing, embarks on the immense and complicated task of documenting the practice of postwar publishing and its theoretical underpinnings. Writing in response to academic criticism's focus on the corporatization of US postwar publishing and omission of print culture in histories of postwar US literature, Foley centers the specific circumstances of individual editors, particularly those involved with smaller-scale, independent publications. Foley's main thesis is that "editing…advances its own legible theories of textuality and meaning-making" (5). This editorial practice is historically situated and diverse in form, as Foley shows in his analysis of five case studies in the subsequent chapters. Each chapter combines close readings of texts written and published by the central editors with texts that inform these works. Foley illustrates how these "textual theories" inform and stem from "the workaday tasks of editing" (19).

Chapter 1, "Editing and the Open Field: Charles Olson's Letters to Editors," documents the correspondence between Olson and Cid Corman, a poet and editor of the literary journal *Origin*. Foley focuses on a 1951 letter written by Olson in response to the publication of the first issue of *Origin*, where Olson displays a growing interest in editing and collaboration between editors and authors, expanding on his investments displayed in several poetic letters responding to an issue of the literary journal *4 Winds*. Foley effectively explains how Olson's consideration of editing affects his theorization of poetics through a close reading of Olson's poetry and the bibliography to his book *Mayan Letters*.

The second chapter details the formation of the Dalkey Archive Press and *Review of Contemporary Fiction*. John O'Brien designed both to combat other presses letting the works of lesser-known authors go out of print, resulting in a lack of academic writing or teaching about these authors and their works. Foley describes the relationship between O'Brien and author and editor Gilbert Sorrentino, who inspired O'Brien to create the press to "counter then-current academic versions of what contemporary literature was in terms of style, voice, and genre" (69). Sorrentino and O'Brien also exchanged correspondence about book recommendations, especially Irish literature. Foley deftly considers several of these books' content and publishing circumstances to parse out how authors were dealing with pressures from the publishing industry and how Dalkey Archive Press was (re)constructing literary history outside the institution.

Linking the origins of the song and musical practice "Hambone" to Nathaniel Mackey's *Hambone* journal in the third chapter, Foley writes, "Whereas hambone adapted as a creative and oppositional response to forcibly closed orders of signification in colonial and antebellum America, *Hambone* asks how the repercussions of such creative protest reverberate in the world of contemporary letters" (103). A look at *Hambone*'s origins and a close reading of some contri-

butions reveals that *Hambone*'s cross-cultural emphasis enabled its "discrepant engagement," which in turn "recuperates a history of creative labor that maintains its disruptive potential in its capacity to lead us elsewhere" (125). Using close reading passages from Mackey's works and correspondence with Mackey about *Hambone*, Foley connects Mackey's fictional and critical investments in musical dispossessions, hospitality, unruliness, and journeys to his editorial practices. In these practices, he rejects Western modernity in favor of embracing collective ways of knowing that are diverse in nature, resist institutional identifiers, and embrace the unknown.

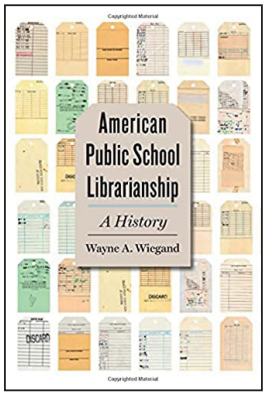
Chris Kraus's editorial work with the journal and publishing house Semiotext(e) and her book *I Love Dick* are the main subjects of the following chapter. Foley begins by tracing a redistribution of desire from the foundation of Semiotext(e), which "set out to subvert academic desire and helped to usher in poststructuralist theory into the position that semiotics once held" (128), to Kraus's novel, where the main character's love for an author becomes transplanted by her love for life. In a study of the connections between Kraus's novel, editorial work with the Native Agents series, and correspondence, Foley argues that Kraus develops a "public I" that is guided by relationships and intimacies.

The book concludes with a coda about Janice Lee and the online magazine *Entropy*. Foley considers *Entropy* as an example of editorial labor today, which is often uncompensated, institutionally unacknowledged, and configured by the sometimes at odds practices of openness of intimacy.

One of the greatest strengths of *The Editor Function* is the continued acknowledgment of those who were (and are) left out of the publishing and writing circles that comprise the bulk of Foley's text. In the first chapter, Foley notes that Olson's network was composed primarily of like-minded white men who helped advance his position and poetics. Kraus's Native Agents series that comprised women and nonbinary authors was created in response to the male-heavy and internationally oriented list of authors from Semiotext(e). In chapter 2, Foley highlights the omission of women in O'Brien's original prospectus for the *Review of Contemporary Fiction*, and he details his own efforts to continue O'Brien's abandoned work in *Interviews with Black Writers,* written early in O'Brien's career to counter the absence of both Black authors in literary history and criticism and discussions of power and visibility in literary studies. Working as an apprentice at Dalkey Archive Press, Foley sought to publish the works of Black authors included in O'Brien's book to middling success. He argues that scholars and practitioners must think critically about how editorial practices and publishing houses engage with constructions of race, acknowledging that the publishing industry is subject to and perpetuates structural biases.

The Editor Function: Literary Publishing in Postwar America covers a lot of ground in relatively few pages. Foley excels in weaving a complicated web of editors, authors, and publishing houses, each with their own agenda in creating postwar American literary culture. Libraries predominantly deal with the final product of these negotiations, but *The Editor Function* proves that the completed text is only part of the story. In doing so, Foley's text fills an obvious gap in literature about literary publishing following World War II into the present. While scholarship like the edited book *Literary Publishing in the Twenty-First Century* offers an overview of current trends in publishing, Charlotte Roh's work examines the prevailing whiteness of editorial boards. While many authors have considered the role of editors in preceding centuries, Foley provides necessary context for academic librarians regarding the specifics of the labor, challenges, and motivations related to postwar literary editing.—*Emma Hetrick, University of Texas*

Wayne A. Wiegand. *American Public School Librarianship: A History*. Baltimore, MD: Johns Hopkins University Press, 2021. 360p. Hardcover, $49.95 (ISBN: 978-1-4214-4150-1).



As I write this, New England and the Mid-Atlantic are digging out from a Nor'easter that dumped 20 to 30 inches of snow on coastal towns. Thinking about Wayne Wiegand's stature in the library history discipline as I experience these wintry conditions, the metaphor that comes to mind is of a rugged pathbreaker who is the first to trudge across a cold, unwelcoming field, making a way for followers who will gratefully fit their feet into his steps. Wiegand's *The Politics of an Emerging Profession* (Greenwood, 1986) and *Irrepressible Reformer* (1996) remain valuable starting points for researching the early history of the American Library Association and for understanding Melvil Dewey, one of the profession's controversial but foundational individuals. More recently, Wiegand's *Part of Our Lives* (Oxford, 2015) has called into question how libraries understand themselves, valuing their role in information-seeking/vetting at the expense of recreational reading materials, community social spaces, and other offerings that library users cherish. His insights on those fronts have influenced my own work and will likely shape a generation or more of scholars.

