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Guest Editorial

Knowledge Held Hostage: What the British Library Ransomware Attack Can Teach Us

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The British Library hack and its response serve as a clear example of the vulnerability of institutions of higher learning to such attacks and the importance of maintaining an open dialogue with the public during recovery. This open dialogue is currently lacking as universities attempt to move on and cover up these attacks quickly. This paper aims to start the conversation by providing three examples of institutions that went through a hack that left their services down for a significant period, how it affected those they serve, how they responded, and what information was made public.

The British Library, a crown jewel among libraries with its long history and extensive collections, is a vital resource for researchers worldwide. In an event that is becoming dishearteningly common, this source of research materials was imprisoned on October 28, 2023, by a ransomware attack that forced the website and staff emails offline. For over two months, the British Library had no online presence and limited services in person. The first signs of recovery came on January 15, 2024, when an online viewable catalog came back, but it still required researchers to come in person to review materials (Spanoudi, 2023). Over 5 months later, recovery continues (Keating, 2023).

Most frustratingly, the British Library has the only extant copy of a sound recording needed for my research. Efforts to access this recording have taken a long and winding path and left me wondering how universities or colleges have handled or could handle situations like that which the British Library is experiencing. Half of my undergraduate education—the half with the heaviest research, of course—took place during the pandemic lockdown. This led me to select less fulfilling research topics that were only dependent on what my library's limited physical and digital collection had available. What books and articles I could find formed the research nest that I stacked precariously around my workstation. I lived in that nest until the end of the quarter.

Now, as a new faculty librarian at another institution, I began this gathering process again. This time however, I could research what I wanted because I had the backing to access a full array of both physical books, online materials, and whatever else I wanted. When I started collecting the twigs for my metaphorical bird's nest, I knew I could finally obtain one of the twigs that had eluded me during the COVID-19 lockdowns: a recording housed in the British Library of an interview with one of the founders of an organization I have been obsessively researching for years.

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How hard could it be? The groans from my librarian colleagues in interlibrary loan began the moment they learned of my "simple" plan. It turns out, those were the groans of experience from trying to get items from the British Library.

After the British Library gatekeepers rejected our formal request for access to the recording, the next six weeks were filled with emails back and forth to them from me and my institution's Head of Access Services. We received two different replies with two different explanations of British Library policy regarding the loan of sound recordings, both of which were also different from the policy stated on the website. Once my colleagues and I were thoroughly annoyed at the lack of proper communication, all parties finally agreed on the actual policy. Then we were told the request could not be continued without obtaining copyright permission for the recording. The National Trust, who own the rights, gave their permission and we relayed this happy development to the British Library.

The reply arrived a mere minute later, which is never a good sign when there is a six-hour time difference, especially since it was well past business hours in London. The Sound Archive staff declared they were unavailable for three weeks and would get back to us when they returned. Due to my request going through back channels rather than the formal interlibrary loan process, there was some additional logistical back and forth. We finally appeared all set with the recording to be sent at the beginning of November following some processing on both ends.

Then, on October 28, the British Library was attacked by Rhysida, a hacker group that uses ransomware to take institutions hostage.

The attack locked both distant researchers and British Library staff out of all of their computer systems: from the online catalog to their own email accounts. Accessing anything within the library's enormous collections, both physical and digital, became nearly impossible and dependent largely on offline indices and the hope that the tomes remained accurate after disuse. This brought research by both those who traveled to London to view the collection and remote researchers like me who rely on digital copies to a standstill.

While I can wait as the British Library works to untangle themselves and recover their trapped digital artifacts, it does leave me questioning how attacks like this happen and what I can do as a librarian if something like this impacts my library. How can I support students who need materials from our physical and print collections? With the British Library down and my research project in a holding pattern, I decided to investigate other institutions and their experiences with hacking to see what lessons could be learned. But first, for this cyber security illiterate librarian, what actually hit the British Library?

The answer is a type of malicious software called ransomware. Ransomware usually exploits a hole in an institution's security to effectively freeze access and often steal data. Hackers using ransomware usually target employee or student information stored by the institution. Such attacks cause disruptions to services until the hacker group is paid a ransom to decrypt the trapped data or another means of decryption is found and employed. Payment may result in the restoration of services, but this is not guaranteed, and some cyber-security experts and the FBI do not support paying ransoms due to the lack of guarantees (Federal Bureau of Investigation, n.d.; Schell et al., 2019).

With the October attack, the British Library joins an ever-growing group of institutions of higher education and libraries being targeted by hacker groups hoping to extort ransom. Universities and colleges hold mountains of valuable data that hacker groups want, especially

student and staff personal information such as names and social security numbers. Compared to banks and large corporations, educational institutions have limited resources to address cybersecurity issues. This makes them attractive targets for hacker groups to target (Coffey, 2023). To illustrate, the Cybersecurity and Infrastructure Security Agency (CISA), a U.S. government organization that promotes cybersecurity and investigates cybercrime, released a 2021 trends report that found that cybercrime and ransomware attacks have shifted from so-called "big-game" corporate targets, such as Colonial Pipeline, to smaller, less protected targets. The CISA's United Kingdom equivalent reports the biggest hacking target is the education sector (CISA, 2022). A separate advisory by CISA on the hacker group Vice Society, who primarily targets K–12 schools, laid out what can happen to institutions of higher education if targeted by a cyber-attack, ranging from the delay of exams and canceled classes to stolen student data being sold or exposed (#StopRansomware, 2022). For example, in 2023, the University of Hawai'i paid a ransom after a community college in their system got hacked to prevent their student data from being sold on the dark web and, in their press release about the hack and the payment, stated that "64% of colleges worldwide reported experiencing some sort of ransomware attack, along with about 2,000 K–12 schools in the U.S."(UH News, 2023). The University of Hawai'i paid the ransom and, in what will be a trend, it is unclear if the payment worked the way they wanted, if recovery was better, and if it prevented private data from being distributed. While The University of Hawai'i was open that they paid the ransom, in almost a year there have been no further updates. The number of institutions of higher learning getting attacked is only going to grow as ransomware groups continue to profit through ransoms paid or data sold (or both).

Another reason to target the higher education sector is the way the basic ideals of higher education, such as academic freedom and equal access to knowledge for all those connected to the institutions, leave many openings for hacker groups to exploit (McGinn, 2017). Unless higher education abandons the idea of equal access, which absolutely should not happen and is incredibly unlikely to without a fight, these practical holes are here to stay. Steps to narrow those openings and protect institutional servers and data can and must be taken, however.

Finding information about protections against ransomware and plans for IT to address an attack once detected is easy. Information on what effects a hack would have on research and education is harder to find. As an outsider, all you get are glimpses.

During the Summer 2023 semester, students at Stephen F. Austin University were unable to do any assignments due to being locked out of their online learning programs for 10 days while the school worked to restore online access. Students, professors, and staff were also unable to access their emails, leaving online students unable to contact professors or other students. Some professors and students resorted to using Facebook. Professors also needed to adjust their courses to recover lost time (McGee, 2023). Ten days during the fast-paced summer term is a huge disruption. Students suffered both the leak of their personal information and the interruption of their education (Wellerman, 2023).

By comparison, in September, 2021, Howard University experienced an attack on a smaller scale that limited access to their online resources and resulted in the cancellation of online and hybrid classes for a few days (Ngo, 2021). Reports weeks after the initial hack indicated frustration among students with the unavailability of internet connectivity for several days on campus, the lack of feedback on assignments, and the inflexibility of professors who still required students to submit assignments on time, even without students receiving feedback

or access to the internet to use the Blackboard course management system. Students voiced their frustration to reporters in the weeks following, but then the story died, partly due to systems coming back online and partly because Howard University, much like Stephen F. Austin, remained quiet in the weeks and months after (Collins, 2021; Musungira, 2021).

As an outsider reading about these incidents, there seems to be limited follow-up. Stories stopped appearing in the news soon after the incidents happened and there was little public comment by faculty or staff. How did the hack affect the academics of students? What lessons were learned by the people handling the incidents? This lack of comment was a common theme when examining cyberattacks on higher education.

The exception to this trend is Regis University in Denver, Colorado, which experienced a hack in 2019 during student move-in that left parts of their system inaccessible for two months and caused continued issues in the day-to-day operation of the university even after Regis paid the ransom. In the meantime, students reverted to using paper for assignments (Hernandez, 2019; Hernandez, 2020; Brennan, 2020). The spokeswoman for Regis spoke regularly to a *Denver Post* reporter into 2020 and Regis maintained a blog with updates about the restoration of their online services. This goes beyond what has been seen at some other universities with Regis maintaining a clear line of communication with its students, the public, and potentially any alumni that wanted to monitor the situation.

When an attack like those that struck Regis and the British Library happens, the fix is not as simple as merely restarting the system. You pray your institution has a good backup from which to rebuild or your institution will be left to start again from scratch. Even if you get data back, there's no guarantee that your hacked data will be free of lingering malware (Hernandez, 2019).

Prior to the British Library hack, Regis provided the best example to other higher education institutions by sharing their story to help others learn from their experience and mistakes. Today, courses related to cybersecurity taught at Regis include lessons learned from the attack. Regis also held a summit that gathered interested parties from across the region to discuss the cyberattack and methods to prevent or recover from such attacks (Brennan, 2020). Even with all the information shared by Regis, there remain gaps in information regarding student support efforts, the effects on student learning, and other useful information. While reports from Howard, Stephen F. Austin, and Regis described initial student reactions, documentation of long-term effects is missing. This could be a result of how recently some of these attacks occurred, but it should be something to be mindful of in the future to learn how best to help students.

Prevention is currently the best way to protect students from disruptive cyberattacks. While it can feel like there is nothing we can do as individuals to stop someone else from opening a suspicious email and unleashing torment on our campuses, there are steps we can take. We can support IT, both in educating ourselves and in supporting campus-wide training to teach how to spot and deal with a suspicious email. This type of training should go beyond the typical orientation new students and faculty receive on their arrival and should include up-to-date prevention techniques (Schell et al., 2019). This training needs to be encouraged and required by top administrative officials so those lessons are not ignored.

By way of example, my institution participates in yearly state-mandated cybersecurity training that teaches every university employee the signs of a suspicious email and how clicking a link in those suspicious emails could result in a hacker group compromising our sys-

tem. The next week, we must complete sexual harassment prevention training. Notice of this training arrives in our email inboxes from an unknown and strange address with the subject line "Urgent" and, despite linking to mandatory training materials, includes several red flags for suspicious emails that were covered in the previous week's cybersecurity training. Ironically, this proves how effective that yearly cybersecurity training courses is, as several of my colleagues did not open that email and reported it to campus IT as a potential threat. This is the correct response. If an email meets all the hallmarks of being sent from a hacker group or other scammer: do not open it! The best way to protect students from a lengthy cyberattack outage is to prevent it from happening.

If an attack does succeed, it is important not only to quickly rebuild systems but also to learn everything possible from it. In an interview about the hacks at Regis and another college, solutions architect, Christian Schreiber, stated that "victims of attacks like ransomware often focus on containing the damage and returning to normal operations as quickly as possible rather than conducting a detailed (and expensive) investigation into how the attack occurred"(McKenzie, 2019). This can leave institutions open to further attacks. Another way to protect students is to learn from other times where unexpected events (weather, pandemic, etc.) affected them and how those were handled.

As the threat of hacking continues to haunt institutions of higher learning and education, not only do we have to work at actively preventing these attacks, but those who have experienced a hack should share what lessons they learned and how they helped their students and staff during that time so others can add to it and prepare themselves. That is where a lot of institutions have failed. Once a hack happens, they either work at recovery or, in the case of Lincoln College in Illinois, throw in the towel, close, (Nietzel, 2022) and never discuss it. Regis was either the only or most noteworthy university to explain what happened and how they overcame it. But even there, this appeared limited to a conference they organized, and the material, including slides, is either difficult or impossible to track down. As a standard bearer for accessible information, of sorts, Wikipedia does not even mention the hack on Regis University's Wikipedia page. If a headline breaks about an institute of higher education being hacked, little public information follows. Even when information is given to the public is it piecemeal and unclear, with no follow-up. For example, the University of Hawai'i did not state if they had been in contact with the FBI as other universities had announced when facing a similar situation. These events happen, are handled somehow, then forgotten, with no opportunity to learn from them.

That was until March of this year when the British Library themselves released an 18-page report on their hack, in addition to the updates via their blog in the preceding months, which explained what happened, how it affected their services to the public, and how they were working at repairing their damaged system. The British Library has been better than any other institution of higher learning when it comes to communicating about their hack and recovery. They are even significantly better at communicating about the hack than about their own interlibrary loan policy. Not only did they release a report for public consumption, they have also been releasing updates explaining where in the process of recovery they are and plans for the future. The British Library has not buried information nor has it moved on or kept quiet. They are open with what information they can share and are sharing, unlike many of the examples given in this article. The report detailed how the British Library depended on outside sources of IT infrastructure, which is what ultimately left them open

to harm. This is a shining example of what happens when IT departments are understaffed and under-resourced. The importance of a well-supported and well-paid IT staff is clear. While the hack was harder to overcome and hide from than the universities mentioned in this article, the British Library has not ignored the public's interest in it. And yes, the British Library hack does have its own Wikipedia page. And unlike other hacks, reporters like Sam Knight came in and reported how the British Library was operating under stress, how patrons were acting, and how they were getting books (Knight, 2023). The British Library is a place of learning, just like a university, and as time has moved on, it has become more dependent on online services. To be severed from these services would have the effect of sending the British Library back decades. Libraries and universities each have people with emotional, financial, and educational stakes in their facilities and these are managed by open communication and scholarship. There is a duty to share information that affects them with others and to be open about being attacked by hacker groups. While there is plenty of literature on what to do before a hack and how to overcome it from an IT perspective, there is a gap in what attacks against education and information mean for us as students, researchers, and a society. This gap can create chaos if not properly addressed.

As of 2021, the National Center for Education Statistics found that 40% of both two-year degree-seeking undergraduates and postbaccalaureate students along with 20% of four-year degree-seeking undergraduates exclusively took online courses. The NCES Fast Facts Tool provides quick answers to many education questions (National Center for Education Statistics, n.d.). These numbers were likely affected by the pandemic but do reflect the growing popularity of partial or completely online degrees within higher education. This translates into students being further away from campus, their professors, and their school's physical collections of research material. With this move toward online learning, being hacked like the British Library and unavailable for months puts students' learning in harm's way.

We need to learn from those who have recovered from cyberattacks and we need to be open about our own experiences without fear of reputational damage. If the British Library can share and be open with their patrons, universities can share and be open with their students and faculty. We need to know how to prevent hacking. Discussions of how our institutions will handle cyberattacks must happen in advance, including what pre-planning can be done, what should be undertaken at each administrative level, and what faculty should do in case of long downtime. If hackers are going to take advantage of higher education's openness to attack us, let us also use that openness to learn from each other how to best support our students, faculty, and IT departments while we prepare our defenses for our own "cyberincident."

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Evaluating AI Literacy in Academic Libraries: A Survey Study with a Focus on U.S. Employees

Leo S. Lo

This survey investigates artificial intelligence (AI) literacy among academic library employees, predominantly in the United States, with a total of 760 respondents. The findings reveal a modest self-rated understanding of AI concepts, limited hands-on experience with AI tools, and notable gaps in discussing ethical implications and collaborating on AI projects. Despite recognizing the benefits, readiness for implementation appears low among participants. Respondents emphasize the need for comprehensive training and the establishment of ethical guidelines. The study proposes a framework defining core components of AI literacy tailored for libraries. The results offer insights to guide professional development and policy formulation as libraries increasingly integrate AI into their services and operations.

Introduction

In a world increasingly dictated by algorithms, artificial intelligence (AI) is not merely a technological phenomenon, it is a transformative force that redefines our intellectual, social, and professional landscapes (McKinsey and Company, 2023). The rapid integration of AI in our everyday lives has profound implications for higher education, a sector entrusted with preparing individuals to navigate, contribute to, and thrive in this AI-driven era. From personalized learning environments to automated administrative tasks, AI's influence in higher education is omnipresent and its potential boundless. However, this potential can only be harnessed effectively if those at the frontline of academia—our educators, researchers, administrators, and, notably, academic library employees—are equipped with the necessary AI literacy (UNESCO, 2021). Without an understanding of AI's principles, capabilities, and ethical considerations, higher education risks falling prey to AI's pitfalls rather than leveraging its benefits.

The potential risks and benefits underscore a pressing need to scrutinize and elevate AI literacy within the higher education community—a task that begins with understanding its current state. As facilitators of information and knowledge, academic library employees stand at the crossroads of this AI revolution, making their AI literacy an imperative, not a choice, for the future of higher education.

AI Literacy: Context and Background

In an era marked by exponential growth in digital technology, the concept of literacy has evolved

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beyond traditional reading and writing skills to encompass a wide array of digital competencies. One such competency, which is gaining critical importance in higher education, is AI literacy. With AI systems beginning to permeate every facet of university operations—from learning management systems to research analytics—the ability to understand and navigate these AI tools has become an essential skill for academic library employees.

AI literacy, a subset of digital literacy, specifically pertains to understanding AI's principles, applications, and ethical considerations. It involves not only the ability to use AI tools effectively, but also the capacity to evaluate their outputs critically, to understand their underlying mechanisms, and to contemplate their ethical and societal implications. AI literacy is not just for computer professionals; as Lo (2023b) and Cetindamar et al. (2022) emphasize, operationalizing AI literacy for non-specialists is essential.

The significance of AI literacy in higher education is underscored by several contemporary trends and challenges. Companies and governments globally are engaged in fierce competition to stay at the forefront of AI integration. Concurrently, the rapid proliferation of AI is giving rise to a host of ethical and privacy concerns that require informed stewardship (Cox, 2022). Furthermore, the COVID-19 pandemic has accelerated the digital transformation of higher education, leading to an increased reliance on AI technologies for remote learning and operations. This reliance further points to the necessity of AI literacy among academic library employees, who play a pivotal role in facilitating online learning and research.

As artificial intelligence proliferates across higher education, developing AI literacy is increasingly recognized as a priority to prepare students, faculty, staff, and administrators to harness AI's potential, while mitigating risks (Ng et al., 2021). Hervieux and Wheatley's (2021) 2019 study (n=163) found that academic librarians require more training regarding artificial intelligence and its potential applications in libraries. The U.S. Department of Education's recent report (2023) on AI emphasizes the growing importance of AI literacy for educators and students, highlighting the necessity of understanding and integrating AI technologies in educational settings. This report aligns with the broader discourse on AI literacy and emphasizes the need to equip library professionals with skills needed to evaluate and utilize AI tools effectively (Lo, 2023a).

While efforts to promote AI literacy are growing, the required content for different target groups remains ambiguous. Some promising measurement tools have been proposed, such as Pinski and Benlian's (2023) multidimensional scale assessing perceived knowledge of AI technology, processes, collaboration, and design. However, further validation of AI literacy assessments is required. Developing rigorous definitions and measurements is crucial for implementing effective AI literacy initiatives.

Ridley and Pawlick-Potts (2021) put forth the concept of algorithmic literacy, involving understanding algorithms and their influence, recognizing their uses, assessing their impacts, and positioning individuals as active agents rather than passive recipients of algorithmic decision-making. They propose libraries can contribute to algorithmic literacy by integrating it into information literacy education and supporting explainable AI.

Ocaña-Fernández et al. (2019) argued curriculum and skills training changes are critical to prepare students and faculty for an AI future, though also warn about digital inequality issues. Laupichler et al.'s (2022) scoping review reveals efforts to teach foundational AI literacy to non-specialists are still in formative stages. Proposed essential skills vary considerably across frameworks, and robust evaluations of AI literacy programs are lacking. Findings indicate

that carefully designed AI literacy courses show promise for knowledge gains; however, research substantiating appropriate frameworks, core competencies and effective instructional approaches for diverse audiences remains an open need.

Within libraries, Heck et al. (2019) discussed the interplay of information literacy and AI. They propose that AI could aid information literacy teaching through timely feedback and tracking skill development, but note that common evaluation approaches would need establishing first. Information literacy empowers learners to actively engage with, not just passively consume from, AI systems. Lo (2023c) proposed a framework to utilize prompt engineering to enhance information literacy and critical thinking skills.

Oliphant (2015) examined intelligent agents for library reference services. The analysis found they rapidly retrieve information but lack human evaluation abilities. Findings suggest librarians will need to guide users in critically evaluating AI-generated results, indicating that information literacy instruction remains crucial. Furthermore, Lund et al. (2023) discuss the ethical implications of using large language models, such as ChatGPT, in scholarly publishing, emphasizing the need for ethical considerations and the potential impact of AI on research practices.

While research is still emerging, initial findings highlight the need for rigorous, tailored AI literacy initiatives encompassing technical skills, critical perspectives, and ethical considerations. As AI becomes further entwined with education and work, developing validated frameworks, assessments, and instructional approaches to enhance multidimensional AI literacy across contexts and roles is an urgent priority. This study seeks to contribute by investigating AI literacy specifically among academic library employees.

Purpose of the Study

The rapid pace of AI development and integration in higher education heightens the need to address this research gap. As AI continues to evolve and permeate further into academic libraries, the demand for AI-literate library employees will only increase. Failure to understand the current state of AI literacy, and to identify the gaps, could result in a significant skills deficit that would impedes the effective utilization of AI in academic libraries.

In light of this, the purpose of this study is to embark on an investigation of AI literacy among academic library employees. The study seeks to answer the following critical research questions:

1. What is the current level of AI literacy among academic library employees?
2. What gaps exist in their AI literacy, and how can these gaps be addressed through professional development and training programs?
3. What are their perceptions of generative AI, and what implications do they foresee for the library profession?

By addressing these questions, this study aims to fill a research gap and provide insights that can inform policy and practice in higher education. It strives to shed light on the competencies that academic library employees possess, identify the gaps that need to be addressed, and propose strategies for enhancing AI literacy among this essential group of higher education professionals.

Theoretic Framework

The Technological Pedagogical Content Knowledge (TPACK) framework developed by Mishra and Koehler (2006) serves as the theoretical foundation for this study. TPACK has also been advocated as a useful decision-making structure for librarians evaluating instructional technologies (Sobel & Grotti, 2013).

Mishra and Koehler (2006) explain that TPACK involves flexible, context-specific application of technology, pedagogy, and content knowledge. It goes beyond isolated knowledge of the concepts to an integrated understanding. TPACK development requires moving past viewing technology as an "add-on" and focusing on the connections between technology, content, and pedagogy in particular educational contexts.

In the context of this study, the researcher applied the TPACK framework to examine AI literacy specifically among academic library professionals. The three key components of the TPACK framework are interpreted as:

1. Technological Knowledge (TK)—Knowledge about AI itself, including its principles, capabilities, and limitations. This encompasses understanding AI as a technology and its potential applications in library settings.
2. Pedagogical Knowledge (PK)—Knowledge about how AI can be used to enhance library services and facilitate learning. This relates to understanding how AI can be integrated into library services to improve user experience, streamline operations, and support learning.
3. Content Knowledge (CK)—Knowledge about the library's content and services. This involves perceiving the potential impact of AI on the library's content and services, and how AI can enhance their management and delivery.

This tailored application of the TPACK framework will allow a multidimensional assessment of AI literacy among academic library employees. It facilitates examining employees' understanding of AI as a technology (TK), perceptions of how AI can enhance library services (PK), and the potential impact of AI on the library's content and services (CK).

Significance of the Study

The significance of this study lies in its potential to contribute to academic library policy, practice, and theory in several ways. Firstly, it utilizes the TPACK framework to evaluate AI literacy among academic library employees, identifying competencies, gaps, and necessary strategies. This insight is crucial for designing effective professional development programs, as well as for resource allocation. Secondly, it adds to the discourse on digital literacy in higher education by specifically focusing on AI literacy, aiding in understanding its role and implications. Thirdly, the study provides insights into the ethical, practical, and opportunity dimensions of AI technology integration in libraries, informing best practices and guidelines for its responsible use. Lastly, by applying the TPACK framework to AI literacy in libraries, the study expands its theoretical applications and offers a robust basis for future research in technology integration in academic settings.

Methodology

Research Design

This study employs a survey-based approach to explore AI literacy among academic library employees, chosen for its ability to quickly gather extensive data across a geographically diverse group. The method aligns with the TPACK framework, highlighting the integration of technological, pedagogical, and content knowledge. Surveys facilitate the collection of standardized data, allowing for comparisons across different roles and demographics. This design is particularly effective for descriptive research in higher education, making it suitable for assessing the current state of AI literacy in academic libraries.

Participants

The researcher utilized a comprehensive approach to recruit a diverse group of academic library employees for the survey. This involved posting on professional listservs across various roles and regions in librarianship (Appendix A), as well directly contacting directors of prominent library associations: the Association of Research Libraries (ARL), the Greater Western Library Alliance (GWLA), and the New Mexico Consortium of Academic Libraries (NMCAL). These organizations represent a broad spectrum of academic libraries in terms of size, location, and type. The directors were requested to share the survey with their staff, thus ensuring a wide-reaching and representative sample for the study.

Data Collection

Data collection was facilitated through a custom-designed survey instrument, which was built and administered using the Qualtrics platform (Appendix B). The survey itself was developed to address the study's research questions and was structured into four main sections, each focusing on a specific aspect of AI literacy among academic library employees.

The first section sought to capture respondents' understanding and knowledge of AI, including their familiarity with AI concepts and terminology. The second section focused on respondents' practical skills and experiences with AI tools and applications in professional settings. The third section aimed to identify areas of AI literacy where respondents felt less confident, signaling potential gaps in knowledge or skills that could be addressed through professional development initiatives. Finally, the last section explored respondents' perspectives on the ethical implications and challenges presented by AI technologies in the library context.

The survey employed a mix of question types to engage respondents and capture nuanced data. These included Likert-scale questions, multiple choice, and open-ended questions. Prior to the full-scale administration, the survey was pilot-tested with a small group of academic library employees to ensure clarity, relevance, and appropriateness of the questions.

The survey questions were designed to tap into different dimensions of the TPACK framework. For instance, questions asking about practical experiences with AI tools and self-identified areas of improvement indirectly assess the intersection of technological and pedagogical knowledge (TPK), as they relate to AI.

Upon finalizing the survey, an invitation to participate, along with a link to the survey, was distributed via the listservs and direct outreach methods. The survey remained open for two weeks, with reminders sent out at regular intervals to maximize the response rate.

Limitations

While the study offers insights into AI literacy among academic library employees, it is crucial to acknowledge its limitations. Firstly, given the survey's self-report nature, the findings may be subject to social desirability bias, where respondents might have over- or under-estimated their knowledge or skills in AI.

Secondly, despite best efforts to reach a wide range of academic library employees, the sample may not be entirely representative of the population. The voluntary nature of participation, coupled with the distribution methods used, may have skewed the sample towards those with an existing interest or engagement in AI.

Moreover, while the use of professional listservs and direct outreach to library directors helped widen our reach, this strategy might have excluded those academic library employ-

ees who are less active, or not included, in these communication channels. The inclusion of Canadian libraries through the Association of Research Libraries suggests a small number of non-U.S. respondents.

Finally, the rapidly evolving nature of AI and its applications in libraries means that our findings provide a snapshot at a specific point in time. As AI continues to advance and integrate more deeply into academic libraries, the landscape of AI literacy among library employees is likely to shift, necessitating ongoing research in this area.

These limitations, while important to note, do not invalidate our findings. Instead, they offer points of consideration for interpreting the results and highlight areas for future research to build on our understanding of AI literacy among academic library employees.

Results and Analysis

Descriptive Statistics

The survey drew a diverse response: 760 participants started the survey, 605 completed it. The participants represented a cross-section of the academic library landscape, with the majority (45.20%) serving in Research Universities. A significant proportion also hailed from institutions offering both graduate and undergraduate programs (29.64%) and undergraduate-focused Colleges or Universities (10.76%). Community Colleges and specialized professional schools (e.g., Law, Medical) were represented as well, albeit to a lesser extent.

Over half of the respondents (61.25%) were from libraries affiliated with the Association of Research Libraries (ARL), signifying an extensive representation from research-intensive institutions. Respondents were predominantly from larger academic institutions. Those serving in institutions with enrollments of 30,000 or more made up the largest group (30.67%), closely followed by those in institutions with enrollments ranging from 10,000 to 29,999 (34.66%).

As for professional roles, the survey drew heavily from the library specialists or professionals (60.99%) who directly support the academic community's research, learning, and teaching needs. Middle (20.00%) and senior (9.09%) management personnel were also well-represented, providing a leadership perspective to the survey insights.

TABLE 1
Role or Position in Organization

Role or Position in Organization	Percentage of Respondents	Number of Respondents
Senior management (e.g. Director, Dean, associate dean/director)	9.09%	55
Middle management (e.g. department head, supervisor, coordinator)	20.00%	121
Specialist or professional (e.g., librarian, analyst, consultant)	60.99%	369
Support staff or administrative	8.93%	54
Other	0.99%	6
Total	**100.00%**	**605**

Most of the respondents were primarily involved in Reference and Research Services (25.17%) or Library Instruction and Information Literacy (24.34%)—two areas integral to the academic support infrastructure.

In terms of professional experience, participants exhibited a broad range, from novices with less than a year's experience (2.81%) to seasoned veterans with over 20 years in the field (22.68%).

TABLE 2
Primary Work Area in Academic Librarianship

Primary Work Area in Academic Librarianship	Percentage of Respondents	Number of Respondents
Administration or management	10.93%	66
Reference and research services	25.17%	152
Technical services (e.g., acquisitions, cataloging, metadata)	8.11%	49
Collection development and management	4.64%	28
Library instruction and information literacy	24.34%	147
Electronic resources and digital services	4.30%	26
Systems and IT services	3.64%	22
Archives and special collections	3.31%	20
Outreach, marketing, and communications	1.66%	10
Other	13.91%	84
Total	**100.00%**	**604**

TABLE 3
Years of Experience as a Library Employee

Years of Experience as a Library Employee	Percentage of Respondents	Number of Respondents
Less than 1 year	2.81%	17
1–5 years	21.19%	128
6–10 years	19.54%	118
11–15 years	19.04%	115
16–20 years	14.74%	89
More than 20 years	22.68%	137
Total	**100.00%**	**604**

The survey group was highly educated, with most holding a master's degree in library and information science (65.51%), and a significant number having completed a doctoral degree or a master's in another field.

The survey also collected demographic information. A substantial majority identified as female (71.97%), and the largest age group was 35–44 years (27.97%). While the majority identified as White (76.11%), other ethnicities, including Asian, Black or African American, and Hispanic or Latino, were also represented.

This diverse participant profile offers a broad-based view of AI literacy in the academic library landscape, setting the stage for insightful findings and discussions.

TABLE 4
Level of Understanding of AI Concepts and Principles

Level of Understanding of AI Concepts and Principles	% of Respondents	Number of Respondents
1 (Very Low)	7.50%	57
2	20.13%	153
3 (Moderate)	45.39%	345
4	23.29%	177
5 (Very High)	3.68%	28

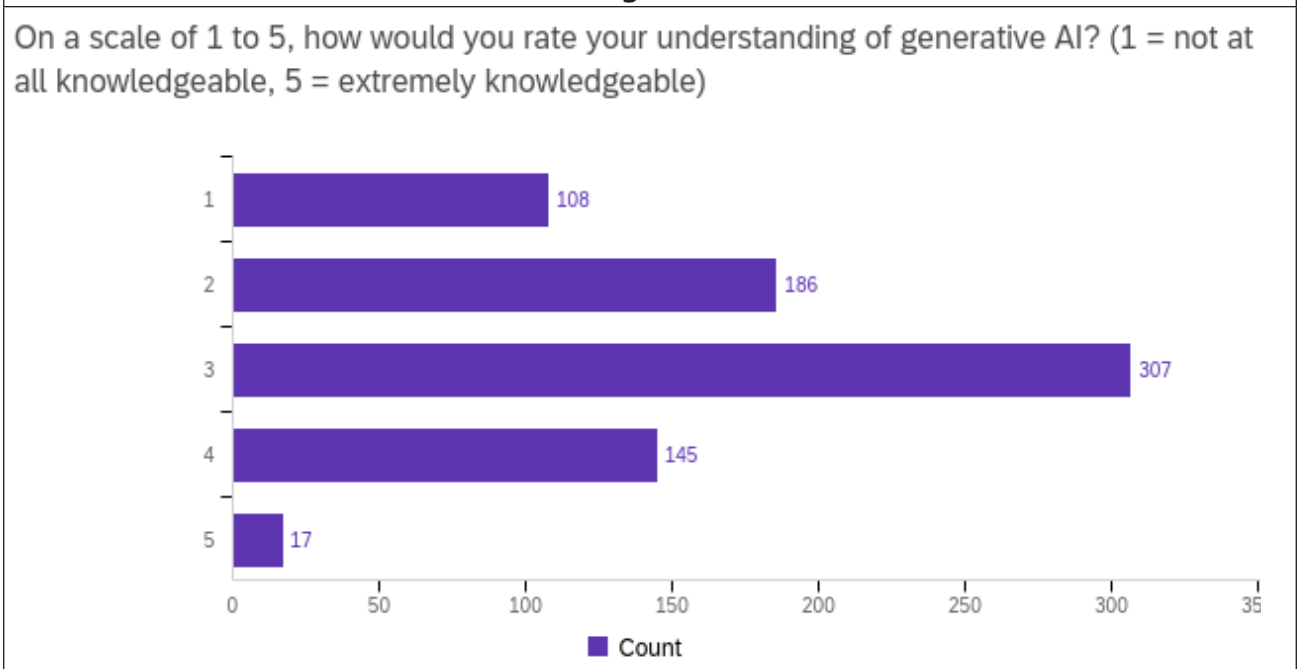
RQ 1 AI Literacy Levels

At a broad level, participants expressed a modest understanding of AI concepts and principles, with a

significant portion rating their knowledge at an average level. However, the number of respondents professing a high understanding of AI was quite small, revealing a potential area for further training and education.

A similar pattern was observed when participants were queried about their understanding of generative AI specifically. This suggests that while librarians have begun to grasp AI and its potential, there is a considerable scope for growth in terms of knowledge and implementation (Figure 1).

FIGURE 1
Understanding of Generative AI



Regarding the familiarity with AI tools, most participants had a moderate level of experience (30.94%). Only a handful of participants reported a high level of familiarity (3.87%), signaling an opportunity for more hands-on training with these tools.

In examining the prevalence of AI usage in the library sector, the researcher found a varied landscape. While some technologies have found significant adoption, others remain relatively unused. Notably, Chatbots and text or data mining tools were the most widely used AI technologies.

Participants' understanding of specific AI concepts followed a similar trend. More straightforward concepts such as Machine Learning and Natural Language Processing had a higher average rating, whereas complex areas like Deep Learning and Generative Adversarial Networks were less understood. This trend underscores the need for targeted educational programs on AI in library settings.

TABLE 5
Understanding of Specific AI Concepts

AI Concept	Average Rating
Machine Learning	2.50
Natural Language Processing (NLP)	2.38
Neural Network	1.93
Deep Learning	1.79
Generative Adversarial Networks (GANs)	1.37

Notably, there was almost a nine percent drop in responses from the previous questions to the questions that asked about the more technical aspects of AI. This could signify a gap in knowledge or comfort level with these topics among the participants.

In the professional sphere, AI tools have yet to become a staple in library work. The majority of participants do not frequently use these tools, with 41.79% never using generative AI tools and 28.01% using them less than once a month. This might be attributed to a lack of familiarity, resources, or perceived need. However, for those who do use them, text generation and research assistance are the primary use cases.

Concerns about ethical issues, quality, and accuracy of generated content, as well as data privacy, were prevalent among the participants. This finding indicates that while there's interest in AI technologies, the perceived challenges are significant barriers to full implementation and adoption.

In their personal lives, AI tools have yet to make a significant impact among the participants. The majority (63.98%) reported using these tools either 'less than once a month' or 'never.' This could potentially reflect the current state of AI integration in non-professional or leisurely activities, and may change as AI continues to permeate our everyday lives.

A chi-square test of independence was performed to examine the relation between the position of the respondent and the understanding of AI concepts and principles. The relation between these variables was significant, $\chi^2(16, N = 760) = 26.31$, $p = .05$. This means that the understanding of AI concepts and principles varies depending on the position of the respondent.

The distributions suggest that—while there is a significant association between the position of the respondent and their understanding of AI concepts and principles—the majority of respondents across all positions have a moderate understanding of AI. However, there are differences in the proportions of respondents who rate their understanding as high or very high, with Senior Management and Middle Management having higher proportions than the other groups.

There is also a significant relation between the area of academic librarianship and the understanding of AI concepts and principles, $\chi^2(36, N = 760) = 68.64$, $p = .00084$. This means that the understanding of AI concepts and principles varies depending on the area of academic librarianship. The distributions show that there are differences in the proportions of respondents who rate their understanding as high or very high, with Administration or management and Library Instruction and Information Literacy having higher proportions than the other groups.

Furthermore, a Chi-Square test shows that the relation between the payment for a premium version of at least one of the AI tools and the understanding of AI concepts and principles is significant, $\chi^2(4, N = 539) = 85.42$, $p < .001$. The distributions suggest that respondents who have paid for a premium version of at least one of the AI tools have a higher understanding of AI concepts and principles compared to those who have not. This could be because those who have paid for a premium version of an AI tool are more likely to use AI in their work or personal life, which could enhance their understanding of AI. Alternatively, those with a higher understanding of AI might be more likely to see the value in paying for a premium version of an AI tool.

It's important to note that these findings are based on the respondents' self-rated understanding of AI, which may not accurately reflect their actual understanding. Further research could involve assessing the respondents' understanding of AI through objective measures.

Additionally, other factors not considered in this analysis, such as the respondent's educational background, years of experience, and exposure to AI in their work, could also influence their understanding of AI.

RQ2 Identifying Gaps

In this section, the researcher delved deeper into the gaps in knowledge and confidence among academic library professionals regarding AI applications. These gaps highlight the urgent need for targeted professional development and training in AI literacy.

Confidence Levels in Various Aspects of AI

The survey data pointed to moderate levels of confidence across a spectrum of AI-related tasks, indicating room for growth and learning. For evaluating ethical implications of using AI, a modest 30.12% of respondents felt somewhat confident (levels 4 and 5 combined), while 29.50% were not confident (levels 1 and 2 combined), and the largest group (39.38%) remained neutral.

Discussing AI integration revealed similar patterns. Here, 31.1% reported high confidence, 34.85% expressed low confidence, and the remaining 33.06% were neutral. These distributions suggest an overall hesitation or lack of assurance in discussing and ethically implementing AI, potentially indicative of inadequate training or exposure to these topics.

When it came to collaborating on AI-related projects, fewer respondents (31.39%) felt confident, while 40.16% reported low confidence, and 28.46% chose a neutral stance. This might point to the necessity of not only individual proficiency in AI but also the need for collaborative skills and shared understanding among teams working with AI.

Troubleshooting AI tools and applications emerged as the most significant gap, with 69.76% rating their confidence as low and only 10.9% expressing high confidence. This highlights an essential area for targeted training, as troubleshooting is a fundamental aspect of successful technology implementation.

TABLE 6
Confidence Levels in Various Aspects of AI

Aspect	% at Confidence Level 1	% at Confidence Level 2	% at Confidence Level 3	% at Confidence Level 4	% at Confidence Level 5
Evaluating Ethical Implications of AI	12.48%	17.02%	39.38%	24.64%	6.48%
Participating in AI Discussions	13.29%	21.56%	33.06%	20.75%	11.35%
Collaborating on AI Projects	15.77%	24.39%	28.46%	21.63%	9.76%
Troubleshooting AI Tools	41.79%	27.97%	19.35%	9.76%	1.14%
Providing Guidance on AI Resources	25.65%	24.51%	25.81%	20.13%	3.90%

Reflecting on Professional Development and Training in AI

Approximately one-third of survey participants have engaged in AI-focused professional development, showcasing several key themes:

- Modes of Training: Librarians access training via various formats, including webinars, workshops, and self-guided learning. Online options are popular, providing accessibility for diverse professionals.

- AI Tools and Applications: Training sessions mainly introduce tools like ChatGPT and others, with an emphasis on functionality and applications in academia.
- Ethical Implications: Sessions often address ethical concerns such as bias and privacy, and the potential misuse of 'black box' AI models.
- Integration into Librarian Workflows: Programs explore AI's integration into library work, including instruction, cataloging, and citation analysis.
- AI Literacy: There is a recurring focus on understanding and teaching AI concepts, tied to broader information literacy discussions.
- AI in Instruction: Training includes using AI tools in library instruction and understanding its impacts on academic integrity.
- Community of Practice: Responses highlight collaborative learning, suggesting a communal approach to understanding AI's challenges and opportunities.
- Self-guided Learning: Some librarians actively pursue independent learning opportunities, reflecting a proactive stance on AI professional development.

The findings emphasize the multifaceted nature of AI in libraries, underlining the need for ongoing, comprehensive professional development. This includes addressing both technical and ethical aspects, equipping librarians with practical AI skills, and fostering a supportive community of practice.

A Chi-square test examining the relationship between the respondents' positions and their participation in any training focused on generative AI ($\chi^2(4, N = 595) = 26.72$, $p < .001$) indicates a significant association. Upon examining the data, the proportion of respondents who have participated in training or professional development programs focused on generative AI is highest among those in Senior Management (47.27%), followed by Specialist or Professional (37.40%), Middle Management (29.75%), and Other (16.67%). The proportion is lowest among Support Staff or Administrative (3.70%).

This suggests that individuals in higher positions, such as Senior Management and Specialist or Professional roles, are more likely to have participated in training or professional development programs focused on generative AI. This could be due to a variety of reasons, such as these roles potentially requiring a more in-depth understanding of AI and its applications, or these individuals having more access to resources and opportunities for such training. On the other hand, Support Staff or Administrative personnel are less likely to have participated in such programs, which could be due to less perceived need or fewer opportunities for training in these roles.

These findings highlight the importance of providing access to training and professional development opportunities focused on AI across all roles in an organization, not just those in higher positions or those directly involved in AI-related tasks. This could help ensure a more widespread understanding and utilization of AI across the organization.

Despite these efforts, many participants did not feel adequately prepared to utilize generative AI tools professionally. A notable 62.91% disagreed to some extent with the statement: "I feel adequately prepared to use generative AI tools in my professional work as a librarian," underscoring the need for more effective training programs.

Interestingly, the areas identified for further training weren't just about understanding the basics of AI. Participants showed a clear demand for advanced understanding of AI concepts and techniques (13.53%), familiarity with AI tools and applications in libraries (14.21%), and addressing privacy and data security concerns related to generative AI (14.36%). This

suggests that librarians are looking to move beyond a basic understanding and are keen to engage more deeply with AI.

Preferred formats for professional development opportunities leaned towards remote and flexible learning opportunities, such as online courses or webinars (26.02%) and self-paced learning modules (22.44%). This preference reflects the current trend towards digital and remote learning, providing a clear direction for future training programs.

Notably, almost half of the participants (43.99%) rated the need for academic librarians to receive training on AI tools and applications within the next twelve months as 'extremely important.' This emphasis on urgency indicates a significant and immediate gap to be addressed.

In summary, a deeper analysis of the data reveals a landscape where academic librarians possess moderate to low confidence in understanding, discussing, and handling AI-related tasks, despite some exposure to professional development in AI. This finding indicates the need for more comprehensive, in-depth, and accessible AI training programs. By addressing these knowledge gaps, the library community can effectively embrace AI's potential and navigate its challenges.

RQ 3 Perceptions

The comprehensive results of our survey, as illustrated in Table 7, offer a detailed portrait of librarians' perceptions towards the integration of generative AI tools in library services and operations.