In *American Public School Librarianship*, Wiegand similarly provides a volume that will be a point of departure for the present and next generation. Here, he asks, "why did school librarianship turn out the way it did, and what can its history tell us about its limitations and opportunities in the twenty-first century's coming decades?" (2). As Wiegand argues in his Introduction, the constraints of educational and library structures that already existed when the public school library profession came into being are central to the answer. For example, school librarians faced adverse power dynamics due to the fiscal control that administrators have wielded and due to the roles textbook publishers and state standards have played in shaping educational environments. From both the education and public library worlds, school libraries also inherited a focus on "useful knowledge," narrowing their focus to serving curricular needs and teaching information literacy. For these reasons, Wiegand contends, school libraries did not encourage reading for pleasure, or school libraries as social spaces, as much as they might have done. Also, they did not respond as progressively as they could have to calls for racial desegregation and other issues.

In this book, we benefit from a treasure-trove of material about school libraries that Wiegand has accumulated through five decades of research on other topics. One strength is his documentation of the early influence of municipal libraries on school libraries, establishing branches within schools or providing children's materials to classrooms. Because of this genealogy, many school libraries ended up employing the Dewey Decimal Classification, using the *ALA Catalog* and Wilson bibliographies as selection tools, and adopting the public library profession's service ethic. In large part, school librarians also heeded the advice of a children's literature "clerisy," which promoted certain types of books for juvenile readers. This part of Wiegand's work is based upon public library annual reports that shed light on the collaborative efforts those institutions attempted with nearby school districts.

American Public School Librarianship is also valuable for uncovering fascinating stories and people that may not be widely known. Personally, I was interested in the "libraries" (book collections for schools) developed by nineteenth-century publishers, and I would like to track down more analyses of the titles, authors, and social values they contained. Wiegand also pro-

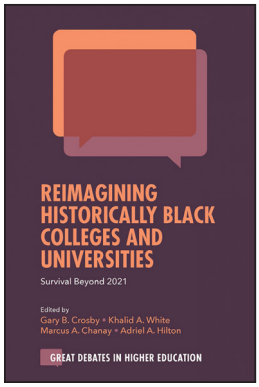
vides a view of the embattled founding of the American Association of School Librarians and ongoing turf wars among children's, school, and audiovisual media professionals. For those who are interested in the influence of federal policy on libraries, a section on the Elementary and Secondary Education Act demonstrates how increased funding led to a "golden age" in school library development followed by declines because of Nixon-era budget cuts and a shift toward "teaching to the test." Many names, including C.C. Certain, Lucille Fargo, Laura K. Martin, Mary Peacock Douglas, Margaret Walraven, and Lillian Gerhardt, surface here and may deserve articles or even book-length treatments of their own.

Wiegand includes a bibliography of primary sources that demonstrates his use of *America's Historical Newspapers*, *Readers Guide Retrospective*, *JSTOR*, and other databases commonly used by historians. However, it must be said that his research from the Education perspective doesn't seem as deep. Much of the Education side of the story appears to come from published books, articles, and dissertations. While Wiegand used *ERIC*, *ProQuest Education Database*, the AASL Archives, and the NEA Archives, it is not clear that he consulted *Education Abstracts* (print), which lists earlier professional literature, or *State Education Journal Index,* which uncovers periodicals that are not included in the largest indexes. It seems that few if any archival collections of state-level education associations, state-level departments of education, or public schools were used. Herein lie significant limitations, because, as Wiegand points out, school librarians tend to affiliate more closely with the Education profession and only a small fraction of them have ever been members of AASL. Also, states and/or localities have significant influence over school librarian training and certification, curriculum content, and other aspects of schools that directly affect their libraries. It is hoped that future studies will provide a better sense of how national standards, ideals, and trends were perceived and implemented—and whether there were important differences—at the regional and local level.

Overall, Wiegand's effort affords us an admirable bird's-eye view of the existing scholarship on school libraries and helps us understand their history through the lens of the library profession more broadly. This approach isn't quite the same as researching the history of school libraries on their own terms or understanding them within the contexts of all the institutions, especially the educational ones, of which they are a part. However, it is a crucial beginning.—*Bernadette A. Lear, Penn State University*

Reimagining Historically Black Colleges and Universities: Survival Beyond 2021. Gary Crosby, Khalid A. White, Marcus A. Chanay, and Adriel Hilton, eds. Bingley, UK: Emerald Publishing, 2021. 217p. Hardcover, $95.00 (ISBN: 978-1800436657).

I have a sentimental connection to historically Black colleges and universities (HBCUs) and remain deeply invested in their survival. I attended Winston-Salem State University and have chosen to work at HBCUs professionally because of their storied history and commitment to Black excellence. While the first HBCU was founded in Pennsylvania in 1837, most Black colleges were founded after the Civil War in the South to educate the formerly enslaved and their descendants. Today, two-year and four-year colleges, public and private institutions, medical and law schools make up more than 100 HBCUs—102 to be exact. *Reimagining Historically Black Colleges and Universities: Survival Beyond 2021* offers a kaleidoscopic view of these diverse institutions, combining historical analysis, theoretical interventions, and



case studies with an eye toward the future. Across the text's 16 chapters, leadership, innovation, transformative justice, sustainability, student success, and inclusion are some themes that emerge.

In his foreword, John T. Wolfe, Jr., a former HBCU administrator, issues "The Call." Wolf situates HBCUs in the current moment, marked by a novel coronavirus, anti-Black violence, and protest. Echoing the question raised by Martin Luther King, Jr. in his 1967 book, Wolfe asks, where do we go from here? The chapters that follow provide "The Response," offering "pivotal revelations on how HBCUs and their leadership can sustain, maintain, and advance from barely surviving to thriving in the new decade and beyond" (3).

HBCUs have always been sites of curricular and pedagogical innovation. The future of these institutions hinges on their ability to continue to innovate. The first chapter, "An Anchored Look Forward" by Gary B. Crosby, an editor and contributor, examines the current work of HBCUs as "anchor institutions" in Black communities, "aligning efforts with elected officials to strengthen, or in some cases implement, sustainable infrastructure and economic development projects" (1). Crosby contends that HBCU leadership must continue to look ahead and find new ways to innovate. Evan Wade picks up this thread in chapter 2, drawing on the long history of curriculum innovation and student activism at HBCUs to urge administrators to listen to students and include their perspectives in the institutional planning process. In the third chapter, "Don't Believe the Hype: HBCUs and MSIs Are Still Necessary to Black Political and Socioeconomic Development and Advancement," Lessie Branch confronts several myths about HBCUs. One is that Black colleges are inferior to predominantly white institutions. For Branch, critical discourse analysis and criticism become powerful tools for challenging anti-Black narratives about HBCUs. The fourth chapter, "HBCUs in a New Decade: A Look at 2010 to 2020 and Beyond," by Ernest C. Evans, Brandon D. Brown, and Karen Bussey, assesses the last decade, especially policies and practices that shaped HBCUs to plan for the future.