TABLE 7
Perceptions Towards the Integration of Generative AI Tools In Library Services

Statement	1	2	3	4	5
To what extent do you agree or disagree with the following statement: "I believe generative AI tools have the potential to benefit library services and operations." (1 = strongly disagree, 5 = strongly agree)	3.32%	10.96%	35.88%	27.91%	21.93%
How important do you think it is for your library to invest in the exploration and implementation of generative AI tools? (1 = not at all important, 5 = extremely important)	7.24%	15.95%	29.93%	28.78%	18.09%
In your opinion, how prepared is your library to adopt generative AI tools and applications in the next 12 months? (1 = not at all prepared, 5 = extremely prepared)	32.28%	37.75%	23.84%	4.80%	1.32%
To what extent do you think generative AI tools and applications will have a significant impact on academic libraries within the next 12 months? (1 = no impact, 5 = major impact)	2.81%	20.03%	36.09%	26.16%	14.90%
How urgent do you feel it is for your library to address the potential ethical and privacy concerns related to the use of generative AI tools and applications? (1 = not at all urgent, 5 = extremely urgent)	2.15%	5.46%	18.05%	29.47%	44.87%

When considering the potential benefits of AI, the responses indicate a degree of ambivalence, with 35.88% choosing a neutral stance. However, when we combine the categories of those who 'agree' and 'strongly agree,' we see that a significant portion, 49.84%, view AI

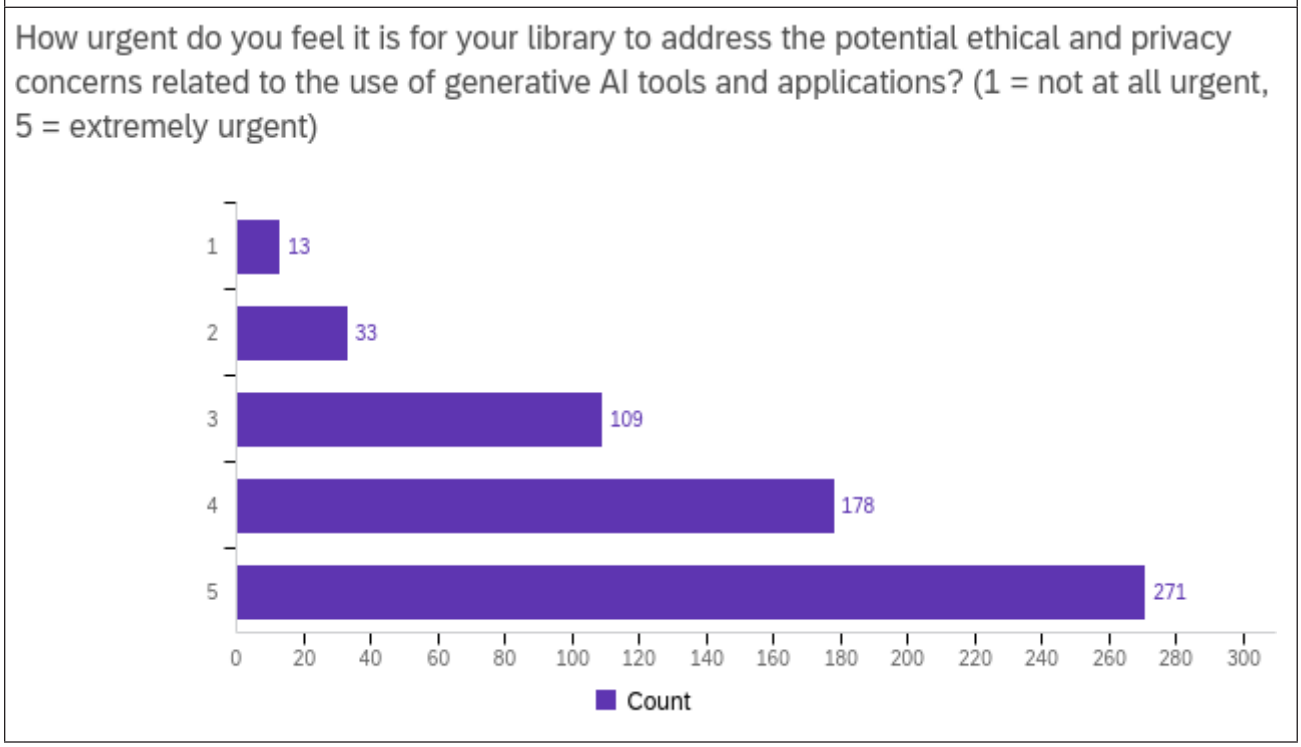
as beneficial to a certain extent. Similarly, on the question of the importance of investment in AI, there is a notable inclination towards agreement, with 46.87% agreeing that investment is important to some degree.

However, this optimism is juxtaposed with concerns about readiness. When asked how prepared they feel to adopt generative AI tools within the forthcoming year, 70.03% of respondents (those who 'strongly disagree' or 'disagree') admit a lack of preparedness. This suggests that despite recognizing the potential value of AI, there are considerable obstacles to be overcome before implementation becomes feasible.

The uncertainty surrounding AI's impact on libraries in the short-term further illuminates this complexity. A significant proportion of librarians (36.09%) chose a neutral response when asked to predict the impact of AI on academic libraries within the next twelve months. Nonetheless, there is a considerable group (41.06% who 'agree' or 'strongly agree') who foresee significant short-term impact.

A key finding from the survey was the collective recognition of the urgency to address ethical and privacy issues tied to AI usage. In fact, 74.34% of respondents, spanning 'agree' and 'strongly agree,' underscored the urgent need to address potential ethical and privacy concerns related to AI, highlighting the weight of responsibility librarians feel in maintaining the integrity of their services in the age of AI (Figure 2).

FIGURE 2
Perceived Urgency for Addressing Ethical and Privacy Concerns of Generative AI in Libraries



The qualitative responses provide a rich understanding of the perceptions of generative AI among library professionals and the implications they foresee for the library profession. The responses were categorized into several key themes, each of which is discussed below with relevant quotes from the respondents.

Themes

Ethical and Privacy Concerns

A significant theme that emerged from the responses was the ethical and privacy concerns associated with the use of generative AI tools in libraries. Respondents expressed apprehension about potential misuse of data and violations of privacy. As one respondent noted, "Library leaders should not rush to implement AI tools without listening to their in-house experts and operational managers." Another respondent cautioned, "We need to be cautious about adopting technologies or practices within our own workflows that pose significant ethical questions, privacy concerns."

Need for Education and Training

The need for education and training on AI for librarians was another prevalent theme. Respondents emphasized the importance of understanding AI tools and their implications before implementing them. One respondent suggested: "quickly education on AI is needed for librarians. As with anything else, there will be early adopters and then a range of adoption over time." Another respondent highlighted the need for an AI specialist, stating, "I also think it would be valuable to have an AI librarian, someone who can be a resource for the rest of the staff."

Potential for Misuse

Respondents expressed concern about the potential for misuse of AI tools, such as generating false citations or over-reliance on AI systems. They emphasized the importance of critical thinking skills, and cautioned against replacing human judgment and learning processes with AI. As one respondent put it, "Critical thinking skills and learning processes are vital and should not be replaced by AI." Another respondent warned: "there are potential risks from misuse such as false citations being provided or too much dependence on systems."

Concerns about Implementation

Several respondents expressed doubts about the ability of libraries to quickly and effectively implement AI tools. They cited issues such as frequent updates and refinements to AI tools, the need for significant investment, and the potential for AI to be used in ways that do not benefit the library or its users. One respondent noted, "the concern I have with AI tools is the frequent updates and refinements that occur. For libraries with small staff size, it seems daunting to keep up."

Role of AI in Libraries

Some respondents suggested specific ways in which AI could be used in libraries, such as for collection development, instruction, and answering frequently asked questions. However, they also cautioned against viewing AI as a panacea for all library challenges. One respondent stated: "using them for FAQs will be more useful than answering a complicated reference question."

Concerns about AI's Impact on the Profession

Some respondents expressed concern that the use of AI could lead to job displacement or a devaluation of the human elements of librarianship. They suggested that AI should be used to

complement, not replace, human librarians. One respondent expressed that, "I could see a future where only top research institutions have human reference librarians as a concierge service."

Need for Critical Evaluation

Respondents emphasized the need for critical evaluation of AI tools, including understanding their limitations and potential biases. They suggested that libraries should not rush to implement AI without fully understanding its implications. One respondent advised: "the framing of AI usage as a forgone conclusion is concerning. It's a tool, not a solution, and should not be implemented without due consideration."

AI Literacy

Some respondents suggested that libraries have a role to play in teaching AI literacy to students and other library users. They emphasized the importance of understanding how AI tools work and how to use them responsibly. One respondent stated: "I think we need to teach AI literacy to students." Another respondent echoed this sentiment, saying, "it is essential that we prepare our students to use generative AI tools responsibly."

The perceptions of generative AI among library professionals are multifaceted, encompassing both the potential benefits and challenges of these technologies. While there is recognition of the potential of AI to enhance library services, there is also a strong emphasis on the need for ethical considerations, education and training, critical evaluation, and responsible use of these tools. The implications for the library profession are significant, with concerns about job displacement, the need for new skills and roles, and the potential for changes in library practices and services. These findings highlight the need for ongoing dialogue and research on the use of generative AI in libraries.

While library employees acknowledge the potential advantages of AI in library services, they also express concerns regarding readiness, and emphasize the urgency to address ethical and privacy considerations. These findings indicate the need for support systems, training, and resources to address readiness gaps, alongside rigorous discussion, and guidelines to navigate ethical and privacy issues as libraries explore the possibilities of AI integration.

Discussions

The survey results cast light on the current state of artificial intelligence literacy, training needs, and perceptions within the academic library community. The findings reveal a landscape of recognition for the potential of AI technologies, yet, simultaneously, a lack of in-depth understanding and preparedness for their adoption.

A detailed examination of the data reveals that a considerable number of library professionals self-assess their understanding of AI as sitting around, or below, the middle. While this does suggest a basic level of familiarity with AI concepts and principles, it likely falls short of the proficiency required to navigate the rapidly evolving AI landscape confidently and competently. This gap in understanding holds implications for the library field as AI continues to infiltrate various sectors and increasingly permeates library services and operations.

Moreover, an analysis of the familiarity of library professionals with AI tools lends further credence to this call for more comprehensive AI education initiatives. An understanding of AI extends beyond mere theoretical comprehension—it necessitates hands-on familiarity with AI tools and the ability to use and apply them in practice. Direct interaction with AI technologies

provides an avenue for library professionals to bolster their practical understanding and thus equip them to incorporate these tools into their work more effectively.

However, formulating training initiatives that address these gaps is a multifaceted task. The AI usage in libraries is as diverse as the scope of AI applications themselves. From customer service chatbots, and text or data mining tools, to advanced technologies like neural networks and deep learning systems—each offers unique applications and therefore requires distinct expertise and understanding. Accordingly, training programs must be flexible and comprehensive, encompassing the full range of potential AI applications while also delving deep enough to provide a solid grasp of each specific tool's functionality and potential uses.

The study also sheds light on the varying degrees of understanding across different AI concepts. Participants generally exhibited a higher level of comprehension for simpler AI concepts. However, their understanding waned when it came to more complex concepts, often the bedrock of cutting-edge AI applications. This variation in comprehension underscores the need for a stratified approach to AI education. Such an approach could start with foundational concepts and gradually progress towards more advanced topics, providing a scaffold on which a deeper understanding of AI can be built.

Addressing the AI literacy gap in the library sector thus requires a concerted approach—one that offers comprehensive and layered educational strategies that bolster both theoretical understanding and practical familiarity with AI. The aim should not only be to impart knowledge, but to empower library professionals to confidently navigate the AI landscape, to adopt and adapt AI technologies in their work effectively and—crucially —responsibly. Through such training and professional development initiatives, libraries can harness the potential of AI, ensuring they continue to be at the forefront of technological advancements.

As the focus shifts to the professional use of AI tools in libraries, the data reveal that their adoption is not yet commonplace. The use of AI tools—such as text generation and research assistance—are most reported, reflecting the immediate utility these technologies offer to librarians. However, a significant proportion of participants do not frequently use AI tools, indicating barriers to adoption. These barriers could include a lack of understanding or familiarity with these tools, a perceived lack of necessity for their use, or limitations in resources necessary for implementation and maintenance. To overcome these barriers, the field may need more than just providing education and resources. Demonstrating the tangible benefits and efficiencies AI tools can bring to library work could play a pivotal role in their wider adoption.

The data show a strong enthusiasm among librarians for professional development related to AI. While introductory training modalities are popular, the findings reveal a demand for more advanced, hands-on training. This need aligns with the complexity and rapid evolution of AI technologies, which require a deeper understanding to be fully leveraged in library contexts.

Furthermore, the findings highlight the importance of ethical considerations and the potential benefits of fostering communities of practice in AI training. With the increasing integration of AI technology into library services, the issues related to AI ethics will likely become more complex. Proactively addressing these concerns through in-depth, focused training can help libraries continue to serve as ethical stewards of information. Communities of practice provide a platform for shared learning, mutual support, and the pooling of resources, equipping librarians to better navigate the intricacies of AI integration.

Importantly, the data show that the diversity in librarians' roles and contexts necessitates a tailored approach to AI training. Libraries differ in their services, target audiences, resources, and strategic goals, and so do their AI training needs. A one-size-fits-all approach to AI training may fall short. Future AI training could therefore take these variations into account, offering specialized tracks or modules catering to specific roles or institutional contexts.

Likewise, the perceptions surrounding the use of generative AI tools in libraries are intricate and multifaceted. While the potential benefits of AI are acknowledged and the importance of investing in its implementation recognized, there is also a pronounced lack of readiness to adopt these tools. This readiness gap could stem from various factors, such as a lack of technical skills, insufficient funding, or institutional resistance. Future research should delve into these possibilities to better understand and address this gap.

Library professionals express uncertainty about the short-term implications of AI for libraries. This could reflect the novelty of these technologies and a lack of clear use cases, or it could echo the experiences of early adopters. The findings also emphasize a heightened sense of urgency in addressing the ethical and privacy concerns associated with AI technologies. These concerns underline the necessity for ongoing dialogue, education, and policy development around AI use in libraries.

Conclusions and Future Directions

The results reveal an intricate landscape of AI understanding, usage, and perception in the library field. While the benefits of AI tools are acknowledged, a comprehensive understanding and readiness to implement these technologies remain less than ideal. This reality underlines the pressing need for an investment in targeted educational strategies and ongoing professional development initiatives.

Crucially, the wide variance in AI literacy, understanding of AI concepts, and hands-on familiarity with AI tools among library professionals points towards the need for a stratified and tailored approach to AI education. Future training programs must aim beyond just knowledge acquisition—they must equip library professionals with the capabilities to apply AI technologies in their roles effectively, ethically, and responsibly. Ethical and privacy concerns emerged as significant considerations in the adoption of AI technologies in libraries. Our findings reinforce the crucial role that libraries have historically played, and must continue to play, in advocating for ethical information practices.

The readiness gap in AI adoption uncovered by the study suggests a disconnect between understanding the potential of AI and the ability to harness it effectively. This invites a deeper investigation into potential barriers, including technical proficiency, resource allocation, and institutional culture, among others.

Framework and Key Competencies

This study presents a framework for defining AI literacy in academic libraries, encapsulating seven key competencies:

1. Understanding AI System Capabilities and Limitations: Recognizing what AI can and cannot do, knowing its strengths and weaknesses.
2. Identifying and Evaluating AI Use Cases: Discovering and assessing potential AI applications in library settings.

3. Utilizing AI Tools Effectively and Appropriately: Applying AI technologies in library operations.
4. Critically Assessing AI Quality, Biases, and Ethics: Evaluating AI for accuracy, fairness, and ethical considerations.
5. Engaging in Informed AI Discussions and Collaborations: Participating knowledgeably in conversations and cooperative efforts involving AI.
6. Recognizing Data Privacy and Security Issues: Understanding and addressing concerns related to data protection and security in AI systems.
7. Anticipating AI's Impacts on Library Stakeholders: Preparing for how AI will affect library users and staff.

This multidimensional definition of AI literacy for libraries provides a foundation for developing comprehensive training programs and curricula. For instance, the need to understand AI system capabilities and limitations highlighted in the definition indicates that introductory AI education should provide a solid grounding in how common AI technologies like machine learning work, where they excel, and their constraints. This conceptual comprehension equips librarians to set realistic expectations when evaluating or implementing AI.

The definition also accentuates that gaining practical skills to use AI tools appropriately should be a core training component. Hands-on learning focused on identifying appropriate applications, utilizing AI technologies effectively, and critically evaluating outputs can empower librarians to harness AI purposefully.

Moreover, emphasizing critical perspectives and ethical considerations reflects that AI training for librarians should move beyond technical proficiency. Incorporating modules examining biases, privacy implications, misinformation risks, and societal impacts is key for fostering responsible AI integration.

Likewise, the collaborative dimension of the definition demonstrates that cultivating soft skills for productive AI discussions and teamwork should be part of the curriculum. AI literacy has an important social element that training programs need to nurture.

Overall, this definition provides a skills framework that can inform multipronged, context-sensitive AI training tailored to librarians' diverse needs. It constitutes an actionable guide for developing AI curricula and professional development that advance both technical and social aspects of AI literacy.

Future Research

Based on the findings and limitations of the current study, the following are specific recommendations for future research:

1. Longitudinal Studies: This study provides a snapshot of AI literacy among academic library employees at a specific point in time. Future research could conduct longitudinal studies to track changes in AI literacy over time, which would provide insights into the effectiveness of interventions and the evolution of AI literacy in the library profession.
2. Comparative Studies: This study focused on academic library employees. Future research could conduct comparative studies to examine AI literacy among different types of library employees (e.g., public library employees, school library employees), or among library employees in different countries. Such studies could provide insights into the factors that influence AI literacy and the strategies that are effective in different contexts.

3. Intervention Studies: This study identified the need for education and training on AI. Future research could design and evaluate interventions aimed at enhancing AI literacy among library employees. Such studies could provide evidence-based recommendations for the development of training programs and resources.
4. Ethical Considerations: This study highlighted ethical concerns about the use of AI in libraries. Future research could delve deeper into these ethical issues, examining the perspectives of different stakeholders (e.g., library users, library administrators) and exploring strategies for addressing these concerns.
5. Impact of AI on Library Services: This study explored library employees' perceptions of the potential impact of AI on library services. Future research could examine the actual impact of AI on library services, assessing the effectiveness of AI in enhancing user experience, streamlining operations, and supporting learning.

By pursuing these avenues for future research, we can continue to deepen our understanding of AI literacy in the library profession, inform strategies for enhancing AI literacy, and promote the effective and ethical use of AI in libraries.

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Appendix A. Recruitment—Listservs

- American Indian Library Association (AILA)
- American Libraries Association (ALA) Members
- Asian Pacific American Librarians Association (APALA)
- Association of College and Research Libraries (ACRL)
  - Members
  - University Libraries Section
  - Distance and Online Learning Section
  - Instruction Section
- Association of Research Libraries (ARL) Directors Listserv
- Black Caucus American Library Association (BCALA)
- Chinese American Librarians Association (CALA)
- Greater Western Library Alliance (GWLA) Directors' listserv
- Minnesota Institute Graduates (MIECL)
- New Mexico Consortium of Academic Libraries (NMCAL) Directors' Listserv
- REFORMA

Appendix B. AI and Academic Librarianship

Survey Flow

Standard: Block 1 (1 Question)
Block: Knowledge and Familiarity (12 Questions)
Standard: Perceived Competence and Gaps in AI Literacy (5 Questions)
Standard: Training on Generative AI for Librarians (6 Questions)
Standard: Desired Use of Generative AI in Libraries (7 Questions)
Standard: Demographic (10 Questions)
Standard: End of Survey (1 Question)
Page Break
Start of Block: Block 1

Q1.1 Introduction

Dr. Leo Lo from the University of New Mexico is conducting a research project. You are invited to participate in a research study aiming to assess AI literacy among academic library employees, identify gaps in AI literacy that require further professional development and training, and understand the differences in AI literacy levels across different roles and demographic factors. Before you begin the survey, please read this Informed Consent Form carefully. Your participation in this study is voluntary, and you may choose to withdraw at any time without any consequences.

Artificial Intelligence (AI) refers to the development of computer systems and software that can perform tasks that would typically require human intelligence. These tasks may include problem-solving, learning, understanding natural language, recognizing patterns, perception, and decision-making

You are being asked to participate based of the following inclusion and exclusion criteria:

Inclusion Criteria:

- Currently employed as an employee in a college or university library setting.
- Willing and able to provide informed consent for participation in the study.

The Exclusion Criteria are as Follows:

- Librarian employees working in non-academic library settings (e.g., public libraries, school libraries, special libraries).
- Individuals who are not currently library employees or who are employed in non-library roles within academic institutions.

Purpose of the Study

The purpose of this study is to evaluate the current AI literacy levels of academic librarians and identify areas where further training and development may be needed. The findings will help inform the design of targeted professional development programs and contribute to the understanding of AI literacy in the library profession.

Procedures

If you agree to participate in this study, you will be asked to complete an online survey that will take approximately 15–20 minutes to complete. The survey includes questions about your AI knowledge, familiarity with AI tools and applications, perceived competence in using AI, and your opinions on training needs.

Potential Risks and Discomforts

There are no known risks or discomforts associated with participating in this study. Some questions might cause minor discomfort due to self-reflection, but you are free to skip any questions you prefer not to answer. Benefits While there are no direct benefits to you for participating in this study, your responses will help contribute to a better understanding of AI literacy among academic librarians and inform the development of relevant professional training programs.

Confidentiality

Your responses will be anonymous, and no personally identifiable information will be collected. Data will be stored securely on password-protected devices or encrypted cloud storage services, with access limited to the research team. The results of this study will be reported in aggregate form, and no individual responses will be identifiable. Your information collected for this project will NOT be used or shared for future research, even if we remove the identifiable information like your name.

Voluntary Participation and Withdrawal

Your participation in this study is voluntary, and you may choose to withdraw at any time without any consequences. Please note that if you decide to withdraw from the study, the data that has already been collected from you will be kept and used. This is necessary to maintain the integrity of the study and ensure that the data collected is reliable and valid.