Black colleges and universities have long been concerned with transformative justice, leadership development, and activism. In chapter 5, "HBCUs: The Foundation and Future of Social Justice, Leadership, and Leadership Development," the authors use the Culturally Responsive Leadership Learning Model to consider the ways that HBCUs facilitate the development of student leaders. Kendra N. Bryant delineates how the first-year composition classroom "is a space where students can practice and propel democracy" in chapter 13 (135).

HBCUs have a record of facilitating academic student success, which is key to their survival. Rihana S. Mason, Curtis D. Byrd, and Lycurgus Muldrow introduce a practical, seven-dimension framework called THRIVE to illuminate the best practices of academic pipeline programs in chapter six. The authors aim to "standardize the magic that happens between students and faculty on campus" (66). Daniel F. Upchurch stresses the importance of building solid infrastructures that support and foster the academic success of Black male students in chapter 15, "The Usage of Personal Power When Collaborating with Black Male Scholars at a Historically Black College and University."

Khalid A. White, also an editor of the volume, addresses HBCU leadership in the last chapter, "The Reason for Reimagining." White encourages HBCU leaders to learn from the book's content to position their institutions for the years to come.

The following three chapters address the historical underfunding of Black colleges and universities caused by centuries of racism and offer practical steps to improve the financial well-being of these institutions. Reshunda L. Mahone writes cogently about how HBCUs can

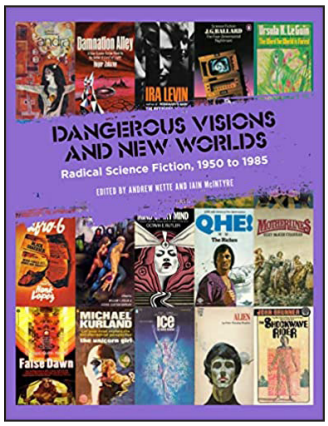
move from one-off fundraising drives to continuous philanthropy by making data-driven decisions. Yoruba T. Mutakabbir and Christopher Parker provide a historical overview of financing and budget management at HBCUs, while Tamara Zellars and Pam Parry encourage HBCU administrators to pursue private and governmental partnerships by "leveraging the contributions [HBCUs] make to community betterment, increased numbers of degreed professionals in critical fields, and even professional athletics" (95). Elgloria Harrison and Morris Thomas look to four HBCUs—Bluefield State College, Bowie State University, Hampton University, and Spelman College—to examine "enabling factors of how they adapt to the changing environment" (98).

The inclusion of all members of the Black community is critical to the future of HBCUs. In chapter 11, Megan Covington and Nadrea R. Njoku invoke the Combahee River Collective to challenge HBCUs to invest in and amplify the voices of Black women, which are often silenced. Black queer and trans students too often experience violence. Jarrel T. Johnson writes about how HBCUs can become more inclusive of Black queer and trans students in chapter 14.

P. Jesse Rine, Adriel A. Hilton, and Jeremy C. McCool discuss long-term institutional survival and success in chapter 12, "Current Trends, Future Directions: Promoting the Long-Term Survival and Success of HBCUs." HBCU advocate and scholar Marybeth Gasman closes the volume, offering an epilogue. In it, Gasman provides 10 suggestions for making sure HBCUs "thrive in the twenty-first century" (77).

Reimagining HBCUs does not address academic libraries or librarians. However, librarians and archivists at institutions charged with student success, or the first-year experience, should draw inspiration and creativity from HBCUs to imagine other possibilities. After all, librarians at Black colleges created new classification systems, extended access to literature, and constructed Black students as scholars. Nearly all of these practices were—and in many cases, continue to be—subversive, often challenging professional norms. The field has much to learn from us.—*Harvey Long, North Carolina Agricultural and Technical State University*

Dangerous Visions and New Worlds: Radical Science Fiction, 1950 to 1985. Andrew Nette and Iain McIntyre, eds. Oakland, CA: PM Press, 2021. 216p. Paper, $24.60 (ISBN: 978-1629638836).



This essay collection on mid-20th century American and British science fiction literature is next in a series of overviews of "outsider" print fiction from PM Press that includes *Girl Gangs, Biker Boys, and Real Cool Cats: Pulp Fiction and Youth Culture, 1950 to 1980* (2017) and *Sticking It to the Man: Revolution and Counterculture in Pulp and Popular Fiction, 1950 to 1980* (2019). This review of science fiction features two groundbreaking New Wave science fiction publications in the book's title: the magazine edited by Michael Moorcock, *New Worlds*, and Harlan Ellison's *Dangerous Visions* short story collections. The era covered by editors and authors Andrew Nette and Iain McIntrye primarily covers what they call the "long sixties," but also encompasses novels and writers that address "radical" themes such as sexual politics, environmentalism, and social revolution outside that time period. Nette and Mcintyre include writers considered the stars of this era—Philip K. Dick, Ursula K. Le Guin, James Tiptree, Jr., Robert A. Heinlein—but the strength of this collection is its inclusion of writers less well known to science fiction scholarship and fandoms: the Brothers Strugatksy,

Judith Merril, Louise Lawrence, Larry Townsend. Other writers included are connected to others in the networks of science fiction history. Luminaries like Octavia E. Butler had an early short story purchased by Harlan Ellison for an as-yet unpublished *Dangerous Visions* volume.

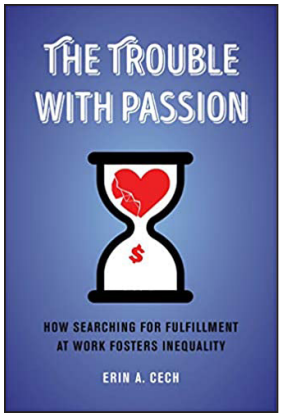
The book's chapters also offer insight into the changing publishing industry, and to economic and political systems that determined whose stories got published. The authors address how science fiction sought not only legitimization as literature but also transformed into a commercialized multimedia industry. Many of the science fiction writers included in this collection did not have the privilege to write literary fiction and wrote for publishers who wanted work that could easily sell. The growth of the paperback novel medium was central to the history of popular culture. Some of these science fiction writers wrote using pseudonyms, not necessarily to cover their gender, but also to conceal their real-life identities or workplaces that might look askance at association with science fiction and its fan cultures. However, this did not stop science fiction and pulp writers from using their work as a vehicle for other ambitions: aesthetic, experimental, and political.