Contact Information

If you have any questions or concerns about this study, please contact the principal investigator, Leo Lo, at leolo@unm.edu. If you have questions regarding your rights as a research participant, or about what you should do in case of any harm to you, or if you want to obtain information or offer input, please contact the UNM Office of the IRB (OIRB) at (505) 277-2644 or irb.unm.edu

Consent

By clicking "I agree" below, you acknowledge that you have read and understood the information provided above, had an opportunity to ask questions, and voluntarily agree to participate.
I agree (1)
I do not agree (2)
Skip To: End of Survey If Q1.1 = I do not agree
Skip To: End of Survey If Q1.1 = I do not agree
End of Block: Block 1
Start of Block: Knowledge and Familiarity

Q2.1 Artificial Intelligence

(AI) refers to the development of computer systems and software that can perform tasks that would typically require human intelligence. These tasks may include problem-solving, learning, understanding natural language, recognizing patterns, perception, and decision-making

Please rate your overall understanding of **AI concepts and principles** (using a Likert scale, e.g., 1 = very low, 5 = very high)

1 (1)
2 (2)
3 (3)
4 (4)
5 (5)

Q2.2 On a scale of 1 to 5, how would you rate your **understanding of generative AI**? (1 = not at all knowledgeable, 5 = extremely knowledgeable)

1 (1)
2 (2)
3 (3)
4 (4)
5 (5)

Q2.3 Rate your familiarity with **generative AI tools** (e.g., ChatGPT, DALL-E, etc.) (using a Likert scale, e.g., 1 = not familiar, 5 = very familiar)

1 (1)
2 (2)
3 (3)
4 (4)
5 (5)

Page Break

Q2.4 Which of the following AI technologies or applications have you encountered or used in your role as an academic librarian? (Select all that apply)

□ Chatbots (1)
□ Text or data mining tools (2)
□ Recommender systems (3)
□ Image or object recognition (4)
□ Automated content summarization (5)
□ Sentiment analysis (6)
□ Speech recognition or synthesis (7)
□ Other(please specify) (8) _____

Page Break

Q2.5 For each of the following AI concepts, indicate your understanding of the concept by selecting the appropriate response.

	I don't know what it is (1)	I know what it is but can't explain it (2)	I can explain it at a basic level (3)	I can explain it in detail (4)
Machine Learning (1)				
Natural Language Processing (NLP) (2)				
Neural Network (3)				
Deep Learning (4)				
Generative Adversarial Networks (GANs) (5)				

Page Break

Q2.6 Which of the following generative AI tools have you used at least a few times? (Select all that apply)

- □ Text generation (e.g., ChatGPT) (1)
- □ Image generation (e.g., DALL-E, Mid Journey) (2)
- □ Music generation (e.g., OpenAI's MuseNet) (3)
- □ Video generation (e.g. Synthesia) (4)
- □ Presentation generation (e.g. Tome) (5)
- □ Voice generation (e.g. Murf) (6)
- □ Data synthesis for research purposes (7)
- □ Other (please specify) (8) _____

Page Break

Display This Question:
If If Which of the following generative AI tools have you used at least a few times? (Select all that a… q://QID5/SelectedChoicesCount Is Greater Than 0

Q2.7 Have you ever paid for a premium version of at least one of the AI tools (for example, ChatGPT Plus; or Mid Journey subscription plan, etc.)

Yes (1)
No (2)

Page Break

Q2.8 How frequently do you use generative AI tools in your professional work? (Select one)

Daily (1)
Several times per week (2)
Weekly (3)
A few times per month (4)
Monthly (5)
Less than once a month (6)
Never (7)

Page Break

Q2.9 For what purposes do you use generative AI tools in your professional work? (Select all that apply)

□ Content creation (e.g., blog posts, social media updates) (1)
□ Research assistance (e.g., literature reviews, data synthesis) (2)
□ Data analysis or visualization (3)
□ Cataloging or metadata generation (4)
□ User support or assistance (e.g., chatbots, virtual reference) (5)
□ Other (please specify) (6) _____

Page Break

Q2.10 On a scale of 1 to 5, how would you rate **how reliable** generative AI tools have been in fulfilling your professional needs? (1 = not at all reliable, 5 = extremely reliable)
Please explain your choice.

1 (1) _____
2 (2) _____
3 (3) _____
4 (4) _____
5 (5) _____

Page Break

Q2.11 What level of concern do you have for the following potential challenges in implementing generative AI technologies in academic libraries? (Rate each challenge on a scale of 1 to 5, where 1 = not at all concerned and 5 = extremely concerned)

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)
Obtaining adequate funding and resources for AI implementation (1)					
Ethical concerns, such as bias and fairness (2)					
Intellectual property and copyright issues (3)					

Staff resistance or lack of buy-in (4)					
Quality and accuracy of generated content (5)					
Ensuring accessibility and inclusivity of AI tools for all users (6)					
Potential job displacement due to automation (7)					
Data privacy and security (8)					
Technical expertise and resource requirements (9)					
Other (please specify) (10)					

Page Break

Q2.12 How frequently do you use generative AI tools in your **personal life**? (Select one)

Daily (1)
Several times per week (2)
Weekly (3)
A few times per month (4)
Monthly (5)
Less than once a month (6)
Never (7)

End of Block: Knowledge and Familiarity

Start of Block: Perceived Competence and Gaps in AI Literacy

Q3.1 On a scale of 1 to 5, how confident are you in your ability to **evaluate the ethical implications of using AI** in your library? (1 = not at all confident, 5 = extremely confident)

1 (1)
2 (2)
3 (3)
4 (4)
5 (5)

Q3.2 On a scale of 1 to 5, how confident are you in your ability to **participate in discussions about AI integration** within your library? (1 = not at all confident, 5 = extremely confident)

1 (1)
2 (2)
3 (3)
4 (4)
5 (5)

Page Break

Q3.3 On a scale of 1 to 5, how confident are you in your ability to **collaborate with colleagues on AI-related projects** in your library? (1 = not at all confident, 5 = extremely confident)

1 (1)
2 (2)
3 (3)
4 (4)
5 (5)

Q3.4 On a scale of 1 to 5, how confident are you in **your ability to troubleshoot issues related to AI tools and applications** used in your library? (1 = not at all confident, 5 = extremely confident)

1 (1)
2 (2)
3 (3)
4 (4)
5 (5)

Page Break

Q3.5 On a scale of 1 to 5, how confident are you in **your ability to provide guidance to library users about AI resources and tools**? (1 = not at all confident, 5 = extremely confident)

1 (1)
2 (2)
3 (3)
4 (4)
5 (5)

Page Break

End of Block: Perceived Competence and Gaps in AI Literacy
Start of Block: Training on Generative AI for Librarians

Q4.1 Have you ever participated in any training or professional development programs focused on generative AI?

Yes (1)
No (2)

Display This Question:
If Q4.1 = Yes

Q4.2 Please briefly describe the nature and content of the training or professional development program(s) you attended.

_____
_____
_____
_____
_____

Page Break

Q4.3 To what extent do you agree or disagree with the following statement: "**I feel adequately prepared to use generative AI tools in my professional work as a librarian**." (1 = strongly disagree, 5 = strongly agree)

1 (1)
2 (2)
3 (3)
4 (4)
5 (5)

Page Break

Q4.4 In which of the following areas do you feel the need for additional training or professional development related to AI? (Select all that apply)

□ Basic understanding of AI concepts and terminology (1)
□ Advanced understanding of AI concepts and techniques (2)
□ Familiarity with AI tools and applications in libraries (3)
□ Ethical considerations of AI in libraries (4)
□ Collaborating on AI-related projects (5)
□ Addressing privacy and data security concerns related to generative AI (6)
□ Troubleshooting AI tools and applications (7)
□ Providing guidance to library users about AI resources (8)
□ Other (please specify) (9) _____

Page Break

Q4.5 What types of professional development opportunities related to AI would be most beneficial to you? (Select all that apply)

□ Online courses or webinars (1)
□ In-person workshops or seminars (2)
□ Conference presentations or panel discussions (3)
□ Self-paced learning modules (4)
□ Mentoring or coaching (5)
□ Peer learning groups or communities of practice (6)
□ Other (please specify) (7) _____

Page Break

Q4.6 How important do you think it is for academic librarians to **receive training on generative AI tools and applications in the next 12 months**? (1 = not at all important, 5 = extremely important)

1 (1)
2 (2)
3 (3)
4 (4)
5 (5)

End of Block: Training on Generative AI for Librarians
Start of Block: Desired Use of Generative AI in Libraries

Q5.1 To what extent do you agree or disagree with the following statement: "**I believe generative AI tools have the potential to benefit library services and operations**." (1 = strongly disagree, 5 = strongly agree)

1 (1)
2 (2)
3 (3)
4 (4)
5 (5)

Page Break

Q5.2 How important do you think it is for your library to **invest in the exploration and implementation of generative AI tools**? (1 = not at all important, 5 = extremely important)

1 (1)
2 (2)
3 (3)
4 (4)
5 (5)

Page Break

Q5.3 If you have any additional thoughts or suggestions on how your library could or should use (or not use) generative AI tools, please share them here.

_____
_____
_____
_____
_____

Page Break

Q5.4 How soon do you think your library should prioritize implementing generative AI tools and applications? (Select one)

Immediately (1)
Within the next 6 months (2)
Within the next year (3)
Within the next 2–3 years (4)
More than 3 years from now (5)
Not a priority at all (6)

Page Break

Q5.5 In your opinion, **how prepared is your library** to adopt generative AI tools and applications in the next 12 months? (1 = not at all prepared, 5 = extremely prepared)

1 (1)
2 (2)
3 (3)
4 (4)
5 (5)

Page Break

Q5.6 To what extent do you think generative AI tools and applications **will have a significant impact on academic libraries within the next 12 months**? (1 = no impact, 5 = major impact)

1 (1)
2 (2)
3 (3)
4 (4)
5 (5)

Page Break

Q5.7 How urgent do you feel it is for your library to **address the potential ethical and privacy concerns** related to the use of generative AI tools and applications? (1 = not at all urgent, 5 = extremely urgent)

1 (1)
2 (2)
3 (3)
4 (4)
5 (5)

End of Block: Desired Use of Generative AI in Libraries

Start of Block: Demographic

Q6.1 In which type of academic institution is your library located? (Select one)

Community college (1)
College or university (primarily undergraduate) (2)
College or university (graduate and undergraduate) (3)
Research university (4)
Specialized or professional school (e.g., law, medical) (5)
Other (please specify) (6) _____

Q6.2 Is your library an ARL member library?

Yes (1)
No (2)

Page Break

Q6.3 Approximately how many students are enrolled at your institution? (Select one)
- Fewer than 1,000 (1)
- 1,000–4,999 (2)
- 5,000–9,999 (3)
- 10,000–19,999 (4)
- 20,000–29,999 (5)
- 30,000 or more (6)

Page Break

Q6.4 What is your current role or position in your organization? (Select one)
- Senior management (e.g. Director, Dean, associate dean/director) (1)
- Middle management (e.g. department head, supervisor, coordinator) (2)
- Specialist or professional (e.g., librarian, analyst, consultant) (3)
- Support staff or administrative (4)
- Other (please specify) (5) _____

Page Break

Q6.5 In which area of academic librarianship do you primarily work? (Select one)
- Administration or management (1)
- Reference and research services (2)
- Technical services (e.g., acquisitions, cataloging, metadata) (3)
- Collection development and management (4)
- Library instruction and information literacy (5)
- Electronic resources and digital services (6)
- Systems and IT services (7)
- Archives and special collections (8)
- Outreach, marketing, and communications (9)
- Other (please specify) (10) _____

Page Break

Q6.6 How many years of experience do you have as a library employee?
- Less than 1 year (1)
- 1–5 years (2)
- 6–10 years (3)
- 11–15 years (4)
- 16–20 years (5)
- More than 20 years (6)

Page Break

Q6.7 What is the highest level of education you have completed? (Select one)

High school diploma or equivalent (1)
Some college or associate degree (2)
Bachelor's degree (3)
Master's degree in library and information science (e.g., MLIS, MSLS) (4)
Master's degree in another field (5)
Doctoral degree (e.g., PhD, EdD) (6)
Other (please specify) (7) _____

Page Break

Q6.8 What is your gender? (Select one)

Male (1)
Female (2)
Non-binary / third gender (3)
Prefer not to say (4)

Q6.9 What is your age range?

Under 25 (1)
25–34 (2)
35–44 (6)
45–54 (3)
55–64 (4)
65 and above (5)

Page Break

Q6.10 How do you describe your ethnicity? (Select one or more)

□ American Indian or Alaskan Native (1)
□ Asian (2)
□ Black or African American (3)
□ Hawaiian or Other Pacific Islander (4)
□ Hispanic or Latino (5)
□ White (6)
□ Prefer not to say (7)
□ Other (8) _____

End of Block: Demographic
Start of Block: End of Survey

Q7.1 Thank you for participating in our survey!

Your input is incredibly valuable to us and will contribute to our understanding of AI literacy among academic librarians. We appreciate the time and effort you have taken to share your experiences and opinions. The information gathered will help inform future professional development opportunities and address potential gaps in AI knowledge and skills.

We will carefully analyze the responses and share the findings with the academic library community. If you have any further comments or questions about the survey, please do not hesitate to contact us at leolo@unm.edu.

Once again, thank you for your contribution to this important research. Your insights will help shape the future of AI in academic libraries.

Best regards,

Leo S. Lo
University of New Mexico
End of Block: End of Survey

Use and Importance of Library Resources to Support Faculty Research and Productivity

Jung Mi Scoulas and Sandra L. De Groote

This article explores the relationships between faculty library use, their perceptions of the importance of library resources, and its impact on their research productivity at a public research university. The authors used a self-reported faculty survey and publication records from a faculty activity reporting system to answer this question. Findings showed that faculty's perceptions of the library resource for their research had no relationships with faculty research productivity, whereas a positive correlation was found between the frequency of use of online journals and databases, and faculty research productivity. Qualitative findings revealed that faculty viewed the library as providing and purchasing the needed library resources, and that they valued the librarians and library services as essential to their teaching and research.

Introduction

Research is an integral part of academic research institutions, and university libraries play a critical role in supporting faculty research. Maintaining key services and resources are imperative to supporting research, which can be challenging when libraries are faced with decreasing budgets and competing demands to fund databases, journal subscriptions, and other resources. Due to this environment, it is imperative for academic librarians both to identify faculty's needs and to demonstrate the library's value and impact on faculty research productivity.

The purpose of this study is to explore the relationship between faculty research productivity and faculty perceptions, and use, of the academic library in supporting their academic research. This paper also examines disciplinary differences between faculty perceptions and use of the academic library's resources and services. Faculty at a research-intensive doctoral granting institution were surveyed about their perceptions on the importance of library resources, their perceptions of the library's impact on their research, and their use of library resources. Faculty responses were examined along with faculty demographic information, including their publication productivity (books, book chapters, and conference proceedings, and journals) in recent years to explore possible relationships. By analyzing both quantitative and qualitative data this paper will provide deeper understanding of faculty's perceptions of the library, their library use, and the library's impact on their research productivity.

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Literature Review

Past studies have explored relationships between research productivity and academic libraries. As part the Association of Research Libraries (ARL) Research Library Impact Framework, a recent study—conducted at the same large public research university as the current study—explored the relationship between faculty productivity and their use of the library's collection in faculty publications.[1] In exploring the number of publications produced by individual faculty in relation to their use of references in their publications, it was observed that faculty who were less productive (defined as five or fewer publications in a 15 year period) tended to use the least number of references in the publications. Faculty who were very prolific (defined as 71 or more publication in a 15 year period) used many more references in their publications compared to less productive faculty; however, they used slightly fewer references in their publications compared to faculty who were productive (defined as six to 70 publications in a 15 year period). In other words, faculty that were highly productive but not very prolific were most likely to include the greatest number of references in their publications. As this study focused primarily on journal publications and citations in journal articles, it did not explore humanities publication patterns. However, there were disciplinary differences noted in the included disciplines when average publications, as well as average references in the publications, were examined from 2015 to 2019.[2] Faculty in Engineering were found to be the most productive, publishing on average 18.61 articles per faculty member over a five-year period (2015 to 2019). Faculty in the health sciences were the next most productive group, depending on the specific discipline: Applied Health Sciences, 20.93; Medicine, 14.57; Dentistry, 12.57; Nursing, 15.85; Pharmacy, 19.58; Public Health, 14.88 (average per faculty member/five years). Those in the other disciplines typically averaged fewer publications per faculty from 2015 to 2019: social sciences (e.g. psychology, sociology, etc.) 6.97; social work, 6.88; business administration, 4.30; and education, 5.30. Differences were also observed in the average number of references included in publications from 2015 to 2019. Those in the social sciences generally included more references per publication: social science, 57.49 average references per publication; social work, 48.23, business administration, 61.96; education 52.12. The use of references in health sciences was slightly lower on average than in the social sciences per publication, though this varied depending on the specific discipline: applied health sciences, 42.90 average references per publication; medicine, 41.59; dentistry, 41.36; nursing, 47.36; pharmacy, 46.01; public health, 39.90. Engineering, on average, included 43.38 references per article.

Michael Rawls utilized ARL library statistics expenditure variables and faculty publication data from a five-year period (2005–2009).[3] Research productivity was positively correlated with library investment, particularly with electronic library resource expenditures. A 2020 study also utilized ARL library reported statistics (e.g. collection expenditures, full-text article requests, and database searches) in conjunction with faculty productivity, as measured by published research articles.[4] A positive correlation was reported between number of publications and library expenditures, collection size, and full-text article requests.

Using surveys, several studies have examined the behavior of researchers to better understand how they seek, read, and use scholarly articles. A study conducted in 2002 captured an early view of the use, and satisfaction of, University of Idaho faculty's with technology to capture, process, store, and communicate information using electronic means.[5] In this study, 71 percent of faculty reported using electronic journals and books for research purposes; however, only 65 percent reported being satisfied with the electronic resources offered by the

library. While faculty found that electronic resources saved them time to search and "sped up" the research process, there were also concerns. For example, some faculty were not aware of electronic resources, not everyone's needs were met, and a poorly designed website made accesses complicated. As a result of a longitudinal survey, which collected data over a 30-year period, Carol Tenopir, Donald W. King, Sheri Edwards and Lei Wu concluded that faculty have increased their reading compared to the number of articles they had read in the past, and that faculty were relying more on the library to provide access to articles compared to the past where they had their own personal subscriptions to journals.[6] They also found that faculty had diversified the ways in which they identified articles to read including internet searching, online journal table of contents browsing, abstracting and indexing (A&I) databases, and full-text database searching as a result of online journals. A study conducted by Carol Tenopir, Donald W. King, Lisa Christian, and Rachel Volentine found online journals were the primary source of articles read by faculty. The articles were primarily accessed through library or other institutional subscriptions.[7]

In another study, faculty members from five U.S., and two Australian, Universities were surveyed about their scholarly article reading habits.[8] Faculty members whose positions were more focused on research reported reading more articles for research purposes (62 percent) compared to the teaching-oriented faculty (49 percent). The research-oriented faculty members also reported more of their reading materials were provided by the library (58 percent), in contrast to the more teaching-oriented faculty (38 percent). A positive relationship was also found between productivity, as measured by publications, and the average number of articles read per month. Faculty who read more articles also published more. This study also found that faculty members in the health science, engineering, and sciences read more scholarly journals articles on average than faculty in the social sciences and humanities.

A more recent study by Carol Tenopir, Lisa Christian, and Jordan Kaufman explored how researchers discovered, read, and used scholarly literature for their work.[9] The study explored how many articles faculty researchers read, how they go about accessing and using the literature, how important other types of information resources are, and demographic differences. Articles from journals were rated the most important source for scholarly information, followed by books, and conference proceedings. Overall, researchers reported reading about 20 articles a month, the majority (70 percent) being read with care. More than half of the articles were read (59 percent) specifically for research, but were also read to support writing proposals, reports, and articles, which—when counted as research related activities—raised the percentage to 67 percent. Most articles were found from browsing (34 percent), or searching (29 percent); the next most common method being finding a source in the citations of another publication (18 percent). The authors conclude that, although many articles read are still in online journals from the library or other institutional subscriptions, researchers are finding other ways to discover and access articles.

Tenopir, Christian, and Kaufman also explored disciplinary differences between the researchers they examined.[10] Almost all disciplines—life and physical sciences, math, computer science, engineering, social sciences, humanities—ranked scholarly journals as "absolutely essential," or "very important" for their work. The exception was medical sciences, which ranked journals between "very important" and "important." Only those in the sciences, social sciences, and humanities ranked scholarly books or book chapters as "absolutely essential" or "very important." Tenopir et al. also explored the number of articles read each month by

discipline. They found that, on average, those in the sciences read 24.10 articles a month, medical sciences read 15.07 articles a month, computer science read 16.83 articles a month, engineering read 16.48 articles a month, social sciences read 26.45 a month, and humanities and fine arts read 25.63 articles a month.

While the literature above confirmed that faculty's library use was associated with their research productivity, it is limited in its exploration of how faculty *perceived* the importance of the library resources and the library's impact on their research productivity. In addition, not only is there is a scarcity of current research, but the earlier canonical literature exploring disciplinary differences in information seeking behavior related to the academic library may no longer be applicable, as databases and access to online journals have continued to evolve, which likely impacts user behavior. This paper aims to analyze both quantitative and qualitative data from an online faculty survey that was conducted earlier this year at a public research university to deepen an understanding of faculty's perceptions of the library, their library use, and its impact on their research productivity. It also explores disciplinary differences in faculty's perceptions and use of the academic library.

Methods

Institutional Setting

This study took place at the University of Illinois Chicago (UIC), a large urban research university with 16 colleges: medicine, nursing, applied health sciences, dentistry, pharmacy, public health, social work, liberal arts and sciences, engineering, education, architecture, design and the arts, urban planning and public affairs, business administration, graduate college, honors college, and law. The University is classified as an R1 research university by the Carnegie Classification of Institutions of Higher Education, with approximately 4,500 faculty serving more than 33,000 undergraduate and graduate students. As of Spring 2022, among 4,500 faculty, about 77 percent of them are assistant, associate and full professor, and the rest are instructors, lecturers, and postdocs. About half of the faculty are from College of Medicine in Chicago, Liberal arts and sciences, and pharmacy. On average, faculty have worked at UIC for about ten years.

Survey Instrument

The Assessment Advisory Committee developed an online survey to examine faculty perceptions of the importance of library resources, their use of library resources, and their perception of the library's impact on their research (Appendix A). Among a total of 12 questions, six questions were based on previous survey questions distributed to faculty in 2017 and 2019, and a set of six new questions addressed topics of current interest including frequency of library use (range of library resources), potential workshop topic to gauge faculty interest, and perceptions of the library's impact on their research and scholarship success. The survey questions were pilot tested by faculty in various departments to check the clarity of the questions and to ensure whether the goals of the survey match with the survey questions. Given this paper's aim of examining the relationships between faculty's perceptions on library resources, their library use, and its impact on their research productivity (measured by the number of publications in 2021 (one year) and 2017–2021 (five years), the following survey questions were selected for this paper.