The editorial approach is archival, with choices guided more by contributor interest than editorial design. This allows for some conspicuous and disappointing omissions. For example, the chapter on Samuel Delany covers *Heavenly Breakfast*, a memoir about living in a New York City commune in 1967–1968 that provides an excellent thesis about how these experiences are reflected in his science fiction. That said, there is little here that considers the breadth of Delany's work in the decades covered by this book. The omission of a fuller discussion of writers gestured to, such as Joanna Russ, or themes like Buddhism and science fiction, is disappointing. Connecting threads with more contemporary science fiction writers and with genres like cyberpunk, Afrofuturism, and queer science fiction would also make the work a stronger contribution for general collections. The reader hoped for an account of Theodore Sturgeon's groundbreaking 1953 short story about aliens and homophobia, "The World Well Lost," and Sturgeon's subsequent blacklisting by some science fiction publishers.

However, in keeping with the archival approach, the book offers encounters both unique and unexpected—material that one did not expect to find. Nearly every chapter/essay includes an array of color book covers for books whose writers are not necessarily discussed at length in the text. These images may lead researchers down new and fascinating rabbit holes. Following their earlier work, Nette and McIntyre also position the changes in science fiction content in relation to the changes in the publishing industry. The chapter on a publisher of science fiction/pornographic paperbacks, "Speculative Fuckbooks: The Brief Life of Essex House, 1968–1969," by librarian Rebecca Baumann, is a particularly valuable contribution.

Dangerous Visions and New Worlds provides far more than the introductory summaries one might find in reference sources like Wikipedia. Careful attention is paid to lesser-known writers, such as Jean Marie Stine and Alice Louise Ramirez, and its inclusion of them as science fiction pioneers is valuable, necessary work. This work is also more suited for general reading rather than scholarly research (bibliographic references or footnotes not included), although the analysis provided is certainly of that caliber.—*Ann Matsuuchi, LaGuardia Community College, CUNY*

Erin A. Cech. *The Trouble with Passion: How Searching for Fulfillment at Work Fosters Inequality*. Los Angeles, CA: University of California Press, 2021. 344p. Paper, $29.95 (ISBN: 978-0520303232).



Loving your work is a truly American idea, but is it a capitalist trap? As a librarian, passion has played heavily in my own narratives about my work. As I've grown in my career and learned more about how multifaceted librarianship is, and as I have worked in different areas of librarianship, the passion I once held for the field has been hit hard with the reality of labor.

Erin A. Cech, an Associate Sociology and Mechanical-Engineering Professor at the University of Michigan, explores questions of passion seeking in labor in *The Trouble with Passion: How Searching for Fulfillment at Work Fosters Inequality*. Cech developed a theoretical concept she calls the *passion principle*: "the belief that self-expression and fulfillment should be the central guiding principle in career decision making" (xii). Cech uses more than 170 interviews with college-educated career aspirants (students) and career counselors and four surveys of workers in the United States to demonstrate her theory. Cech also uses cultural schema, or "shared cultural frameworks for 'viewing, filtering, and evaluating what we know as reality'" (13).

In the first chapter, Cech shares her data so that the reader can see the interviews Cech collected and how the passion principle has factored into the choices career aspirants made. In chapter 2, she asks, "What is so compelling about finding passion in your labor?" There is more evidence from her data and interviews with students/career aspirants, but we also see that some people don't rely on seeking passion in their work. Cech notes that those who pushed back on the passion principle theory were rare, and her data shows that class/socioeconomic status plays a large part in who gets to find passion in their work and who doesn't.

In chapter 3, "The Privilege of Passion," Cech has a particularly interesting section titled "Passion in Precarity.'' As a former diversity resident librarian, I reflected on my experiences with job precarity during my residency. Cech notes that "for respondents from less privileged class backgrounds, passion-seeking came with greater risk of landing on a precarious path—a path that was unstable, temporary, poorly paid, and/or lacked feasible advancement opportunities'' (147). This is exactly how some diversity residency programs work, and librarianship should continue to really critique how those programs truly work in the metaconversations about pipeline issues and retention. In chapter 4, Cech explores choicewashing: explaining away societal patterns of occupational inequality by making it about individual choices and how passion-seeking in labor can diminish structural issues of the labor market.

The last chapter questions whether passion-seeking in labor exploits workers. This is where the theoretical concept of vocational awe developed through the work of Fobazi Ettarh and her 2018 article, "Vocational Awe and Librarianship: The Lies We Tell Ourselves,"[1] can be explored by library workers who are reading Cech's book. Both Cech and Ettarh explore worker exploitation in their respective works. Cech explains, "passion promises to inspire the inclination to work hard that is expected of employees in a capitalist economy, without requiring either extensive external compulsion by employees or the moral imperative of hard work for its own sake" (192). She writes about Karl Marx and his concerns about the exploitation of workers and "surplus value" (the economic value of what workers produce and the amount they are compensated for their work, 192). Ettarh also addresses these concerns in the "Burnout" and "Undercompensation" sections of her 2018 work.

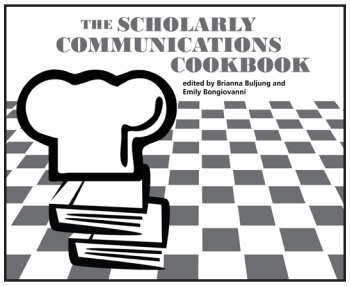
As a white-collar worker and former diversity resident trying to "prove my worth" to my institution to gain permanent employment, I worked longer hours and nights and weekends to achieve my goal of holding onto my position and ending my precarious status. Now I have more agency and freedom (privilege) in my role and can have clear and stricter boundaries between my work and other areas of my life. What resonates with me from Cech's book is the discussion about capitalism and how it ties to white-collar work.

Throughout the book, Cech notes how the demand and opportunity to have passion for our work has grown and shifted due to changes in industrial life, the expansion of white-collar labor, technology shifts, gendered-labor shifts in the workforce, and how Americans view work. This resonated with me as a librarian and historian. As I began my work in librarianship, I practiced vocational awe, and passion was a big part of the narrative I told myself about why I did this work. I spoke about it while completing my MLIS, in job interviews, when I moved from working as an archives assistant to being a children's librarian at a public library, and during the interview process to be a diversity resident. The book never really answers the question of whether passion seeking in work is bad, and I don't believe that is Cech's goal. Cech engages readers to think about passion in labor seeking in a broader context of working life in America. Cech, a trained sociologist, uses those tools and evidence-based data to support a new narrative about how current career aspirants view passion-seeking in their future careers. If you're looking for a book that can offer you new insights into career choices while making you think critically about librarianship, passion, and labor, this is a recommended read.—*Mallary Rawls, Florida State University*

Note

1. Fobazi Ettarh, "Vocational Awe and Librarianship: The Lies We Tell Ourselves," *In the Library with the Lead Pipe* (January 2018), https://www.inthelibrarywiththeleadpipe.org/2018/vocational-awe/.

The Scholarly Communications Cookbook. Brianna Buljung and Emily Bongiovanni, eds. Chicago, IL: Association of College and Research Libraries, a division of the American Library Association, 2021. 358p. Softcover, $88.00 ($79.20 ALA members) (ISBN: 978-0838938478).



The Scholarly Communications Cookbook, edited by Brianna Buljung and Emily Bongiovanni, offers a wide range of successful scholarly communications programs and projects that can serve as inspiration for librarians seeking to expand scholarly communications services at their institutions. A broad scope of scholarly communications topics is represented, including open access (OA) publishing services, open educational resources (OER) initiatives, research support tools, campus collaborations, and teaching and learning opportunities.

The metaphor in the book's title appropriately describes the book's format as well as how it is best read and used: just like an actual cookbook. Each chapter is a short, digestible "recipe" for an aspect of scholarly communications; you most likely won't read it from cover to cover. Instead, the *Cookbook* is a resource to consult when you want to know how to "cook" a certain "recipe" (implement a specific project or service), or for inspiration for how to use the "ingredients" (resources, staffing, and the like) that you already have. There is a strong focus on practicality and putting scholarly communications initiatives into action. Recipes

walk readers through the nuts-and-bolts of preparing for and implementing a number of events, workshops, programs, and services.

After a brief introduction, the book is divided into four sections. The recipes in Section I: "Taking Your Program to the Next Level" take a "big picture" (9) approach to scholarly communications programs, focusing on aspects that contribute broadly to developing or expanding programs, such as partnerships and collaboration, engaging campus stakeholders, and institutionwide events or initiatives.

Section II: "Open Educational Resources" provides a wealth of recipes for advancing the use of OER. Many of these recipes address grant programs, campus OER committees, workshops and training programs, and awareness-raising efforts, offering different perspectives on activities that are commonly seen within OER initiatives. Additional recipes address a range of program elements, including some that are not as prevalent in the broader OER literature: project management, statewide ambassadors, curation by subject librarians, an OER assignment library, and more.

Section III: "Publishing Models and Open Access" starts with recipes for campus OA policies, OA publishing funds, and infrastructure that supports OA, followed by recipes for various aspects of OA journal publishing. Several recipes in this section provide multiple approaches to facilitating campus engagement with scholarly communications and OA topics at an introductory level, such as through student workshops, events, a faculty cohort, campuswide events, and online learning objects. Workshops, events, and instructional activities geared toward specific topics are also included: predatory journals, accessibility, Creative Commons licenses, copyright and the public domain, and information privilege.

Section IV: "Tools, Trends, and Best Practices for Modern Researchers" is dedicated to how libraries leverage tools, skills, and services to support all stages of the research process. The recipes span citation management tools, research data management, data and computing skills, repository services, and scholarly identity and impact. Most recipes in this section take the form of workshops, and many deal with specific software. The recipes that are similar to lesson plans (in this section and others) could easily be used as templates and adapted for individual or institutional needs.

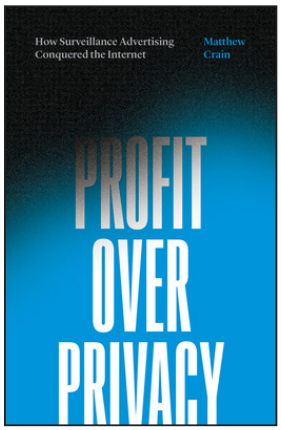
The number of recipes can appear overwhelming at first, with most sections including more than 20, but each entry is meant to be brief and easily digestible. Each recipe uses a consistent format, with headings such as Learning Outcomes, Number Served, Cooking Time, Ingredients & Equipment, Preparation, Cooking Method, Chef's Notes, and so on. This structure allows for a concise overview of the program, activity, or initiative described in each recipe, including background information, logistics, alignment with professional standards (such as the *ACRL Framework for Information Literacy for Higher Education* or the *ACRL Scholarly Communications Toolkit*), description, and considerations. Many recipes include visual aids where appropriate, such as photos, templates, rubrics, or examples. Additional resources at the end of recipes point readers to LibGuides, slides, handouts, toolkits, and other resources that expand upon the main recipe.

The recipe-like language might cause confusion for some readers and at times gets in the way of a smooth reading experience. For example, the use of food-related puns in recipe titles, along with the large number of recipes available, might make it difficult to quickly find the type of recipe you want. Similarly, the recipe headings (such as Cooking Method, Chef's Notes, and others) can inhibit the ability to skim and locate desired information due to the

use of cooking-related language that is not descriptive of the individual scholarly communications programs. These relatively minor critiques may be helpful to be aware of, but certainly shouldn't deter anyone from consulting the book. However, those seeking in-depth discussions of and reflections on the concepts underpinning these recipes should look elsewhere, as this book's strength is in breadth rather than depth.

The Scholarly Communications Cookbook is a valuable resource for finding inspiration and for guidance on how to put ideas into action. This collection will be useful for academic librarians at any career stage and at any institution type and is informative for those seeking to expand their knowledge of scholarly communications beyond a narrower area of expertise. For example, as an OER librarian, I gained a useful overview of OA initiatives. The collection of recipes represents how librarians in a variety of academic library contexts are currently engaging themselves and their campuses with scholarly communications. Each recipe is licensed with a Creative Commons license, allowing readers to use and adapt the contents according to the terms of the specific license applied.—*Ariana Santiago, University of Houston*

Matthew Crain. *Profit over Privacy: How Surveillance Advertising Conquered the Internet.* Minneapolis, MN: University of Minnesota Press, 2021. 216p. Paperback, $25.00 (ISBN: 978-1-5179-0505-7).



You exit an online store, leaving behind an item in your cart, only to receive a follow-up email encouraging you to reconsider. Later, after getting together with friends and chatting about their new wardrobe, you find your social media feed inundated with clothing ads directing you to purchase the same items that you were admiring on your friend. These are some of the visible ways that surveillance advertising plays out in our lives today. Such prevalent consumer monitoring and targeting was not always the norm, nor did the internet have to develop in this way, as Matthew Crain makes clear in this dense but readable text.

Using archival research, Crain's *Profit over Privacy* provides an in-depth analysis of the historical development of surveillance advertising, documenting how the surveillance advertising apparatus was constructed through concerted action and inaction by advertisers and marketers, tech start-ups, and government figures during the course of 25 years. In doing so, Crain provides an "origin story" (2) for the ubiquitous villain that is surveillance advertising. Crain shows how the development of targeted advertising built on incessant data collection was rooted in neoliberal free-market ideals and public-private "partnerships" that served to enshrine private industry power over public policy, normalize surveillance, and disempower the public.