- Importance of library resources for research or administrative responsibility with a nine-point Likert Scale (from one, "not at all" to nine, "extremely important," with zero as

"not applicable") on the following list: Print books, eBooks, Online journals, Databases to find literature, Special Collections, Interlibrary Loan (ILL), Digital Images, Assistance from a subject specialist librarian, and Comprehensive literature search support.
- Frequency of library resource and service use for research with a four-point Likert Scale (0 = Never, 1 = Once a year, 2 = Once a month, 3 = Weekly or More often) on the following list: Print books, eBooks, Online Journals, Databases to find literature, Special Collections, Subject and Course guides, Interlibrary loan (ILL), Assistance from a subject specialist librarian, and Comprehensive literature support.
- Faculty's perceptions of library impact on their teaching and research (Open-ended question).
- Faculty's demographic information from the University's Office of Institutional Research and their publication records from the institution's faculty activity reporting tool were included in this paper as follows:Faculty demographics: Faculty status and their Full Time Equivalent (FTE) percentage of department.
- Faculty research productivity: This was measured by the numbers of publications including books, book chapters, conference proceedings, and journal articles published in 2021 (one year) and 2017–2021 (five years). Considering the nature of the publication, the authors carefully selected the publication time range that corresponds to the survey. While the survey was being performed in February 2022, faculty were invited to respond to questions on their library use and perceptions in the past year (as stated in the survey instruction). For these reasons, the research productivity used two time ranges: one year and five years.

Data Collection

Prior to distributing the survey, email addresses and demographic information was obtained from the institutions Office of Institutional Research (OIR). Faculty demographic information was uploaded as a "panel" in Qualtrics, along with their publication output. Publication output—when the information was available—was obtained from the institution's faculty activity reporting tool,[11] a faculty scholarly and professional activity reporting system that automatically captures faculty scholarly productivity when indexed in database such as PubMed, Web of Science, Scopus, and Dimensions authored by each faculty in 2021, and from 2017 to 2021. According to the University's faculty activity reporting tool, 87 percent of faculty had publication information. Faculty can assess research impact using citation metrics automatically captured by the reporting tool, and other scholarship and professional activities can be manually entered. In the past five years, the average publication per faculty member—including books, book chapters, conference proceeding, and journal articles entered in the system—was 11. The survey was distributed to about 4,500 university faculty and post-docs working at UIC February 21, 2022, closing March 25, 2022. Three reminder emails were sent to faculty who did not complete the survey in Qualtrics. A total of 557 faculty completed the survey (12 percent response rate).

Survey Incentives

All survey respondents were invited to enter a drawing to win one of six items valued at $100-$200, such as smart watch and wireless headphone. Contact information was destroyed after the incentives were distributed.

Data Analysis

Descriptive statistics and inferential statistics (correlations and a two-way between group analysis of variance (ANOVA) were run using SPSS 28. Correlations were employed to explore if there were any relationships between: 1. faculty's perceptions of the importance of library resources and support for their research and their research productivity; and 2. their frequency of library use and research productivity. A Pearson correlation was used to test faculty perceptions of the importance of library support for their research using a ratings scale from one (not at all) to nine (extremely important). This nine-point scale is treated as interval variable, also known as number rating scales, because it is commonly used by researchers in education field by treating responses as interval-level measures rather than just ordinal data and allows researchers to utilize statistical analysis such as Pearson correlations or ANOVA.[12] A Spearman correlation was employed to test the frequency library use, using a scale from zero (never) to three (Weekly or more often), which is considered an ordinal variable.

To examine the impact of disciplines and faculty's library use on their publications, a two-way ANOVA was conducted. Prior to conducting a two-way ANOVA, assumptions were tested including homogeneity of variances assumption using Levene's Test of Equality of Error Variances (to test whether the variance of dependent variable across the groups are equal). The results of homogeneity of variance assumption were violated (significant level is greater than .05). Therefore, the authors used more stringent significant level at the p value of less than <.01 rather than .05 when evaluating and reporting the results of the two-way ANOVA.[13]

Disciplines were grouped into five categories based on the department where the faculty member had their highest FTE: arts and humanities, social sciences, physical sciences, life sciences, and health sciences. To create groups for library use, faculty' frequency of library use (zero = never, to three = weekly or more often) were used to sum all nine library resources and services, from print book to comprehensive literature search support; the range of minimum and maximum for frequency of use were from one to 27. Using quartiles, the total number of library uses was used to group faculty members into three categories: less frequent (faculty who used library resources from one-ten), moderate (faculty who used library resources from 11–15), and high (faculty who used library resources from 16 or more).

Another goal of this paper is to explore how faculty perceived library impact for their teaching and research by examining their feedback. The open-ended responses were imported into Excel and analyzed by the Assessment Coordinator using thematic analysis, which is a popular qualitative analysis technique to analyze themes in a dataset and identify meaning. Initial codes and themes were reviewed by the Assessment Advisory Committee members and condensed after repeating this process until reaching agreement.

Below are the research questions for this study:

- What are the relationships between faculty's perceptions on the importance of library resource, frequency of library use, and their research productivity?
- Are there differences in faculty's library use and research productivity between disciplines?
- How do faculty perceive the importance of library resources and services as it relates to their teaching and research?

Results

Publications by Faculty Status

Faculty publications for a one-year period (2021), and the average for a five-year period (2017–2021) respectively, were analyzed by the particular faculty's status: assistant, associate and full professor, and others—which included instructors, lecturers, postdoctoral and visiting faculty. As shown in table 1, regardless of the type of publications, full professors published the most, followed by associate professor and assistant professors in both a one-year period and an average of a five-year period. Regarding the types of the publications, journals recorded the highest type of publication (*M*=1.93, *SD*=3.78 in a one- year period, *M*=1.73, *SD*=3.29, an average of a five-year period).

TABLE 1
Mean and Standard Deviation for Faculty Publication: 2021 and Average of a Five-Year Period (2017–2021)

	Book	Book Chapter	Conference Proceeding	Journal	Total
1Y (2021)	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*
Assistant Professor (*n*=173)	0.01 (0.11)	0.06 (0.29)	0.16 (0.75)	1.77 (3.20)	2.01 (3.51)
Associate Professor (*n*=133)	0.07 (0.28)	0.29 (0.80)	0.11 (0.42)	1.77 (2.50)	2.25 (2.74)
Professor (*n*=125)	0.09 (0.36)	0.42 (1.65)	0.18 (0.65)	3.94 (5.87)	4.63 (6.31)
Other (*n*=115)	0.00 (0.00)	0.02 (0.13)	0.01 (0.09)	0.17 (0.60)	0.20 (0.68)
Total (*n*=546)	**0.04 (0.23)**	**0.19 (0.91)**	**0.12 (0.57)**	**1.93 (3.78)**	**2.29 (4.13)**
Average_ 5Y (2017–2021)					
Assistant Professor (*n*=173)	0.01 (0.04)	0.08 (0.19)	0.17 (0.57)	1.37 (2.87)	1.63 (3.18)
Associate Professor (*n*=133)	0.04 (0.12)	0.29 (0.63)	0.33 (0.78)	1.69 (2.23)	2.35 (2.83)
Professor (*n*=125)	0.06 (0.15)	0.34 (0.56)	0.65 (1.57)	3.74 (4.90)	4.78 (5.96)
Other (*n*=115)	0.00 (0.04)	0.02 (0.07)	0.01 (0.06)	0.13 (0.44)	0.16 (0.49)
Total (*n*=546)	**0.03 (0.10)**	**0.18 (0.44)**	**0.29 (0.93)**	**1.73 (3.29)**	**2.22 (3.97)**

Relationships between Faculty's Perceptions on the Importance of Library Resource and Their Research Productivity

Faculty were asked to rate the importance of library resources on a scale from one to nine, with nine being "extremely important" and one being "not important at all." The overall perception ratings based on 2022 survey results were as follows: online journals (*M*= 8.73); scholarly databases (*M*= 8.44); interlibrary loan (*M*= 7.51); eBooks (*M*= 7.23); subject special assistance from a librarian (*M*= 6.15); print books (*M*= 5.65); and special collections (*M*= 4.47).[14] Faculty's perceptions of the importance of library resources for research was further analyzed to examine whether their perceptions of library resources were correlated with their research productivity—measured by number of publications including books, book chapters, conference proceeding, and journals articles—over one year (2021) and over five years (from 2017 to 2021). The results from Pearson correlations indicated that based on importance, only one library resource (eBooks (r [419] = -.102, $p < .05$) in 2021 was correlated with their research productivity, whereas Special Collections in 2017 and 2021 was correlated with their research productivity (r [389] = -.110, $p < .05$). However, the directions of the correlations were negative,

meaning that the higher faculty's research productivity, the less their perceptions of eBooks in 2021, the higher faculty's research productivity, the less their perceptions of Special Collections in 2017 and 2021 (see table 2).

TABLE 2
Relationships Between Faculty's Perceptions of Library Resources Importance and Their Research Productivity

Publication year(s)	Print books (*n*=409)	eBooks (*n*=419)	Online journals (*n*=431)	Databases (*n*=427)	Special collections (*n*=389)	ILL (*n*=419)	Digital images (*n*=390)	Assistance from a subject specialist librarian (*n*=406)	Comprehensive literature search support (*n*=410)
2021	–.090	–.102*	.090	.060	–.078	.039	–.048	–.018	.012
2017 to 2021	–.082	–.095	.087	.017	–.110*	–.005	–.020	–.018	.008
p <.05									

Relationships between Faculty's Library Use and Their Research Productivity

Faculty's library resource use was further analyzed to examine whether their frequency of library resource use correlated with their research productivity (measured by number of publications including books, book chapters, conference proceeding, and journals) in a one-year period (2021) and a 5-year period (2017 to 2021). A Spearman rank correlation was employed, and the results indicate that only certain library resource uses in 2021 were correlated with their research productivity: print books (r_s [407] = -.136, $p < .01$), online journal (r_s [418] = .194, $p < .01$), databases (r_s [419] = .124, $p < .05$), and subject and course guides (r_s [400] = -.099, $p < .05$); however, the directions of the correlations were different (see table 3). That is, print books, and subject and course guides use were negatively correlated with the faculty's research productivity, whereas journal and database use were positively correlated with their research productivity, indicating the more faculty used print books or course guides, the less productive they were. On the other hand, the more journal and database use, the higher number of publications in 2021.

When examining the relationships over a five-year period, the results were slightly different. Print books, journal, and subject and course guides uses in a five-year period remained similar in their relationship with faculty research productivity in 2021. That is, these library resources were associated with faculty research productivity in both 2021 and a five-year period. However, productivity in the five-year period appeared to be statistically associated with eBooks (r_s [413] = -.098, $p < .05$), whereas database use was not (r_s [419] = .088, $p = .071$). While it is important to demonstrate that faculty's library resource uses were correlated with their research productivity, one should be cautious to interpret the findings, as this relationship does not warrant causation. Also, faculty library resource use over a one-year period may not be accurately represented by their publication numbers for the same year because publications are typically released well after the year in which the initial research occurred. Further investigation would be needed to fully explore this chronological disconnect.

TABLE 3
Relationships Between Faculty's Library Resource Use and Their Research Productivity

Publication year(s)	Print books (n=407)	eBooks (n=413)	Online journals (n=418)	Databases (n=419)	Special collections (historical documents, archives, rare books) (n=403)	Subject and Course guides (n=400)	Interlibrary loan (n=413)	Assistance from a subject specialist librarian (n=408)	Comprehensive literature search support (n=410)
2021	–.136**	–.095	.194**	.124*	–.055	–.099*	.076	–.014	.063
2017 to 2021	–.162**	–.098*	.182**	.088	–.097	–.105*	.049	–.005	.031

Note. * $p < .05$, ** $p < .01$. Research productivity includes books, book chapters, conference proceeding, and journals.

Given that the amount of time it takes for books and book chapters to be published is longer than it is for conference proceeding and journals, a separate analysis of publications including only journals and conference proceedings for a five-year period (2017 to 2021) was examined to explore if there were any differences in the relationship between publications and library resource and service use (see table 4). The results remained the same as when all publication types (i.e. book, book chapters, conference proceeding and journals) were included, with the exception of special collections, which also showed a statistically significant negative relationship (r_s [403] = -.113, $p < .05$). This indicates that faculty's library use for print books, eBooks, special collections, and subject guides were statistically and negatively correlated with the number of journals and conference proceedings, but positively correlated with the frequency of online journal use.

TABLE 4
Relationships Between Faculty's Library Resource Use And Their Research Productivity (Only Journals And Conference Proceedings)

Publication year(s)	Print books (n=407)	eBooks (n=413)	Online journals (n=418)	Databases (n=419)	Special collections (historical documents, archives, rare books) (n=403)	Subject and Course guides (n=400)	Interlibrary loan (n=413)	Assistance from a subject specialist librarian (n=408)	Comprehensive literature search support (n=410)
2017 to 2021	–.197**	–.121*	.171**	.085	–.113*	–.099*	.033	–.014	.037

Note. * $p < .05$, ** $p < .01$

Library Impact: Library Use, Discipline and Publications

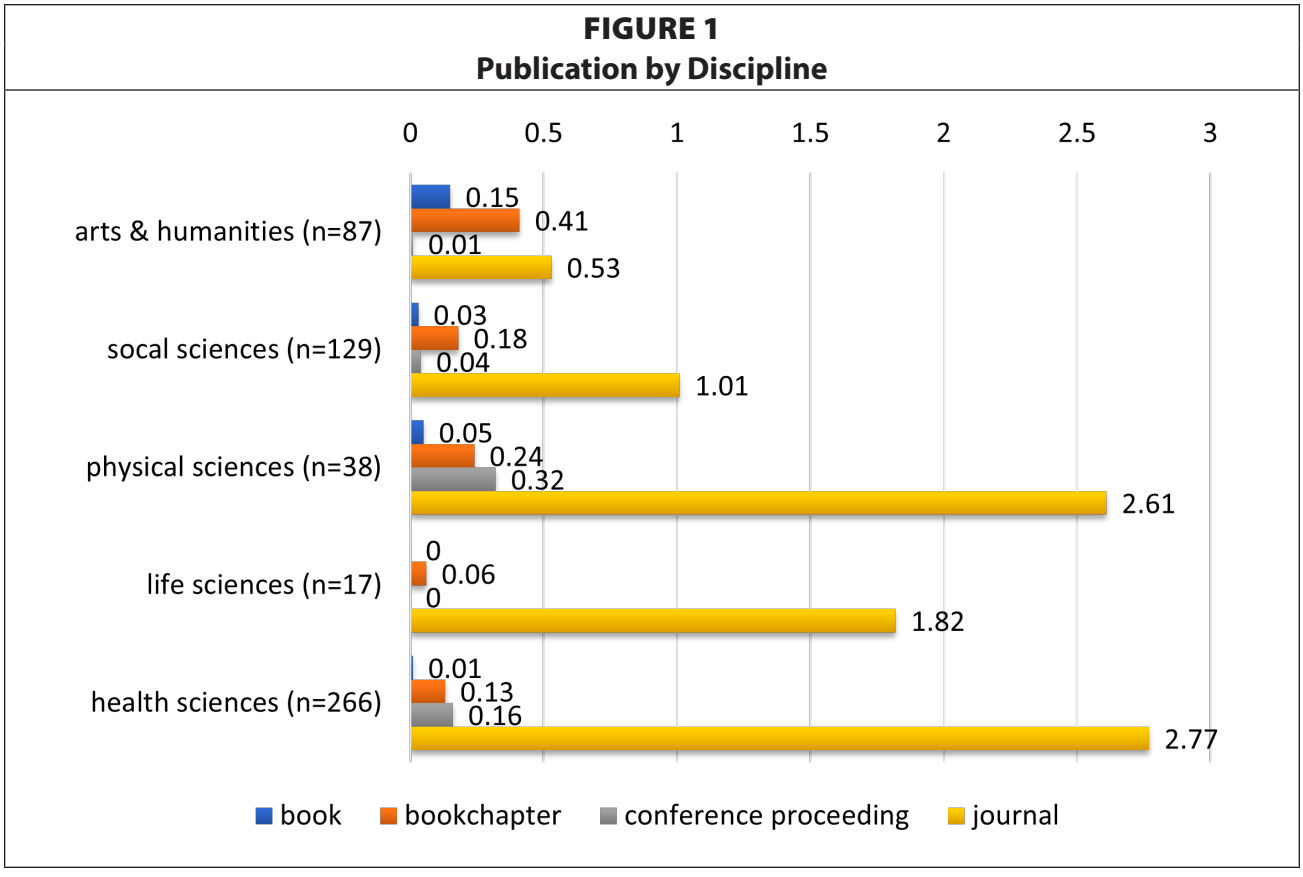
Table 5 demonstrates how well survey respondents from five discipline categories—arts and humanities, social sciences, physical sciences, life sciences, and health sciences—represent the university populations. Except for health sciences, all of the disciplines accurately represented the University population; around 10% of faculty from health sciences were less representative of those from the university health science population.

TABLE 5
Frequency of Disciplines on Survey in Comparison to the University Population

	Survey		Population	
	Frequency	**Percent**	**Frequency**	**Percent**
Arts & humanities	89	16.2%	455	10.1%
Social sciences	132	24.1%	648	14.4%
Physical sciences	38	6.9%	484	10.8%
Life sciences	17	3.1%	214	4.8%
Health sciences	272	49.6%	2,689	59.9%
Total	**548**		**4,490**	

Prior to examining the impact of disciplines and library use on the research productivity, descriptive statistics were run to seek patterns between disciplines and each type of publications. As shown in figure 1, each type of publication differs by disciplines. The faculty from the arts and humanities published the highest number of books (*M*=0.15) and book chapters (*M*=0.41), followed by those in the physical sciences (books *M*=0.05; book chapters *M*=0.24). There were no book publications (*M*=0.00) and few book chapters (*M*=0.06) published by faculty from the life sciences. For the journal articles and conference proceeding publications, the patterns were different—faculty from the health sciences published the highest number of journal articles (*M*=2.77), followed by faculty from physical sciences (*M*=2.61). However, faculty from the life sciences did not produce conference proceedings—journal articles were their primary form of publication (*M*=1.82).

FIGURE 1
Publication by Discipline



Faculty's ranking for level of importance (table 6) and frequency of library use also differs among the disciplines (table 7). Compared to the other disciplines, arts and humanities ranked books (print and electronic) the highest in terms of importance. Arts and humanities also ranked special collections, interlibrary loan, and digital images as more important compared to other disciplines. All disciplines (from life sciences, *M*=9.00, to physical sciences, *M*=8.26) ranked journal articles as the most important resource for their research. Within the rankings of databases, life sciences faculty ranked the importance of database the highest.

TABLE 6
Means, Standard Deviation in Faculty's Perceptions of Importance with Library Resources for Supporting Research by Disciplines

	Arts & humanities	Social sciences	Physical sciences	Life sciences	Health sciences
	M (SD)	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*
Print books	8.01 (1.89)	6.34 (2.60)	5.58 (2.63)	4.71 (2.76)	4.50 (2.66)
eBooks	7.78 (1.86)	7.21 (2.33)	7.67 (2.23)	7.00 (2.42)	6.96 (2.49)
Online journals	8.69 (1.23)	8.56 (1.04)	8.26 (2.05)	9.00 (0.00)	8.87 (0.54)
Databases	8.34 (1.68)	8.08 (1.61)	8.55 (1.52)	8.73 (0.70)	8.60 (1.12)
Special Collections	6.16 (2.69)	4.61 (2.95)	3.60 (2.71)	3.25 (2.70)	4.01 (2.83)
Interlibrary loan	8.33 (1.59)	7.57 (2.15)	7.13 (2.31)	6.57 (2.74)	7.32 (2.38)
Digital images	6.40 (2.50)	4.64 (2.81)	4.85 (3.43)	5.08 (3.50)	5.48 (3.00)
Assistance from librarian	6.10 (2.53)	6.69 (2.54)	4.97 (2.64)	5.07 (2.79)	6.19 (2.62)
Literature search support	6.13 (2.40)	5.65 (2.99)	6.03 (2.89)	5.80 (2.65)	6.48 (2.64)

Note: Scales for faculty's perceptions of importance with library resources for supporting research was coded from one (not important at all) to nine (very important). Not available response was excluded from calculating the mean scores.

Similar to faculty's perceptions of the importance of library resources for their research, more faculty from art and humanities reported using books (print and online), special collections, and digital images more frequently than other disciplines, at once a month or more often (table 7). However, frequency of using Interlibrary loan was somewhat different; faculty from physical sciences, social sciences and arts and humanities more frequently used Interlibrary loan compared to other disciplines. Most faculty in all disciplines reported using online journals at least weekly, except for those in the physical sciences, where only a little over half reported weekly use. Additionally, physical sciences faculty reported using online journals once a month. With respect to database use, faculty in the physical sciences were most likely to report at least weekly (83.9 percent) database use, compared to those in the life sciences who were the least likely to report weekly use (50 percent). While faculty from the life sciences reported the most frequent use of online journals, these faculty also report highest percentage of resources and services never used including: comprehensive literature search support (71.4 percent), Interlibrary loan (61.5 percent), assistance from a subject librarian (57.1 percent), print books (30.8 percent), and eBooks (30.8 percent).