The first two chapters cover Clinton's first and second terms, respectively. Crain documents the neoliberal turn within the Democratic Party through the lens of emerging internet policy, highlighting the Clinton administration's foundational role in the commercialization of the newly privatized internet. Clinton's unerring support for private sector leadership of technology policy offered tech companies immense access to shape policy in ways that would benefit those companies. This also laid the groundwork for what would become the surveillance advertising industry. Throughout the text, Crain uses the concepts of discursive capture and negative policy to highlight how policy alternatives that would have protected privacy rights were constructed by both government and industry figures as unrealistic and

anti-business. Such characterization was due to the neoliberal, pro-capitalist values espoused by those in power. Crain convincingly demonstrates how, contrary to the rhetoric that markets should be free of regulation, government intervention was critical to this period of capitalist internet development.

The third chapter focuses on the development of ad networks like DoubleClick during the early years of web advertising. The creation of the HTTP cookie and its widespread implementation signaled the end of the web as an anonymous space and the advent of surveillance advertising. The power of default settings is illustrated through a case study of an unsuccessful attempt to revise cookies' technical specifications: privacy advocates sought to change how cookies were delivered, from being turned on as the default with users allowed to opt out, to a proposed opt-in setting that would require user action to enable. (More recent changes to how users are informed about cookies are attributable not to changed technical specifications or US government action, but to the EU's General Data Protection Regulation [GDPR], which went into effect in 2018.)

Chapter 4 explores how the dot-com bubble allowed ad networks to grow quickly and massively thanks to a feedback loop between marketing and finance. Free from the "old economy" demands to be profitable, tech companies were able to rake in huge amounts of venture capital and public investment dollars, which they funneled into public relations and advertising that sought to further raise funds while building market share. In chapter 5, Crain shows how DoubleClick and other ad networks sought to achieve platform monopolies in the late dot-com period by establishing themselves as "web advertising's indispensable middleman" (97) between publishers and marketers.

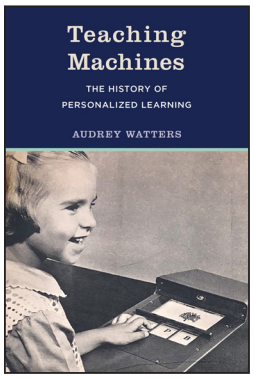
Having grown big fast thanks to the dot-com bubble, DoubleClick was well positioned to expand its surveillance capacities through a merger with off-line data broker Abacus Direct. The massive threat to privacy that this merger represented is the subject of chapter 6. Crain shows how privacy activists used the more compelling issue of *children's* privacy rights to launch national debates on internet privacy. Ultimately, however, industry's successful capture of government and a change in White House administration shunted privacy to the wayside.

In a short conclusion, Crain discusses the rise of Google as its own platform monopoly, beginning with its early "don't be evil" days when it relied on relatively surveillance-free contextual advertising and continuing through its acquisition of DoubleClick and rapid transition into surveillance advertising. Returning to the critical role of public policy in the development of surveillance advertising, Crain concludes by emphasizing the importance of strong privacy laws and pointing to the EU's GDPR as a potential model.

The story of surveillance advertising is not an uplifting one. Crain's book highlights the tremendous structural and symbolic hurdles that privacy advocates face. However, understanding how things came to be the way they are is crucial to efforts to dismantle our current system of surveillance and build a new model of the internet that centers the public good. Positioned at the intersection of public policy and technology, this book should be of interest to a wide range of users in both fields, but especially those who are seeking to make critical change concerning privacy rights. Labyrinthine privacy policies that the average user does not read or understand are, as Crain shows, an accommodation by the marketing industry to deflate activists' demands for authentic privacy protection. (Omitted from the book but included on Crain's website is a tongue-in-cheek "privacy policy" that pokes fun at such policies.) In documenting the historical development of surveillance advertising, Crain makes a

forceful argument against the capitalist status quo and in favor of strong privacy laws. The book would benefit from an expanded discussion of the discriminatory and other societal effects of surveillance advertising, but Crain does a decent job of summarizing these issues. Overall, the text is succinct and relatively jargon-free, documenting a complex technical and political history in a clearly argued, understandable way.—*Julie Setele, University of Missouri, Columbia*

Audrey Watters. *Teaching Machines: The History of Personalized Learning.* Boston, MA: MIT Press, 2021. 328p. Hardcover, $34.95 (ISBN: 978-0262045698).



Books sometimes feel like a map, a way of orienting yourself to help you understand where you are. Or, in the case of *Teaching Machines: The History of Personalized Learning* by Audrey Watters, it's like going to therapy to unpack your family of origin's dysfunction, allowing you to reframe your childhood. This is the kind of work that makes your present circumstances more intelligible. This book is like all of that, but for educational technology.

I have been researching and writing about ed tech for years. While I've become familiar with the advertising techniques used to sell what amounts to surveillance software to use on students that triggers a scramble within education to understand whether and how we should use them, the landscape of ed tech can still be difficult to understand with any critical distance. Watters provides this perspective by taking the reader through significant developments in "automated teaching" that span from the 1920s through the 1970s. The history of ed tech becomes a fantastic lens through which to view our present. While most education technologists are either unaware of their own history or proudly ignore it, Watters relentlessly demonstrates that some of the shiniest claims to ed tech magic aren't new. The marketers of educational technologies have always struggled to show evidence that these systems do what they claim.

The Silicon Valley method paints education as a fossilized copy of the Prussian factory model of classrooms right up until when Sal Khan invented the MOOC and saved education itself. The real story is more complicated and filled with unsavory actors. Watters digs into several archives to show how behaviorism, a psychological theory most famously espoused by B.F. Skinner, is embedded in how the technology sector promotes things like social engineering, nudging, and other strategies that shape how people interact with technologies. Tech companies use behavioristic tools to drive more engagement with technology that are ultimately monetized: think of the tactics social media platforms use like notifications or infinite scrolling—and Watters connects the dots for how this practice first began. As someone who already disliked B.F. Skinner, this book was delicious, offering new reasons to hate him with much more depth and nuance. His casual sexism, including taking credit for the work of his graduate student, Susan Meyer, feel prescient of ongoing sexism within tech and academia. Skinner also didn't mind causing collateral damage to Black students in impoverished schools whom he tried to enlist as trial populations for intelligence testing and programs to increase reading, regardless of the human cost. He makes a compelling villain.

The book contextualizes teaching machines alongside other educational technologies like typewriters, movies, textbooks, radios, and chalkboards. Watters' broad definition of educational technology rightly undercuts the unearned mystique of what contemporary actors trumpet as innovation.