To further examine the impact of disciplines and library use on the research productivity (table 8), as measured by the total number of publications in 2021 and the overall reported

TABLE 7
Faculty's Frequency of Library Resource Use for Research by Disciplines

Resources	Discipline	Never	Once a year	Once a month	Weekly or more often	M
Print books	arts & humanities (n=69)	2.9%	10.1%	26.1%	60.9%	2.45
	social sciences (n=98)	10.2%	23.5%	35.7%	30.6%	1.87
	physical sciences (n=31)	6.5%	41.9%	32.3%	19.4%	1.65
	life sciences (n=13)	30.8%	30.8%	30.8%	7.7%	1.15
	health sciences (n=197)	29.4%	38.1%	23.4%	9.1%	1.12
eBooks	arts & humanities (n=69)	2.9%	13%	29%	55.1%	2.36
	social sciences (n=99)	10.1%	16.2%	39.4%	34.3%	1.98
	physical sciences (n=30)	3.3%	13.3%	26.7%	56.7%	2.37
	life sciences (n=14)	30.8%	30.8%	30.8%	7.7%	1.64
	health sciences (n=202)	29.4%	38.1%	23.4%	9.1%	1.84
Online journals	arts & humanities (n=69)	1.4%	1.4%	13%	84.1%	2.8
	social sciences (n=98)	2%	3.1%	10.2%	84.7%	2.78
	physical sciences (n=31)	3.3%	13.3%	26.7%	56.7%	2.77
	life sciences (n=14)	0%	0%	7.1%	92.9%	2.93
	health sciences (n=207)	0.5%	0%	6.3%	93.2%	2.92
Databases	arts & humanities (n=70)	2.9%	7.1%	22.9%	67.1%	2.54
	social sciences (n=98)	4.1%	9.2%	20.4%	66.3%	2.49
	physical sciences (n=31)	0%	9.7%	6.5%	83.9%	2.74
	life sciences (n=14)	0%	0%	50%	50%	2.50
	health sciences (n=207)	2.9%	3.4%	19.8%	73.9%	2.65
Special Collections	arts & humanities (n=69)	27.5%	42%	20.3%	10.1%	1.13
	social sciences (n=96)	56.3%	29.2%	9.4%	5.2%	0.64
	physical sciences (n=28)	60.7%	35.7%	0%	3.6%	0.46
	life sciences (n=14)	78.6%	14.3%	7.1%	0%	0.29
	health sciences (n=198)	60.1%	33.3%	4.5%	2%	0.48
Interlibrary loan	arts & humanities (n=64)	40.6%	29.7%	18.8%	10.9%	1.00
	social sciences (n=97)	46.4%	22.7%	20.6%	10.3%	0.95
	physical sciences (n=29)	37.9%	27.6%	20.7%	13.8%	1.10
	life sciences (n=13)	61.5%	23.1%	7.7%	7.7%	0.62
	health sciences (n=199)	48.2%	28.6%	13.6%	9.5%	0.84
Digital images	arts & humanities (n=69)	4.3%	23.2%	50.7%	21.7%	1.90
	social sciences (n=97)	11.3%	30.9%	41.2%	16.5%	1.63
	physical sciences (n=30)	16.7%	50%	20%	13.3%	1.30
	life sciences (n=14)	21.4%	64.3%	14.3%	0%	0.93
	health sciences (n=204)	17.6%	34.8%	38.2%	9.3%	1.39
Assistance from a subject specialist librarian	arts & humanities (n=67)	31.3%	41.8%	23.9%	3%	0.99
	social sciences (n=96)	27.1%	34.4%	34.4%	4.2%	1.16
	physical sciences (n=30)	43.3%	40%	10%	6.7%	0.80
	life sciences (n=14)	57.1%	35.7%	7.1%	0%	0.50
	health sciences (n=202)	34.7%	41.1%	20.3%	4%	0.94

TABLE 7
Faculty's Frequency of Library Resource Use for Research by Disciplines

Resources	Discipline	Never	Once a year	Once a month	Weekly or more often	M
Comprehensive literature search support	arts & humanities (n=66)	47%	33.3%	13.6%	6.1%	0.79
	social sciences (n=96)	59.4%	26%	11.5%	3.1%	0.58
	physical sciences (n=30)	50%	20%	13.3%	16.7%	0.97
	life sciences (n=14)	71.4%	21.4%	7.1%	0%	0.36
	health sciences (n=205)	42%	36.6%	14.6%	6.8%	0.86

Note: Given that frequency of faculty library resource use was considered as ordinal from zero. Never to three. Weekly or more often, both frequency and mean were used to demonstrate the distribution of the data.

frequency of library use, a two-way ANOVA was conducted (table 9). The interaction effect between disciplines and library use groups (F (7, 355) = 0.218, p = .981) was not statistically significant, meaning that there was no significant difference in the effect of disciplines on publications for level of library use (less frequent, moderate, and high). There was a statistically significant main effect for disciplines (F (4, 355) = 5.909, p <.001). This finding indicates that there is a difference in the number of publications for disciplines (arts and humanities, social sciences, physical sciences, health sciences and life sciences). The magnitude of difference for disciplines was moderate (partial eta squared=.062), using Cohen's criterion.[15] To further systematically compare each discipline, and to test whether there is a significant difference in the means of each of discipline, post-hoc comparisons using the Tukey HSD test was used. As shown in Tables 8 and 10, the results indicated that the mean publication for the health sciences (M= 3.98, SD= 5.90) was significantly higher than arts and humanities (M= 1.46, SD= 2.44) and social sciences (M= 1.41, SD= 2.28) at the p < .01 level. The physical sciences (M= 3.78, SD= 3.77) and life sciences (M= 2.42, SD= 2.43) did not differ significantly from either of the other groups. The main effect for library use (F (2, 355) = 0.078, p =.925) did not reach statistical significance, indicating that degree of library use (less frequent, moderate, and high) does not differ in terms of their publications.

TABLE 8
Means, Standard Deviations in Disciplines and Library Use Groups and Publications

Disciplines	Library use groups	*Mean*	*SD*	*N*
Arts & humanities	Less frequent[a]	0.00	0.00	4
	Moderate[b]	1.92	3.05	24
	High[c]	1.28	1.94	29
	Total	**1.46**	**2.44**	**57**
Social sciences	Less frequent	1.59	3.43	17
	Moderate	1.30	2.10	46
	High	1.48	1.72	27
	Total	**1.41**	**2.28**	**90**

TABLE 8
Means, Standard Deviations in Disciplines and Library Use Groups and Publications

Disciplines	Library use groups	*Mean*	*SD*	*N*
Physical sciences	Less frequent	4.75	6.40	4
	Moderate	3.87	3.78	16
	High	3.00	2.00	7
	Total	**3.78**	**3.77**	**27**
Life sciences	Less frequent	2.83	2.23	6
	Moderate	2.00	2.76	6
	High	0.00	0.00	0
	Total	**2.42**	**2.43**	**12**
Health sciences	Less frequent	4.54	7.36	48
	Moderate	3.70	4.78	82
	High	3.92	6.08	53
	Total	**3.98**	**5.90**	**183**

[a]Less frequent: faculty who used library resources 10 or less, [b]Moderate: faculty who used library resources 11–15; [c]High: faculty who used library resources 16 or more.

TABLE 9
Two-Way ANOVA Statistics for Disciplines and Library Use Groups and Publications

	Sum of Squares	*df*	*F*	*p*	Partial Eta Squared
Intercept	943.577	1	44.541	<.001	0.111
Disciplines	500.698	4	5.909	<.001	0.062
Library use groups	3.325	2	0.078	.925	0
Disciplines * Library use groups	32.369	7	0.218	.981	0.004
Error	7520.55	355			
Total	**11228**	**369**			

TABLE 10
Tukey HSD: Mean differences for Disciplines and Publications

(I) Disciplines	Disciplines	Mean Difference	*SE*	*p*	95% CI	
					LB	UB
Arts & humanities	Social sciences	0.05	0.779	1	–2.09	2.18
	Physical sciences	–2.32	1.075	.198	–5.27	0.63
	Life sciences	–0.96	1.462	.965	–4.97	3.05
	Health sciences	–2.53**	0.698	.003	–4.44	–0.61
Social sciences	Arts & humanities	–0.05	0.779	1	–2.18	2.09
	Physical sciences	–2.37	1.01	.134	–5.14	0.40
	Life sciences	–1.01	1.414	.954	–4.88	2.87
	Health sciences	–2.57***	0.593	<.001	–4.20	–0.95

TABLE 10
Tukey HSD: Mean differences for Disciplines and Publications

(I) Disciplines	Disciplines	Mean Difference	*SE*	*p*	95% CI	
					LB	UB
Physical sciences	Arts & humanities	2.32	1.075	.198	–0.63	5.27
	Social sciences	2.37	1.01	.134	–0.40	5.14
	Life sciences	1.36	1.597	.914	–3.02	5.74
	Health sciences	–0.21	0.949	1	–2.81	2.40
Life sciences	Arts & humanities	0.96	1.462	.965	–3.05	4.97
	Social sciences	1.01	1.414	.954	–2.87	4.88
	Physical sciences	–1.36	1.597	.914	–5.74	3.02
	Health sciences	–1.57	1.372	.784	–5.33	2.19
Health sciences	Arts & humanities	2.53**	0.698	.003	0.61	4.44
	Social sciences	2.57***	0.593	<.001	0.95	4.2
	Physical sciences	0.21	0.949	1	–2.40	2.81
	Life sciences	1.57	1.372	.784	–2.19	5.33

** $p < .01$, *** $p < .001$

Library Impact on Faculty's Teaching, Research, or Administrative Work

Faculty were asked to answer the open-ended question: "Thinking about your overall UIC library experience, please describe how the library has impacted your teaching, clinical practice, research, or administrative work." A total of 267 respondents provided feedback on this question. Three themes were generated from this open-ended question using content analysis. When reporting faculty's comments, faculty's college was included to provide context for their feedback.

Theme 1: Invaluable Library Resources (n=181)

Many faculty perceived that accessing library resources was valuable for their teaching and research. The list of resources that impacted their teaching and research includes journals, databases, books, textbooks, and eBooks. Examples of faculty feedback on this theme follow:

- "The UIC library has always helped me to pursue my intellectual curiosity, beyond the articles/journals books that I need to pursue my research and teaching. To me, this is invaluable" (Pharmacy).
- "The UIC Library provides robust literature search engines and strong capture of this articles typically through available subscriptions but also through interlibrary loans. This is critical for poster/oral presentations, manuscript, and grant submissions. For students, this allows them to find relevant research articles to bolster their position in writing essays" (College of Medicine).
- "The library has been fantastic in purchasing electronic versions of the textbooks that I use for my course so that students don't have to buy them" (School of Public Health).
- "The quick availability of journals is paramount in the development of new projects and in many other aspects of research productivity" (Liberal Arts and Sciences).
- "I use open educational resources in all of my classes and the library is essential to find

and collect the information. Access to medical literature through PubMed and other databases is essential for my research" (Applied Health Sciences).

While most faculty valued accessing the library resources and perceived that library resources had a great impact on their teaching and research, some faculty expressed concerns of possible discontinuation of certain resources due to the limited budgets, such as in the following comments:

- "The library is a crucial asset for both teaching and research. Please do not continue to cut resources to the library in ways that result in less access to materials. The move to acquire an increase digital library during the pandemic was crucial to our collective ability to teach and research. Please keep this up for access purposes, but do not limit purchases to only digital copies" (Applied Health Sciences).
- "UIC Library resources are fine, but I know I'll run into an access wall eventually and would love it if the library sets aside a fund to purchase access or something for people who need material in days, not a week or two" (Urban Planning & Public Affairs).
- "I mostly use art publications. Very often these books are too expensive and / or published internationally. I hope that the library continues to acquire these important resources because the internet cannot supplant them" (Architecture, Design and Arts).

Theme 2: Resourceful and Professional Librarians (n=53)

Another resource that respondents acknowledged had an impact on their teaching and research was the library staff and librarians. Sixteen librarians' names were mentioned in the survey with appreciation (n=28). Below are examples of faculty's feedback on this theme:

- "The responsiveness of library support has been great and I feel that the librarians go above and beyond to answer my questions and provide assistance. This has helped to facilitate my research by reducing the time it would typically take for me to find resources and determine what is available and what is not"(Liberal Arts and Sciences).
- "The library and librarians have simplified the work of bringing my students up-to-date with their background searches for their research. I cannot say enough about the help my students and I get from the library and the librarians" (Pharmacy).
- "Qualified Librarians and Experts are critical to our academic and clinical work at UIC. Assistance has always been generous" (College of Medicine).
- "The library makes my research easier and better. My liaison has made sure my students can access assigned reading by speedily acquiring e-books" (Architecture, Design and Arts).

Theme 3: Quick and Immediate Services (n=51)

The last theme is quick and immediate services impacting faculty's teaching and research. Services mentioned by respondents include chat, ILL/I-Share, reference, and Open Access Publication Funding. Below are some examples of faculty feedback on this theme:

- "I recently did two literature review papers and used the library heavily for interlibrary loans / electronic copy of papers and book chapters—the library services met my needs. I recently requested that the library consider acquiring a couple of books in my specialty field of sickle cell disease and these were purchased" (College of Medicine- Chicago).
- "The librarians on the chat have been very helpful" (College of Medicine, Peoria).
- "I also received support from the UIC library to publish in Open Access to research papers

and disseminate my work via Indigo, which is much appreciate, at the early independent career stage I am at" (Business Administration).
- "ILL is amazingly fast. I love being able to get books easily delivered or being able to pick them up" (Architecture, Design and Arts).
- "Thank you for the outstanding service that you provide! The service you provide always exceeds my expectations. RefWorks is a handy feature for sharing literature searches" (Nursing).

As described above, a vast majority of the faculty acknowledged that library resources, services and librarians have a significant impact on their teaching and research; however, some faculty (n=22) stated lack of journals they need, discontinuing journal subscriptions, challenges in accessing the most recent articles or older articles, better access to films and videos (e.g., non-digitized material including projectors), difficulty in searching on library website.

Discussion

The current study used quantitative and qualitative data from an online faculty survey, as well as publication records from a faculty activity reporting system to examine faculty perceptions of the importance of library resources, frequency of library use by discipline, as well as the impact of library resources and services on their teaching and research.

There were disciplinary differences in how faculty ranked the importance of and frequency of use of library resources. Arts and humanities faculty ranked books (both print and electronic), special collections, and interlibrary loan (most likely monograph requests) as more important to their research compared to other disciplines. All disciplines except for the physical sciences ranked journal articles as the most important resource for their research. Physical sciences ranked the databases as the most important. While Carol Tenopir, Lisa Christian, and Jordan Kaufman also noted the majority of faculty rated articles from journals as the most important source for scholarly information,[16] this study further demonstrated the disciplinary differences in faculty members' perceptions of the value of the library resources.

It was also discovered that faculty's perceptions of the importance of library resources (i.e. books, online journals, databases, Interlibrary loan) had no statistical relationship with their research productivity. This result implies that faculty members' opinions of how much they value these library resources are not related to how productive they are with their research. However, there were negative correlations found between productivity and the importance of eBooks and special collections. This suggests there are resources not utilized by the majority of faculty for their research. Those who rank them higher, such as those in the arts and humanities, tend to have lower publication counts than those in other disciplines. Faculty in the arts and humanities ranked books and special collections as important, and they were also the discipline that reported the highest use of books and special collections. They likely have a smaller scholarly output, in part because their primary output is monographs (books) which are produced less frequently than journal articles. As noted in a study exploring the use of the monograph and citation patterns in the humanities, humanities scholars mainly rely on the monographs for primary and secondary sources.[17] While articles are important to humanities research, they do not serve as a replacement for monographs.

Was faculty research productivity correlated with how frequently they used library resources? With respect to the frequency of use of library resources overall by faculty, reported uses of online journals and databases were positively correlated with faculty productivity

according to 2021 publication data. When publication data from 2017 to 2021 was examined, only online journal use positively correlated with productivity, while the database use correlation was not significant. These findings are similar as those of De Groote and colleagues who found a positive correlation between faculty productivity and ARL reported statistics for full-text article requests and database searches.[18] Similarly, Tenopir and colleagues also found a positive relationship between the average number of articles read monthly and the number of publications produced.[19] On the other hand, use of print books, eBooks, and subject guides were negatively correlated with productivity between 2017 and 2021. This indicates that the more productive they were, the less likely they were to use books, or, alternatively, the more they use books to complete their research, they were less likely to have a high publication count. Given that faculty in the arts and humanities ranked print books and eBooks as important to their research compared to the other disciplines, and that they are the most likely to produce print books, this relationship makes sense given that book publication productivity is much lower in comparison to article publication productivity. There were no disciplinary differences found between frequency of use of the library and faculty research productivity, although the differences in productivity between the disciplines is significantly different.

While there were no statistically significant differences in the effect of disciplines on publications for level of library use (less frequent, moderate, and high) as well as no significant differences in publications between the level of library use, it is important to note that patterns of the average numbers of publication vary by discipline; the less frequent library use group had the highest mean scores of publications across all disciplines, except art and humanities. This may indicate that faculty with high productivity are likely searching and accessing the literature to support multiple research papers at one time. This result may also be explained by the fact that library use groups were created based on the total number of library resources use rather than specific resource use (print books, eBooks, journals etc.). As stated earlier, this study found that frequency of print books and subject course guides were negatively correlated with the faculty research productivity, whereas journals and database were positively associated with the research productivity. Additionally, it is important to know which library resources were frequently used by what discipline. For faculty from arts and humanities, the less frequent library use group did not publish any materials (M=0.00), whereas the moderate library use group scored the highest publication average (M=1.92).

As the quantitative findings showed that faculty's certain library use was associated with faculty productivity, qualitative findings also corroborated that many faculty perceived library resources (journals, databases, and books), services and librarians as a significant impact on their teaching and research. The faculty's comments revealed that faculty viewed the library as providing and purchasing the library resources, and valued the librarians and services as an essential of their teaching and research. While the research productivity was one outcome on whether faculty published books or journals, the qualitative finding further uncovered faculty's perceptions of library impact for their teaching and research. Faculty considered the library impact when they were involved in the process of the research project such as grant submissions, development of new projects, and manuscript. By employing several datasets (i.e. survey containing multiple choices and open-ended questions, faculty's demographic information, and their publication records), this study attempted to provide faculty's perceptions of their library resources and its impact on their teaching and research.

Limitations

The number of publications was obtained using the faculty profile tool, which automatically gathers journal and conference proceedings through API feeds from Web of Science, Scopus, Dimensions, PubMed, and Crossref. A limited number of books and book chapters are also captured by these systems and brought in automatically. For those that are not, a faculty member or their designate would need to enter the publication information. The majority of colleges, though not all, were using the reporting tool at the time of the research. Therefore, some publications—primarily books and book chapters—would not have been recorded for those faculty that were not manually adding missing publications. For these reasons, book and book chapters data may be underrepresented. Some productivity comparisons looked at publication numbers in aggregate when examining the relationships with library use. These generalized findings may not apply to all disciplines. Also, it should be noted that the findings of this research may not be representative of other research universities.

Implications and Conclusion

Faculty use of the library collection and the importance of the library collection for research is highlighted through the findings of this study. Our findings demonstrate that faculty publication patterns differ across the disciplines. Print books, as well as subject and course guides, were found to be negatively correlated with faculty research productivity, whereas journal and database use was found to be positively correlated. These findings indicate that the more productive faculty used print books or course guides less; the more productive faculty used journal and database more. It should be noted that interpreting this correlation should be done with caution because these are not cause and effect relationships. Journal articles, as accessed through online journals, remain important to faculty in conducting their research across all disciplines. By adding faculty publication records to the self-reported faculty input, this study demonstrated the value of library resources.

This study also revealed how faculty members felt about the library's resources and how it affected their scholarly work. The academic librarians who work with faculty may already be aware of some of the results, but this study's empirical findings show that faculty members' use of the library is linked to their research output. As the academic environment changes, the library's efforts to understand the needs of the faculty are crucial to ensuring their academic success. At the same time, this study raised an important question, how can libraries capture the library's impact on faculty's research productivity beyond the publications? As academic libraries are pressured to demonstrate the library's impact and value for our users, it is possible to look at other outcomes such as grant submissions (accepted vs. not funded), number of research projects in progress, the number of reports and white papers deposited in the institutional repository, and so on.

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Appendix A. 2022 Faculty Survey

The UIC Library is seeking to understand how library services and resources impact your teaching, research and scholarship. Your participation will help us develop meaningful programs and collections. Please respond to this survey in the context of the primary UIC library that you use (e.g., Daley Library, Library of Health Sciences-Chicago, Peoria, Rockford or Law Library). We will use your responses to guide our priorities.

Q1 During the past year, have you done any of the following at UIC? Select all that apply.

- □ Taught an undergraduate level course
- □ Taught a graduate level course
- □ Taught a course for professional students
- □ Taught/served in a clinical setting
- □ Engaged in research or scholarship
- □ Published a book, article or other scholarly product
- □ Served in an administrative capacity

Q2 Please rate the following in terms of importance for your teaching (9= Extremely, 1= Not at all, and 0=N/A).

	9 (Extremely important)	8	7	6	5	4	3	2	1 (Not at all)	0 (N/A)
Assign course readings or text books that are available in print through the University Library.	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Have a link in Blackboard to University Library resources.	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Have graded assignments in my syllabus that require students to use library resources.	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Refer students to a subject specialist librarian for assistance in locating relevant information.	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Ensure that students who graduate from my program are skilled at locating, evaluating, and using information.	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍

Q3 Please rate the following in terms of importance for your research or administrative responsibility (9=Extremely, 1=Not at all, and 0=N/A).

	9 (Extremely important)	8	7	6	5	4	3	2	1 (Not at all)	0 (N/A)
Print books	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
eBooks	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Online journals	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Databases to find literature	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Special collections (historical documents, archives, rare books)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Interlibrary loan (ILLiad/I-Share/ document delivery)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Digital images	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Assistance from a subject specialist librarian	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Comprehensive literature search support	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Other resources (please specify):	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍

Q4 How often did you use the following for your research?

	Weekly or more often	Once a month	Once a year	Never
Print books	❍	❍	❍	❍
eBooks	❍	❍	❍	❍
Online journals	❍	❍	❍	❍
Databases to find literature	❍	❍	❍	❍
Special collections (historical documents, archives, rare books)	❍	❍	❍	❍
Subject and Course guides	❍	❍	❍	❍
Interlibrary loan (ILLiad/I-Share/document delivery)	❍	❍	❍	❍
Assistance from a subject specialist librarian	❍	❍	❍	❍
Comprehensive literature search support	❍	❍	❍	❍
Other resources (please specify):	❍	❍	❍	❍

Page Break

Q5 How easy is it to use the university library website to access the following? (9=Extremely easy, 1=Not at all, and 0=I've never used this tool).

	9 (Extremely easy)	8	7	6	5	4	3	2	1 (Not at all)	0 (I've never used this tool)
Books and Media (Catalog)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Journals (e.g., Nature, Science)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Databases (e.g., PubMed, JSTOR)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Subject & Course Guides	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Chat with a Librarian	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Interlibrary loan (ILLiad/I-Share/ document delivery)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
I-Share (Books from UIC partners)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Library News	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Library Search	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍

Q6 Think about the last time you needed a journal article not available through the UIC Library's physical or digital collections. What method(s) did you use to obtain a copy? Select all that apply.