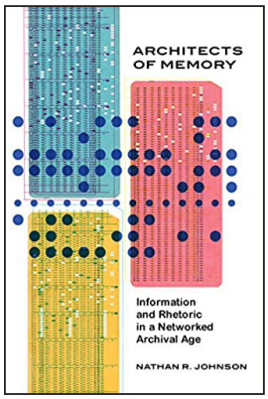
Watters describes how the movement for automated teaching grew in conjunction with standardized testing. Standardized testing created a market for standardized grading and teaching machines. Both were sold as a way to liberate teachers from grading, a common selling point for contemporary ed tech. She demonstrates how personalized learning advocates often critiqued education as being mechanized and one-size-fits-all. Missing all sense of irony, these marketers tried to put machines in front of every student as a strategy for making education *less* mechanized. To ed tech advocates, personalizing education means automating it. Over and over again, teaching machines are shown to be physical manifestations of ideas about teaching and learning. Ed tech advocates assume that education is an individual process, not a social one, that the Greek influence of a 1-1 instructor to student ratio was and remains ideal. They assume that to know a student means to test them through constant assessment. Students come to resemble the animals used in operant conditioning experiments across America during the height of behaviorism.

Watters further explores how organizations like The Freedom School attempted using teaching machines and found them to be antithetical to education as a practice of liberation. The Freedom School was a Black-led antiracist education network that focused on improving literacy rates and voting participation for Black people in Mississippi in the 1960s. Even when used toward ends such as improving the literacy rates of their students, these teachers concluded that automated teaching machines restricted agency and selfhood in their students, a fundamental value to their work. Unlike Skinner, these educators believe that teachers are meant to learn *with* students, not control them.

Watters does a masterful job of showing that ed tech, historically and today, is not just about technology; it is about people, markets, politics, culture, and power. It turns out that teaching machines have always and only ever enriched the people who made the machines, not the students they claim to have served. When faced with the decades-long pattern of for-profit tech companies overpromising educational *deus ex machinas* and the subsequent misguided adoption in classrooms, it can be tempting to conclude that mechanization is inevitable. Watters is adamant that it need not be, as long as our pedagogy is grounded in the freedom and dignity of the students trying to learn.—*Shea Swauger, University of Colorado Denver*

Nathan R. Johnson. *Architects of Memory: Information and Rhetoric in a Networked Archival Age*. Tuscaloosa: University of Alabama Press, 2020. 224p. Hardcover, $49.95 (ISBN: 978-0817320607).

As our society increasingly recognizes the importance of what information others around us interact with, Nathan R. Johnson's *Architects of Memory: Information and Rhetoric in a Networked Archival Age* arrives as an important contribution toward understanding the memory infrastructures that underlie our collective remembering. Johnson defines memory infrastructures as "backgrounded resources for practicing memory" that "explicitly obfuscate social issues related to memory because they are built to do just that." (4) They also "consist of the backgrounds that expose particular modes of memory." (6) An example of this "background exposure" is the social tendency to "recognize debt as morally sinful, for example, is to read religious texts over the top of what it means to participate in a given nation's economy." (14) A key point here is that this reading of religious texts takes place in the



background and goes unacknowledged as the shared infrastructure that makes the concept that debt is morally sinful exists at all. We can think of memory infrastructures as shared conceptual frameworks for remembering that often obscure the human labor and human biases contained within their maintenance and creation. Additionally, memory infrastructures are not fixed and are created, disseminated, grow, and finally splinter. (17) In other words, they are fundamentally human creations.

Johnson also challenges academic librarians to think critically about our information literacy (IL) work. The stakes are made clear in the introduction. He writes that "the question I suggest asking instead of 'What is the credibility of this information?' is 'What sort of public memory does this information invoke?'" (9) He returns to this same concept a few sentences later, asking, "what sorts of publics are being produced, repeated, and amplified by the sociotechnical regimes of memory? These kinds of questions have much more to do with the ethos of the infrastructures of memory, an age-old problem, rather than the invention of a new information literacy." (9) This book challenges us all to reflect on how many of our current forms of (IL) teaching and learning might more productively deal with concepts like misinformation by framing them as questions about what kinds of publics are amplified by the memory infrastructure that undergirds misinformation rather than as a right/wrong, true/false dichotomy.

First, this rhetorical history highlights the actual labor that went (and continues to go) into the creation of memory infrastructure. Throughout the book, Johnson problematizes the idea that memory infrastructures (from Simonides to the Present) are neutral by showing the very human labor that produces them and their mnemonic techné ("specific techniques that support remembering or forgetting but depend on the resources of an encompassing infrastructure" [26]). To make his argument, Johnson nominally traces the history of the creation of Library and Information Science out of the strange marriage of information science (inspired by Organization Research thinking after World War II) and traditional librarianship. The narrative of this partnership is all framed by the field of Rhetoric's founding myths of memory (namely Simonides of Ceos and Juno Moneta). Johnson effectively illustrates how mnemonic techné provide durable signs of the underlying politics of memory infrastructures. The coins of memory's realm are exposed as power signifiers rather than as neutral memory objects. The book sets out to highlight "the invisible politics that keep public memory functioning" (12). Johnson foregrounds intriguing aspects of the development of Information Science in the second half of the twentieth century. Specifically, he focuses on "movements between memory infrastructure and mnemonic techné" through the story of how information science created a particular memory infrastructure as it merged (if uneasily) with traditional librarianship in the second half of the twentieth century (27).

The book is deliberately organized in discrete sections that attend to theory, history, and thick descriptions of various concrete examples. The opening chapters lay out the theoretical and rhetorical framework of the book while posing intriguing questions like the ones I cite above. In a certain way, these chapters could be read on their own as a thought experiment about what it might mean to think through the ways that memory infrastructures are political acts that reinforce what should and should not be remembered or forgotten.

The central chapters weave a narrative of the rise of information science as it collides with, is shaped by, and in turn shapes traditional librarianship over the course of the post-World War II years. Johnson describes the ways that the war fundamentally breaks longstanding modes of

scientific information sharing. As he moves to the post-War era, Johnson illuminates the highly funded push to organize scientific information and create systems for its efficient retrieval. This new information science clashes with librarianship (for reasons that include academic institutional funding and philosophy of purpose) for an extended period from the 1950s through the 1980s. The story he tells is fairly simple: the introduction of information science creates computerlike ways of thinking and is gendered by participants as male. This sets up a clash with librarianship, gendered female and concerned with morality and ethics. In Johnson's story, the two fields develop an uneasy alliance and partnership by the end of the twentieth century. The memory infrastructure that emerges from this partnership is what this book is truly interested in. Johnson leaves space for the reader to draw connections between these intersecting histories and his central theme of the human and political labor involved in creating memory infrastructures.