- □ Searched for a freely available version online
- □ Used interlibrary loan (ILLiad) or document delivery services provided by the UIC Library
- □ Gave up and looked for a different article that I can access
- □ Purchased it myself from the publisher or vendor
- □ Requested it from a colleague at another institution
- □ Contacted the author
- □ Requested a copy using social media (#canhazpdf on Twitter, etc.) or through Scihub
- □ Asked a librarian
- □ Obtained it from Google Scholar, Academia.edu or ResearchGate
- □ Articles I needed were readily available through the UIC Library.
- □ I do not usually use journal articles for my teaching or research.
- □ I do not recall
- □ Other _____

Q7 What topics would you like to learn more about? Select all that apply.

- □ Bibliographic Management Software(e.g., RefWorks, EndNote)
- □ Digital scholarship tools & techniques (data visualization, text mining and analysis,

natural language processing, GIS, maps, etc.)
- □ Multimedia tools & techniques (videography, podcasting, infographics, websites, digital design, etc.)
- □ Data visualization platforms/software/language for my research (Tableau, PowerBI, Google Data Studio, R, Python etc.)
- □ Qualitative data analysis platforms/software for my research (NVivo, Atlas.ti, MaxQDA, etc.)
- □ Quantitative data analysis platforms/software/language for my research (R, Python, SPSS, etc.)
- □ Managing, preserving, and sharing the data I create in my scholarship
- □ Finding and reusing data for scholarship and instruction
- □ Digital methods for gathering data (APIs, web scraping, etc.)
- □ Academic authorship platforms/software/language for my research (RStudio/Rmarkdown, Overleaf/LaTeX, Pressbooks, etc.)
- □ Other _____

Q8 How do you usually get informed of library information (e.g., collections, services and resources)? Select all that apply.
- □ Department chair
- □ UIC colleagues
- □ Liaison librarians
- □ UIC Library website (Library News)
- □ UIC mass email
- □ Other _____

Q9 What information resource support do you need from the Library for your teaching and research?
- □ Teaching _____
- □ Clinical practice _____
- □ Research _____

Q10 Please rate your level of agreement with the following statements (9=strongly agree, 1=strongly disagree).

	9 (Strongly agree)	8	7	6	5	4	3	2	1 (Strongly disagree)
The University Library helps me stay abreast of developments in my field(s) of interest.	❍	❍	❍	❍	❍	❍	❍	❍	❍
The University Library aids my advancement in my academic discipline or work.	❍	❍	❍	❍	❍	❍	❍	❍	❍

The University Library helps me increase the productivity of my research and scholarship.	❍	❍	❍	❍	❍	❍	❍	❍	❍
The University Library helps my students find materials and develop research and information literacy skills.	❍	❍	❍	❍	❍	❍	❍	❍	❍
The University Library helps me preserve my data and research.	❍	❍	❍	❍	❍	❍	❍	❍	❍
When I need assistance finding materials, articles, or information, I am likely to contact the University Library.	❍	❍	❍	❍	❍	❍	❍	❍	❍
In general, I am satisfied with the overall quality of the **services** provided by the University Library.	❍	❍	❍	❍	❍	❍	❍	❍	❍
In general, I am satisfied with the overall quality of the **resources** provided by the University Library.	❍	❍	❍	❍	❍	❍	❍	❍	❍

Q11 Thinking about your overall UIC library experience, please describe how the library has impacted your teaching, clinical practice, research or administrative work.

_____

_____

Q12 Please provide any other comments about the UIC Library, its collections, services or website.

_____

_____

Thank you for completing the UIC Library Faculty Survey 2022. Your responses will help us improve Library services and resources.

Did you know … ? Your liaison librarian can provide specific resources and tips for students to complete research assignments.

If you can't get a book at the library, we can usually obtain a copy for you through interlibrary loan or purchase it for the collection.

If you can't get a journal article through the library's collection, we can usually obtain a copy for you through interlibrary loan in an average of four days (often much faster).

If you need assistance with selecting appropriate platforms to make OERs (Open Educational Resources) materials available to students, please contact Chat with a Librarian (library.uic.edu).

You can link to the library through your Blackboard course site. You will not be able to return to the survey. Once you click **Next**, you will be taken to a separate survey where you can enter a drawing to win one of six items valued at $100-$200.

"But Where Are You Really From?": Multiracial Students, Sense of Belonging, and Academic Libraries

María Evelia Emerson

Academic libraries need to have a stronger understanding of how to best support multiracial college students. The purpose of this study was to learn if multiracial students viewed their academic library as a place that increased their sense of belonging. Through interviews and a focus group with multiracial undergraduate students at the University of Illinois Urbana-Champaign (UIUC), the author learned that the interviewed students viewed the library in a positive manner but did not feel like it increased their sense of belonging on campus. Suggestions on how to increase their sense of belonging from students are included in the discussion.

"In America, you don't get to decide what race you are. It is decided for you."
~ Chimamanda Ngozi Adichie, Americanah[1]

Introduction

In 1967, the Supreme Court officially legalized interracial marriage in the case of *Loving vs. Commonwealth of Virginia*. Although there were interracial couples and multiracial individuals well before 1967, the legalization of interracial marriage was certainly a contributing factor in American society becoming to become less monoracial—a trend that continues today. However, "multiracial" as an identity often remains unacknowledged. For example, it was not until the year 2000 that the US Census allowed citizens the option to select more than one racial category,[2] and there are still official documents today, in 2024, that restrict users to select only one race. However, the US Census shows a substantial increase in individuals identifying as "multiracial" (categorized as "two or more races" in the census).[3] In 2010, nine million people selected "multiracial," while in 2020, the percentage increased by 276 percent, meaning 33.8 million people selected multiracial.[4]

Although the multiracial identity is still not commonly recognized, individuals who identify as multiracial still experience daily reminders that much of society views them as outsiders. Questions and statements such as: "What are you?"; "Where are you from?"; and "I never saw you as…" are common experiences for people from multiracial backgrounds. These questions

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make it clear to the person on the receiving end that they are racially ambiguous and that others will decide what race they are for them. Niall Singh, an artist of mixed Indian and Scottish heritage, said in an interview with Mixed Messages (a weekly newsletter about the mixed-race experience) that, "often my perspective of how I see myself has been defined by white people, because they're the ones who most frequently tell me what they think I look like."[5]

The author of this article identifies as multiracial and believes there needs to be a better understanding and awareness of the multiracial population, particularly since more people are identifying with this demographic. The author conducted a series of one-on-one interviews, and also led a focus group of seven undergraduate students who self-identified as multiracial at the University of Illinois Urbana-Champaign (UIUC). The purpose of the interviews and focus group was to learn if the interviewed students viewed their academic library as a place that increased their sense of belonging at UIUC, and to learn more about ways academic libraries can support multiracial students.

For the purpose of this article, the term "multiracial" can be defined as a person who identifies with two or more racial groups. Other terms commonly used are biracial, mixed-race, and racially mixed. Although "multiracial" is the predominant term used throughout the article, other terms are used interchangeably. Sense of belonging, a term categorized as a social need in Abraham Maslow's work "A Theory of Human Motivation,"[6] can be defined as a human emotional need to feel accepted and supported by members of a group; it contributes to one's physical and mental well-being.

The University of Illinois Urbana-Champaign is a public, land grant institution, and is in the twin cities of Urbana and Champaign in southeast Illinois. UIUC is the flagship institution of the University of Illinois system and is an R1 research university. The University Library is one of the largest academic libraries in the United States. The undergraduate student body makeup at UIUC in the fall of 2022 is 38.87 percent Caucasian, 21.73 percent Asian American, 13.49 percent Hispanic, 5.81 percent African American, .03 percent Native Hawaiian or Pacific Islander, .03 percent Native American, 15.2 percent International, and 1.3 percent unknown.[7] Starting in 2010, students at UIUC could select "multiracial" as their racial identity; in 2010, 560 (1.6%) undergraduate students selected multiracial for their racial demographic, and in 2022, the number increased to 1,233 (3.53%).[8] With the continual increase in students identifying as mixed-race, there is a need for academic libraries to have a better understanding of how to better support the students of this demographic.

Literature Review

Libraries have been viewed, or strive to be seen, as safe spaces for their users. The American Library Association has a "Code of Ethics" that, when practiced, strives to make libraries a safe space where censorship is resisted, information is accessible, and patron privacy is upheld, among other principles. In the summer of 2021, a ninth principle was added to the code, stating that libraries, "work to recognize and dismantle systemic and individual biases [and] to confront inequity and oppression."[9] Libraries can contribute to fulfilling these principles in different ways, such as implementing different book displays, programs, initiatives, and resources that represent the different backgrounds and needs of library users.[10] While there is an abundance of literature that discusses different ways that libraries attempt to be more inclusive, there is a definite research gap about the role of academic libraries in their support of multiracial students, particularly regarding these students' sense of belonging.

The majority of literature involving mixed-raced populations references the groundbreaking and foundational work of Maria Root and Kristen Renn; the author drew upon these works in some of their interview and focus group questions for this study. Root, a leading expert on mixed-race people, has conducted research on multiracial identity and experiences, providing a spotlight on the complexity—and always evolving identity development—of mixed-race people, as well as the need for society to have a much stronger understanding of multiracial experiences. Through her work with mixed-race individuals, Root established that racial identity development for multiracial individuals is fluid instead of rigid.[11] Her "Bill of Rights for Racially Mixed People," a document written to affirm mixed-race identity, also acknowledges this by stating that mixed-raced individuals have the right, "to identify…differently in different situations," and "to change my identity over my lifetime—and more than once."[12]

Similar to Root, Renn has researched the racial identity development of biracial and mixed-race people, but focuses specifically on college students.[13] Renn drew on Urie Bronfenbrenner's ecological theory of human development[14] for its flexibility of identity development, stating that, "…the attempt to explore the cumulative, interactive influences of overlapping social settings, some or all of which may be sending contradictory messages regarding racial identity and identification, calls for more theoretical flexibility than the racial identity development models…"[15]

For the literature review, the author focused on how higher education institutions supported mixed-race students, and then looked at the role academic libraries play regarding a sense of belonging for students. Lastly, she looked at the literature to learn more about the programs and research conducted in academic libraries, so these institutions have a better understanding of the sense of belonging for multiracial students.

Multiracial Students, Higher Education, and Sense of Belonging

There is a large body of research that focuses on multiracial students in higher education. Many of these articles focus on the mental health and well-being of multiracial students. Michael T. West and Cara S. Maffini discussed how college is a normal time for students to explore their identity more, continuing that students also, "may begin to question and reflect on how their previous or current identity, which has been shaped by their past experiences (e.g., family, hometown), can be integrated with their new experiences."[16] Some articles investigate ways to provide coping strategies and therapy exercises to mixed-race students, such as venting sessions to process their emotions that stem from the complexity of a multiracial identity.[17] Samuel D. Museus, Susan A. Lambe Sariñana, and Tasha Kawamata Ryan suggested that providing more learning opportunities on college campuses, "might simultaneously serve as a productive way to educate campus communities about multiracial issues and an effective coping strategy for mixed-race students."[18] Other articles focus on a particular student demographic, such as Black and white individuals,[19] or students of Asian descent.[20]

Research on multiracial students is especially prevalent in student affairs literature.[21] There is also literature on different experiences that multiracial students encountered in their college campuses. Haley K.M. Okamoto analyzed the challenges and identity development multiracial college students experienced, highlighting the need of work like this because, "while racial identity has certainly made its way into higher education curriculums, racial identity is still often conceptualized as singular and static."[22] Some higher education institutions, such as Stanford University and Yale University, are starting to include the topic of multiracialism in their curriculum; however, this is still a field that is missing from most institutions.

Academic Libraries and Student Sense of Belonging

While many academic libraries aim to be seen as a safe place for students, they are not always successful in this endeavor. This is especially true for marginalized students since libraries have a history of whiteness in their profession, buildings, collections, policies, and treatment of users. Myrna Morales, Em Claire Knowles, and Chris Bourg argue that, "academic librarians are perhaps uniquely equipped and empowered to define and redefine systems of knowledge that convey 'truths' about what we know about the world and how that knowledge is organized and evaluated,"[23] yet diversity initiatives often fail to consider how their own policies, standards, and practices impact their students and colleagues.

The profession of librarianship is also an overwhelmingly white, female-dominated field; in 2021, over 83 percent of librarians identified as white, and 83.2 percent identified as women in 2020.[24] This lack of diversity in library staff negatively impacts students not only due to insufficient representation in the programs and collections, but also in the librarians themselves, who may serve as partners and mentors to students. Brook et al. discuss how the library centers whiteness in public services, stating that, "when students cannot see themselves and their values represented in the library, be that in the staff, the policies, the services, or the space, then it is easy to understand why they might not use the library."[25] Lack of diversity in the library profession impacts BIPOC librarians as well as students. Recent library literature highlights the problems of working in predominantly white spaces and discusses steps to decenter whiteness in the library profession.[26]

Academic libraries play a prominent role in student success, and can help students by providing support and a sense of community during their time in college. This is especially important since college is a time when students—especially underrepresented students—may experience imposter syndrome, which contributes to a lower retention rate. Imposter syndrome, originally called imposter phenomenon, is a term coined by psychologists Clance and Imes in their 1978 study, "The Imposter Phenomenon in High Achieving Women: Dynamics and Therapeutic Intervention."[27] Clance and Imes researched how high achieving women often feel like they are not qualified to belong in a workplace or education setting; however, their study excluded many other groups, "namely women of color and people of various income levels, genders, and professional backgrounds."[28] Tulshyan and Burey argue that this study overlooked how institutions and workplaces cultivate these feelings of inadequacy, and that, "leaders must create a culture for women and people of color that addresses systemic bias and racism."[29]

Focusing on academic libraries, Ramsey and Brown argue that these types of institutions can assist students in overcoming imposter syndrome by creating inclusive spaces to, "help enhance a sense of belonging in their students, which can counter the 'outsider' feelings inherent in imposter syndrome."[30] Oliveira also presents the different ways that academic libraries contribute to student retention and discusses the themes of social learning spaces, library use, and information literacy, which can assist with the college transition process and increase student retention.[31]

Academic Libraries and Multiracial Student Sense of Belonging

Academic libraries engage with students and attempt to promote diversity and inclusivity in different ways, such as displays, exhibits, relationships, and visibility of collections.[32] However, the majority of these initiatives and programs focus on underrepresented groups,

typically through the lens of a singular identity perspective and experience. For example, Bucy's article focused on the Native American student experience in the academic library,[33] and Couture et al. discussed their work with first-generation students.[34] While these groups are underrepresented and often misunderstood student populations whose experiences are essential to understand, much of the literature still presents these groups from a homogeneous perspective, which creates a barrier to understanding the complexity and intersectionality that occurs with many students.

Although most library programs and incentives focus on homogeneous groups, some academic libraries have seen the importance of acknowledging and supporting multiracial students. The University of Michigan Library designed a library program specifically geared towards mixed-race students, including a faculty panel titled, "*Multiracial in a Monoracial World: Interraciality Informing Academic Work*," and film screenings on mixed-race experiences.[35] There are also several articles that address some of the behind-the-scenes work that libraries can do to become more inclusive. Beall discussed creative ways that the Dewey Decimal Classification system and MARC records can become more inclusive of racially mixed people,[36] while Furner discussed using critical race theory as a way to evaluate bibliographic classification schemes.[37]

Methodology

The study, which was conducted during the spring semester of 2022, was designed in two parts: individual interviews with undergraduate students who self-identified as mixed-race, followed by a focus group of the same individuals. The questions asked in the one-on-one interviews were focused on the participant's individual journey of their mixed-race identity, as well as their experiences in libraries, particularly the University of Illinois Library. The focus group questions pertained to how academic libraries can increase a sense of belonging among their multiracial students. Approval for the study was sent to the campus Institutional Review Board in November of 2021, and it obtained approval in December 2021.

Students qualified for the study if they were an undergraduate student at UIUC and identified with two or more races. The study was advertised through: the library's social media accounts, email recruitment to the campus' culture houses, emails to registered student organizations, and the weekly campus newsletter. As an incentive to participate, students received a $30 gift card to Amazon upon completing both the individual interview and the focus group. Funding was provided for up to twenty students to participate in the study. Since this was a qualitative study, the initial goal of twenty students (which is only 1.62 percent of the multiracial student population at UIUC) was chosen, as it is a manageable number of interviews to work through and sufficient for identifying common themes.

TABLE 1
Study Participant Racial Background

Student	Races Selected
Student #1	Asian/Caucasian
Student #2	Asian/Caucasian
Student #3	Asian Caucasian
Student #4	Asian Caucasian
Student #5	Asian Caucasian
Student #6	Asian Middle Eastern or Northern African
Student #7	Hispanic, Latinx, or Spanish Black or African American Caucasian Write in your own answer: Multiracial

Interested students first had to complete a pre-screening questionnaire (Appendix A) to ensure that they qualified for the study. Thirteen students originally responded and completed the pre-screening form; eleven students qualified for the study. Those who did not qualify identified with only one race. Students were sent a consent form to sign; several students chose not to participate at that point in the process, resulting in the final number of participants being seven. Table 1 provides information about the racial background each of the students selected on the pre-screening questionnaire (Appendix A).

The seven students represented only .05 percent of the multiracial population at UIUC. Of the seven students, 71 percent selected the racial background of Asian and Caucasian from the pre-screening questionnaire. While the participating students represent a very small sample, themes were easily identified, and similar experiences were described from the individual conversations and focus group with the participants. There are also future plans to expand this study to see if the answers are representative of a larger population.

It is important to note that Hispanic, Latinx, and Spanish are not races, but ethnicities. People who identify as Hispanic, Latinx, or Spanish are defined by the U.S. census to be, "a person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin regardless of race."[38] However, for the purpose of this study, students could select this as a race they identify with to align with university data as much as possible.

One-on-one interviews and a focus group were chosen as the qualitative research methods for the study. The personal interviews allowed the author to learn more about individuals' personal experiences and thoughts regarding their multiracial identity, while the focus group helped participants hear other students' thoughts, and to share similarities or differences in those opinions. Focus groups also allowed participants to work off each other and brainstorm different ways that libraries could be more inclusive of their identities. Since the study was conducted during the COVID-19 pandemic, Zoom was chosen as the format for the interviews and focus group to ensure safety. Meeting via Zoom also allowed for more flexibility with scheduling around participating students' classes, jobs, and extracurricular activities. Study participants also had the choice of having the camera on or off while in the interviews and focus group to help participants feel more at ease while engaging with the author. All participants decided to have their cameras off during the interviews and focus group. Before conducting the one-on-one interviews and focus groups, the author also consulted with some of her colleagues to learn more about best practices for leading these conversations.

Questions for both the one-on-one interviews and the focus group were designed in several different ways. First, the author drew from her own experiences as a multiracial individual and designed some questions that she felt would provide a foundation on how study participants viewed their mixed-race identities, as well as how others may perceive them and how that impacts their day-to-day lives. The author shared these questions with another multiracial colleague to discuss if they felt the questions would help provide information that the author hoped to learn about multiracial students and libraries. Second, the author designed questions that would provide foundational information about students' usage of libraries to gain a better understanding of ways students utilize, spend time in, and view the library. Lastly, the author incorporated some of the work of Renn and Root into the interview questions, specifically questions number three and four (Appendix B). The author drew from Root's Bill of Rights to design question three, which asked about being incorrectly identified as a mixed-race individual, as well as Renn's work on racial identity development to craft

question number four.[39] The question preparation for the interview and focus group was conducted over several afternoons, in addition to being revised a few times based on discussion with the author's colleague, as well as the literature review.

The one-on-one interviews lasted between fifteen minutes to forty-five minutes; each student was asked the same set of questions, included in appendices B and C. Each interview was recorded with the student's consent, and the audio recording was transcribed using the NVivo transcription service. After all the personal interviews were complete, a focus group with all seven participants took place over Zoom, moderated by the author. The focus group session was fifty minutes long, recorded with the participants' consent, and transcribed using the same software as the personal interviews. While almost all the participants expressed their thoughts verbally, one student participated more frequently using the chat function in Zoom. At the end of the focus group, each participant was sent a $30 Amazon gift card to their university email account.

After the audio recordings of the personal interviews and focus group were transcribed, the author identified recurrent themes that occurred in the conversations. The transcriptions of the interviews and focus group—along with the chat transcript of the focus group—were printed and read several times in order to find recurring experiences, thoughts, and keywords from the study participants, which were then color-coded into categories. Quotes were also pulled from the interviews and focus group, and were color-coded into the appropriate category that supported the recognized themes. There were some outliers within the identified themes, which are included in the findings section of this article. The outliers, though few, are important to include since they highlight how everyone's multiracial journeys are different, even if there is overlap within their experiences. An afternoon was set aside to conduct and complete the qualitative data coding process of the seven interviews and one focus group.

Findings

Themes of identity challenges, feelings of erasure, and the desire to find community, all emerged from the individual interviews and focus group. Participants discussed how these themes tied into their experiences on campus and in the academic library. Overall, students in this study viewed the University of Illinois Library as a neutral place on campus, which served as a location to study and to provide academic resources rather than a place that fostered a sense of belonging, community, and support. All the participants used the library at a minimum of a few hours a week, and none of them had experiences where they felt unwelcome in the University of Illinois Library.

The author defined the themes from the study as follows:

- *Identity challenges* refers to both challenges experienced internally by mixed-race individuals (e.g. having to "decide" which race they are, or feelings of imposter syndrome), as well as challenges from others of the individual's identity (e.g. "I don't see you as…" or "Let me guess what you are.").
- *Feelings of erasure* address the experiences many of the study participants expressed with feeling like their identities as multiracial individuals are rarely recognized as an identity in the same way that other groups are recognized. For example, while seeing many displays and resources on sexual orientations or homogenous races, they do not see the same recognition of multiracial identities.

- *Finding community* references the struggle many of the participants described of feeling like they do not belong in a specific community since their identity encompasses several different communities.

Identity Challenges

One of the questions in the individual interviews focused on their journey with their multiracial identity. All participants did have at least one time in their lives where they struggled with their mixed identity. Family relationships, growing up in a predominantly white neighborhood or schools, and misidentification of their identities all contributed to the confusion and difficulties they experienced in their multiracial identity journeys. One participant stated, "If you are multiracial then you are in a constant state of flux in between those ethnic distinctions."

Many participants discussed how people are often confused about how to view them. Several told stories about how it is common for people to guess what they "are." While some of the students said that they understand people are curious and normally mean well, others expressed frustration. One student said, "sometimes it's fine, but sometimes it's kind of weird when they just keep guessing. Like, it's not a game." Another student remarked during the focus group that they wish others knew that "I am many things, right? …I just wish that people would respect the multifaceted nature and mind of that."