The intermezzos illustrate the concrete ways that memory infrastructure creates and shapes mnemonic techné, and vice versa. For librarians, the intermezzo on Dorothy Crosland's book truck will prove informative in terms of how mnemonic techné and memory infrastructure interact and will offer a good chuckle. In fact, this intermezzo is perhaps the clearest and most succinct way into understanding the theme of human labor as embodied in mnemonic techné. In this section, Johnson most clearly articulates how memory technologies "occupy space," are inherently political, and "provide more access to some people than others." (117)

The conclusion returns to a discussion of an expanded rhetoric of memory. Johnson rewrites the founding story of Simonides to "bring often backgrounded aspects of memory work to the foreground—material, affect, and shared infrastructure" (126). What he does here is rather brilliant. He takes the myth of Simonides's memory palaces and shows how they are not some incredible invention made up on the spot to support the identification of dead party guests, but are rather materially linked to the conditions that brought Simonides to the party in the first place. The foregrounding of the labor of memory is the real genius of this book. While many will find the middle chapters of the book an intriguing story, the real meat of the conceptual approach occurs here in this retelling of the classical rhetoric of memory.

I'll close this review with an extended quote that librarians, perhaps, would like to sit with for a while:

> The desire to control memory is a desire to tame risk, uncertainty, fear, and paranoia of unknown—unknown people, events, and ideas. The desire to control memory points to unrest about whose memory to prioritize, and criticism about imperfect memory are just as accurately imagined as an affective identification with an authoritarian and partisan past, present, and future. When critics seek better control of memory, they simultaneously seek power over alternative forms of remembering and forgetting, forms that are often valued by conflicting publics and counterpublics. A "perfect" memory can only perform a limited assortment of activities, usually those that fit the needs of an even more limited public. It is far more important to encourage an imperfect memory that is able to adjust to the needs of ever-fluctuating publics. We will never be able to remember perfectly, and we should always be vigilant to retain the capacity to remember anew. (151)

Although this book is dense (and at times will prove difficult for readers not steeped in the field of Rhetoric), Johnson creates an intriguing theoretical and historical framework from

which to view what we call Information Literacy (IL) as a kind of public remembering (or forgetting). He challenges us to interrogate the affordances our mnemonic techné created for those less attuned to memory's infrastructure. To encourage all of us to continually remember anew, to think about the labor of memory: that is Johnson's provocative message.—*Anders Tobiason, Boise State University*

Catherine Knight Steele. *Digital Black Feminism.* New York, NY: New York University Press, 2021. 208p. Paperback, $27.00 (ISBN: 978-1-4798-0838-0).

Catherine Knight Steele's *Digital Black Feminism* is the first scholarly monograph to center the experiences, contributions, and impact of Black women in technology and digital culture studies. Across five chapters, Steele charts the evolution of Black feminism and demonstrates how technology has always been an integral part of Black women's lives in the United States. By interrogating the ways in which Black women and Black feminists have continually engaged with technology, Steele proves that "Black feminist thought work has forever altered digital communication technologies" (8). As a Black feminist with scholarly expertise and experience as both participant and observer in digital Black feminist spaces, Steele is uniquely positioned to make this important contribution. Steele grounds her study in work set forth by Black feminists like Patricia Hill Collins, bell hooks, and Joan Morgan, delivering an approachable text that unpacks the important, nuanced ideologies of digital Black feminism.

Chapter 1, "A History of Black Women in Technology, or Badges of Oppression and Positions of Strength," reviews the placement and treatment of Black women as laborers in the United States. Throughout the nineteenth and twentieth centuries, Black women developed the technical expertise required to complete and advance domestic, agricultural, and communicative tasks. This same technological expertise also provided a way for Black women to both navigate and resist the social and political structures in place that were designed to uphold their oppression. Steele traces Black women's use of technology, from material tools to perform field labor and domestic work to oral and written devices used as tools for self-preservation and advocacy, to show that the development of technology cannot be separated from Black women and their interactions with it.

In chapter 2, "Black Feminist Technoculture, or the Virtual Beauty Shop," Steele introduces the idea of the virtual beauty shop to describe Black feminist technoculture as well as the relationship between Black women and technology. As a metaphor, the virtual beauty shop creates space to explore Black women's use of technology on its own terms, and within a context that is designed by and for Black women—just like Black beauty shops. Steele highlights the features, or technologies, of the virtual shop using a framework of hair care, entrepreneurs, and shoptalk. Through the use of this metaphor, Steele points directly to the rhetorical, entrepreneurial, and survival technologies used to move Black women to the center from the margins. Recognizing the relationships between Black women and technology creates space to consider the long and often complicated history of Black women's technology use, and the impact of digital technology on Black feminist discourse.

Chapter 3, "Principles for a Digital Black Feminism, or Blogging While Black," underscores the significance of the Black blogosphere and the possibilities it has created for Black

feminist thought and activity. Steele examines blogging as the foundation for social media and contemporary methods of digital communication. In this way, she articulates how blogs continue to serve as sites of Black digital expression, or virtual beauty shops, and Black feminist technoculture. Steele argues that Black feminist possibilities are achieved in these spaces through principles of agency, the right to self-identify, gender nonbinary spaces of discourse, complicated allegiances, and dialectic of self and community interests.

Steele uses chapter 4, "Digital Black Feminist Praxis, or Mavis Beacon Teaches Typing," to explore the development of tools, strategies, and processes of Black feminist digital culture. The presence of the internet and a burgeoning digital culture in Black feminists' lives has had an important impact on the evolution of Black feminist thought. Steele suggests a praxis of digital Black feminism to illustrate the dynamic relationships that exist between Black feminists, the tools at their disposal, and their work. To achieve this, Steele focuses on Zora Neale Hurston, Anna Julia Cooper, Ida B. Wells-Barnett, Feminista Jones, Jamilah Lemieux, and Luvvie Ajayi. Considered within a framework of capturing, publishing, and threading and stitching, Steele discusses how, over time, Black women have navigated the conflation of public and private selves in the process of producing Black feminist work.

Chapter 5, "Digital Black Feminism as Product, or 'It's Funny How Money Change a Situation,'" considers how the work of digital Black feminists has come to be rendered as commercially valuable. Steele uses a framework that includes branding, selling the goods, and prototypes to unpack how digital tools create new ways of exploring Black feminist thought and praxis. Engaging these tools with methods like signifyin' and self-naming allows digital Black feminists to create culturally specific content and manage their identities. Through their practice, digital Black feminists are able to resist both the challenges that are associated with commodification as well as the flattening of deeply nuanced and personalized ideologies that are central to Black feminist practice.

Steele concludes by imagining a digital Black feminist future. She notes the care and ethical considerations required to study and understand digital Black feminism. Demonstrating by example, Steele's work proves that Black women and Black feminist thought must not be left out of technological and digital discourse. *Digital Black Feminism* is an important publication with wide appeal and relevance for anyone in media studies, information studies, women and gender studies, Black studies, or seeking liberation.—*Rachel E. Winston, The University of Texas at Austin*