When asked about how the library did or did not contribute to their identity journey, many of the students did not feel like they had resources available to support them or provide more information about their identity. A few participants talked about a time in the library when they stumbled upon a book that told a story about a mixed-race individual, and they were excited to read it because they could hear about someone else's multiracial identity journey. However, these were isolated incidents, and the students discussed how overall there is a lack of resources that could support or assist them in learning more about being multiracial. During the focus group, one student said, "I haven't really seen many materials that do represent multiracial groups, and I think that would be great for increasing our sense of belonging." Others agreed with the statement and talked about how more awareness of the topic and resources could help themselves and other students.

Many of the study participants also described the feelings of imposter syndrome, or having to choose one race over another, on multiple occasions in their lives. However, one student discussed a positive experience of not needing to choose their race describing a non-UIUC library where the library was, "full of people from different backgrounds using different languages…we were all respecting one another…and it made me feel like I didn't have to choose one of my races over the other." This experience highlights the relief from not having to choose between races, and the potential support academic libraries can provide by having a more heterogeneous environment.

Despite the challenges and complexities that can come with identifying as mixed-race, all the participants said that they felt being multiracial made them more empathetic and understanding of people. They also felt like it helped them learn how to better navigate differences of opinions and backgrounds. One participant of the study said that being multiracial is, "definitely a blessing. It's more like it turns into a blessing once you realize how to manage that in your life. If you want to make it a blessing, you can make it a blessing."

Feelings of Erasure

All the participants discussed how they felt that their multiracial identity is often ignored, or erased, both by institutions and people in their lives. The lack of multiracial options in surveys and forms, the erasure of their identity in conversations with friends and classmates (and sometimes even families), the absence of multiracial topics in educational settings, and the lack of acknowledgment of the multiracial identity in libraries were discussed in the personal interviews and focus group. One student talked about a time they felt ignored when they went to [Library] to find something to read, and found books organized by different race and sexual orientation identities: "But I didn't see the mixed section, so that was just something that was like…I *am* that, it would have been cool to have at least a few books to look through because [multiracial] *is* an identity."

This anecdote ties into the recurring theme regarding the visibility of heritage and history months, as well as spotlighting authors from a variety of backgrounds. Study participants discussed seeing library displays promoting different books, authors, histories, or celebrations of specific groups, yet none for multiracial identities. Many of the participants acknowledged that there is no multiracial identity month to highlight, yet it is an identity that libraries can still put a spotlight on; doing so would help them feel more seen. One of the participants did not completely agree that mixed-race identities are erased, but instead were more misunderstood by their peers, remarking, "I think a lot of the time the way it [being multiracial] works is that it's acknowledged but not necessarily respected." This response was shared in the focus group and, upon hearing that, many of the other participants remarked on how they feel like the mixed-race experience is misunderstood by many; in an individual interview, a participant said that often people get confused about being multiracial because, "it's like they only see one side of things." Several remarked that they felt that with more resources in the library and discussions about the mixed-race experience, others could begin to have a better understanding of the complexity and varied experiences and journeys that occur with that identity. During the focus group, participants talked about when they felt most at home and safe; feelings of acceptance, respect, understanding, and acknowledgment of all parts of their racial background contributed to an increased sense of belonging. One participant said, "I feel most comfortable when people acknowledge both my Polish and Chinese side because I feel like it's pretty easy…for like other people to kind of dismiss whichever culture or race that you look less like." None of the participants identified their academic library (or any library) as a place where they felt at home. For participants, the library was viewed as a neutral building to in which to study, find resources for their classes, and receive research support. It was not seen as a support system, nor as campus resource that could contribute to their sense of belonging and/or understanding of their place on campus.

Finding Community

Very few students felt that they had a multiracial community; most participants felt alone in their identity, though some did actively seek out other multiracial individuals. Some students mentioned siblings who they could talk about their identity with, but others remarked on how their families ignored that part of their children's identity. This would sometimes happen for different reasons; some participants discussed how their parents are immigrants and were told to "Americanize" their children, while others acknowledged family tensions due

to race. One participant said they were, "sort of whitewashed by my dad because he, I don't know, but he liked to promote my whiteness over anything else."

When asked about finding community in the library, the students commented on how they found library spaces that worked well for their academic needs, but they did not typically find people or resources that could relate to their mixed-race experience. Regarding library staff, some of the participants felt like they saw themselves represented by the library student workers, but other participants did not feel represented in that sense. As already mentioned, some of the participants reflected on the time they found a library resource about, or written by, someone with a mixed-race background. However, one student thought of a particular example with a book when asked about community and discussed their excitement over finding a book that was about a character with the same racial makeup as themselves. While this student may have not found a multiracial community in person, they did think of one instance in which a library resource provided a small community to them.

In both the interviews and the focus group, participants brought up other campus resources which could serve as possible places of community and/or increase a sense of belonging, such as culture houses and student organizations. However, several of the participants still struggled with finding a community within culture houses because they felt the houses did not relate to their multiracial experience, and better served students who identified with one racial background. Several students also discussed the various student organizations on campus that are for students from different racial and ethnic groups, but felt that one's appearance and skin tone impacted whether a multiracial student could participate and feel welcomed in these groups. One student reflected on their experience in the focus group and said that, "even though my lived experiences are not necessarily indicative of my ethnic background, it still exists." The focus group discussed whether there was a student organization for multiracial students; the majority of the students believed one did not exist on the campus, but several other students said there used to be one, but that it had disbanded for unknown reasons.

The struggle of not belonging to any specific group was discussed by almost all the participants. One participant said, "I feel like even though I say I can connect to more people I still feel like there is some disconnect, and I don't belong in a particular group." This feeling was brought up several times regarding library displays, with one student noting, "all of these displays are for specific cultures and I'm just feeling like I didn't really fit into any of those categories." Several participants stated that, even among mixed-race individuals, it is rare to find someone else with the same exact background as you, or with the same lived experiences. However, the one commonality of the multiracial community is the shared experience of not belonging to one single racial group. One study participant said that, "even if you come from a different background, you still have this one shared identity of being multiracial, multicultural."

Discussion

All the participants of this study use the UIUC libraries to support their academic needs. All of them spent at least a couple hours a week studying in the library, while others spent close to fifteen hours a week. Several of the participants used their hometown's public libraries, and one student mentioned using their high school library. While the results of this study were not a negative reflection of the University of Illinois Library, or of libraries in general, it

was discovered that the participating students did not view their academic library as a place to increase their sense of belonging at UIUC.

Overall, students described using libraries for research and scholarship, although several participants did go to the library to find leisure books to read. Similar to other experiences in their lives, participants did not feel like their multiracial identity was acknowledged within the library, especially in ways that other cultures and races have been acknowledged, such as through various displays and collections. Many of the participants talked about specific library displays. The library's display for Black History Month frequently came up, and another student talked about a display that highlighted Arab women authors. While the students were not surprised about not finding a display about multiracialism, several expressed a desire to see that part of their identity acknowledged in that specific way.

An unexpected perspective that emerged with several study participants was the belief that libraries are neutral. Because of this belief, many of the participants felt that the library did not have a responsibility to support their sense of belonging; one participant said, "I have no problems with them [libraries] because they take such a neutral stance on everything. And that's fine…but if part of their goal was to be more inclusive, then, you know, I probably expect a bit more." Another student remarked that, "libraries aren't political places," and many participants stated that, while they did not see their own representation in the library, they did not believe it was part of the library's responsibilities to increase their sense of belonging. Several of the study participants said that they had a very neutral stance on the library, and many participants reflected on how they associate the library with a physical space to study in. These observations from the interviews and focus group are important because they show that the University of Illinois Library is not as inclusive as it—according to the library's mission statement—strives to be.[40] Instead, the study participants believe that the mission of the library is to solely provide resources and services in an unbiased way.

There has been a great deal of criticism of the idea that libraries are neutral institutions[41] because libraries uphold white supremacy; this relates back to the issue of whiteness in academic libraries, and how the systemic inequalities in library policies and structures need to be addressed for academic libraries to become more inclusive. While the University of Illinois Library mission statement has language that communicate the necessity and importance of supporting student needs through library collections and services, it does not include active language against neutrality in libraries. By adopting more active language against neutrality in its mission statement, as well as continuing to include more services and collection items that are more inclusive and accessible, the library may begin to change students' perspective of the library from a neutral space to one that is more inclusive space.

Academic libraries are a place where students can grow not only through scholarly resources, but through the programs, space, staff, and exhibits offered. It is important for academic libraries to explore ways to reach out to, and connect with, students who have intersectional identities and who are seeking places and communities that make them feel less alone.

Conclusion

The author learned from the discussion with the participating students that, while they viewed the library in a positive manner, they did not feel like it increased their sense of belonging on campus. Instead, they viewed it as a physical space to study in, with several of them viewing

libraries as neutral spaces whose purpose is meant only to provide academic support. While none of the students felt unwelcomed in the University of Illinois Library, they did acknowledge that they felt erasure of their multiracial identity in the library as they did with many other places on campus.

With the population of the United States continuing to become more diverse, there needs to be more attention on, and awareness of, multiracial identities to combat the erasure of this demographic. Being multiracial brings about a wealth of complexities, including identity challenges and a lack of a sense of belonging. Mixed-race individuals have unique experiences that all contribute to their sense of self, but the complexity of this identity also allows for more empathy and support for others.

Themes of identity challenges, erasure, and finding community all emerged from conversations with participants, and will be used in guiding questions and discussions for the next steps of this study. Additionally, the idea of academic libraries as neutral places will be explored more in-depth to gain a stronger understanding of how students view the purpose of academic libraries. This study is only a small sampling from one university, and it will next be expanded to explore the experiences of a larger sampling of multiracial students in higher education on a national level. With a larger sample size, more information, experiences, and reflections will be gathered, which will provide a stronger understanding and will continue the conversation of how academic libraries can best support this group of students and increase their sense of belonging on their campuses.

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Appendix A. Pre-screen Questionnaire

1. Full name
2. University of Illinois email
3. Please select what year you are:
    a. First-year
    b. Sophomore
    c. Junior
    d. Senior
4. Please select the racial categories in which you identify. There is also an option to write in your own identity if you do not feel like the options presented accurately reflect you. These categories are adapted from the University of Illinois Urbana-Champaign from the [identifiable information].
    a. Asian
    b. Black or African American
    c. Hispanic, Latinx, or Spanish
    d. Caucasian
    e. Native American
    f. Hawaiian or other Pacific Islander
    g. Middle Eastern or Northern African
    h. Provide own answer
5. Are you an international student? We ask this to help us with the gift card process. Participants receive a 30$ Amazon gift card; since there are different processes for gift cards dependent on student status, it helps us to know ahead of time if you're an international student.
    a. Yes
    b. No

Appendix B. Individual Interview Questions

1. What does it mean (to you) to be multiracial?
2. Do you feel like you have a multiracial community, or do you feel alone? How so?
3. Have people ever classified your race incorrectly? If so, how have you responded and how did it make you feel? Have you experienced identity issues as a multiracial person? If so, how? If not, what has helped you feel secure in your identity?
4. How much time do you normally spend in the library? Why do you like spending time there AND/OR what would make you spend more time there?
5. What has your library experience been like, not only at the University of Illinois Urbana-Champaign, but other libraries as well?
6. Do you feel represented in the library? On campus? How so, or how not?
7. Can you tell me about a time when you really didn't feel like you belonged at the library?
8. Was there a time or times where you felt like you *were* "seen" in the library? Like your identity was acknowledged in some way, directly or indirectly?Do you feel it's important for multiracial experiences to be better understood? If so, why? If not, why not?

Appendix C. Focus Group Questions

1. What are some ways that libraries can contribute toward increasing a sense of belonging on campus?You identify as multiracial students, but do you feel like your identity as a multiracial/biracial person is a valued identity? In particular at the University of Illinois Urbana-Champaign?
2. Have you ever felt "erased" in the library? As if your identity does not exist? If so, how?
3. What would you like to see more of in the library for this part of your identity to feel acknowledged?
4. What does it mean to feel 'at home' in a place?Do you feel like that feeling applies to your experience in the U of I libraries? How so?
5. Taking what you just described, in what ways is the library responsible for making you feel at home?
6. Can you tell me about a time when you felt a real sense that you belonged in the University of Illinois libraries? What was that like for you? Can you describe it?
    a. Which library do you feel most at home at and why?
7. What do you want others to know about your experience/identity?

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Community College Librarian Views of Student Information Literacy Needs

Don Latham, Melissa Gross, and Heidi Julien

This paper shares the results of semi-structured interviews with 30 community college librarians who have instruction duties. The interviews explored these librarians' perceptions of students' information literacy (IL) strengths and weaknesses as well as their views of students' self-perceptions. Participants believe that students are confident in their ability to find information and are proficient in using technology to find information. Participants consider students' overconfidence to be an IL weakness along with: not understanding the research process; being overwhelmed by information; and, in some cases, having poor reading comprehension skills. Views are mixed as to whether students' IL skills vary based on their program of study.

Introduction

The research reported in this paper represents part of a larger project that sought to investigate information literacy (IL) among community college students in Florida and New York. In Phase 1, a survey was used to collect data on the instructional practices of community college librarians in relation to the ACRL *Framework for Information Literacy for Higher Education*[1] (*Framework*) and these librarians' perceptions of students' IL needs. In Phase 2, semi-structured interviews were conducted with students in order to investigate their own views of their IL needs. In Phase 3, semi-structured interviews were conducted with community college librarians in order to explore more fully the responses collected through the survey in Phase 1. This report will focus on community college librarians' views of students' IL needs.

The community college context is a rich one to investigate for a variety of reasons. Although a wealth of research has been conducted on IL among college students in general, far less work focusing specifically on community college students has been done. In addition, community colleges enroll nearly half of the students pursuing higher education in the United States.[2] Community colleges offer open-access enrollment and, as a result, serve a wide variety of students in terms of age, socioeconomic status, educational background, job status, and parental/caregiver status.[3] In addition, students who attend community college do so for a variety of reasons. Some are there to gain a certificate or associate of science degree to go into the workforce. Some are pursuing an associate of arts degree to transfer eventually to a four-year institution. And some are high school students who are dual enrolled in community college classes to get an early start on earning college-level credit. Not surprisingly, this rich

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diversity means that students arrive at community college with varying levels of experience with, and skills in, IL.

Success in teaching IL, regardless of the approach, depends on an understanding of the target audience for instruction. While research on community college students' perceptions of IL is growing, the understanding of how community college librarians think students see themselves in terms of their IL is important because this influences how IL instruction is approached. Research has reported on librarian views of student IL strengths and deficits but has paid less attention to librarian conceptions of how students see themselves in terms of their IL skills and needs. This topic requires further exploration as the implementation of the *Framework* is considered and undertaken in community colleges.

The overarching research question addressed in this study is: What are community college librarians' perceptions of students' IL needs? The specific research questions that guided data collection are:

- RQ1. What do community college librarians believe about how students view their strengths related to IL?
- RQ2. What do community college librarians believe about how students view their weaknesses related to IL?
- RQ3. How do community college librarians' beliefs about student views compare with their own perceptions of students' strengths and weaknesses related to IL?
- RQ4. To what extent do community college librarians believe that students' IL strengths and weaknesses vary depending on the program they are in and/or their goals beyond graduation?

A word about definitions is in order. By "IL skills" we mean the set of abilities related to finding, evaluating, using, and creating information effectively and ethically. By "IL concepts" we mean the threshold concepts (or frames) associated with the *Framework*, and their related knowledge practices and dispositions, namely: Authority Is Constructed and Contextual, Information Creation as a Process, Information Has Value, Research as Inquiry, Scholarship as Conversation, Searching as Strategic Exploration.[4] And by "IL needs" we are referring to what students need in order to be successful creators and consumers of information in their academic, professional, and personal lives.

Literature Review

Several review articles published in the early 2000s conclude that the number of research articles addressing community college student information behaviors published up to that time was quite limited.[5] Almost all of the articles reviewed describe librarians' professional assessment of student information seeking, and reveal concerns about student deficits in their technology and IL skills; however, they also caution that the conclusions in this literature "seem to lack concrete sources"[6] and tend to make inferences based on studies of university students. A more recent review of the research concludes that: (a) community college students have a variety of IL needs and (b) research on community college students' IL needs is generally underrepresented in the literature.[7] The literature that is available tends to focus on skills—the ability to find, evaluate, and use information—rather than higher level concepts, such as understanding how the research process works, how authority is constructed and contextual, etc.

Discourse on information literacy and learners tends to position IL as an empowering practice and learners as deficient,[8] and indeed those two positions are evident in the research

literature on community college students and IL. Recent work has objectively demonstrated that many community college students do not have proficient IL skills, though they are largely unaware of it and, in fact, report their skills to be "above average."[9] Their self-assessments reveal a common misperception of social comparisons, the "better-than-average effect," established in psychology, also known as the Dunning-Kruger effect.[10] Of course, it is a mathematical impossibility that everyone can be "above average."

How well one performs is also related to how the skill is defined. Interviews with community college students have revealed that they are more concerned with whether or not they can find the information they seek, and are less concerned about the process of finding it or how long that process takes.[11] These students did not see IL as a set of skills, but rather something they were naturally good at. People are preferred sources, as is Google when they are looking for information online. In addition, the quality of information is not a big concern as most information is seen as "good enough."

Kocevar-Weidinger, instead of focusing on students' IL deficits, examined their strengths. She and her collaborators used a phenomenographic approach based on 40 interviews with first-year students from four institutions of higher learning, one of which was a community college.[12] They asked students about how they search for information relevant to their everyday lives, thinking that students' everyday information seeking might inform how students approach academic research. They concluded that first-year students easily manage and prioritize information, prefer people as resources, and use information intentionally to solve problems. These authors recommend using these findings to develop a strengths-based approach to IL instruction (ILI). Their suggestion is in line with concerns in the literature that a deficit approach to educating community college students is far too common.[13]

A recent study performed semi-structured interviews with 34 students from five community colleges in Florida and New York to explore their self-perceptions of their IL needs, as well as how these perceptions relate to their educational and career goals and to the type of ILI they have experienced (i.e., skills-based instruction versus threshold concepts).[14] These students voiced more comfort in seeking information for personal use than for schoolwork. They were interested in knowing more about finding resources, evaluating information, differentiating opinion from bias, and improving their writing skills. Conceptions of IL varied depending on context (i.e., personal, school, workplace), and for many participants, school and workplace IL were the most similar. Some students felt that in the workplace they would most likely rely on people for information, rather than published resources. The study found that all of the participants described IL in terms of skills; none of them described it in terms of the *Framework*'s threshold concepts, suggesting that none had received (or at least recalled) ILI based on the threshold concepts.

An online survey of the instructional practices of community college librarians in Florida and New York included questions about librarians' perceptions of student IL needs.[15] Respondents considered students' primary IL strengths to include awareness of technological innovations, and an understanding of general research strategies—especially among students who were career-oriented or planning to transfer to a four-year institution. The most-reported student IL weaknesses included critically evaluating information, understanding databases, and managing information. These participants rated knowing how to critically evaluate information, understanding general research strategies, and knowing how to find information

in various sources as the top three skills that are important for student success. The study reported here sought to further explore these findings with community college librarians.

Methodology

Librarians with instructional responsibilities were recruited from community colleges in Florida and New York as participants. Both states have large, longstanding community college systems that serve urban, suburban, and rural populations that are diverse in terms of age, race, ethnicity, socioeconomic status, and military status.[16] Participants were recruited via an email invitation to participate in an online semi-structured interview. These invitations were sent directly to all community college librarians in both states. The interview schedule was pretested with four librarians at Florida State University before it was deployed. The interview schedule provided a general guide that ensured certain information was collected, such as years of professional experience, while allowing participants some autonomy in determining the scope and direction of their comments. The portion of the interview schedule related to this study is provided in the Appendix. The interviews ranged from 15 to 74 minutes in length and were recorded, transcribed, and then entered into NVivo for coding and qualitative data analysis. A subset of transcripts was coded by one of the primary investigators and a research assistant, who achieved a high Kappa of 0.77 agreement. After that, the coding was completed by the research assistant. Thematic coding was employed, and a grounded theory approach was used for data analysis.[17] Participants received a $50 gift card as an incentive for participation. Ethics approval was obtained from the Institutional Review Board at Florida State University in agreement with the University at Buffalo, and the project was determined to be exempt. Interviews were completed during the spring of 2021.

Participants

A total of 30 participants were recruited via the email solicitation: twenty-three females and seven males. Seventeen were from Florida and 13 from New York. Their experience ranged from three to 40 years ($M = 13.5$; $SD = 8.95$). The community college systems in which they were employed had estimated student enrollments that ranged from 600 to 160,000 ($Mdn = 10{,}000$).

The forms of ILI they offer include one-shot sessions, credit courses, library orientations, embedded instruction, workshops, and one-on-one instruction provided as part of reference service transactions. Instruction is provided in classrooms, the library, computer labs, and online. In the sections that follow, participants' names have been replaced with pseudonyms.

Findings

Findings presented in this section are arranged according to the interview questions that relate to the overarching research question: "What are community college librarians' perceptions of students' IL needs?"

Aspects of IL Considered Most Important

To provide context for responses to questions about students' strengths and weaknesses, participants were first asked: "What aspects of information literacy do you think are most important for students' success"? Several dominant themes emerged. One is the importance of understanding research as a process and scholarship as conversation, two of the frames in the *Framework*.[18] Lily expressed the belief that librarians need to focus on "changing [students']

conception so that they think about research as a process that requires time and persistence and flexibility. Those are things I think they struggle with the most." Jade offered a similar view: "I explain to people, particularly if I don't get the results that I want, that it's a process, you know, you have to be a little patient… and you gotta play with the databases, you got to play with your search strategy." Lucy explained the importance of students' "understanding from the beginning that this is more of a circular process than a linear one." Both Samantha and Teresa noted the need to impress upon students that research is an "iterative process." Stella described it like this: "[R]eally understanding how to do research and what it consists of is something that takes some of them a real significant amount of time to grasp."

Related to understanding the research process is developing an awareness of how scholarly communication works. Eleanor, for example, stated that she felt it was important "for students to understand just how scholarship works, how information is created… the communication." Kim reflected a similar viewpoint:

> I like to talk with the students about how scholarship is really a conversation and how, whenever they're reading these journal articles… why they're written the way they are, why they refer to other people's works, and how they themselves are participating in that conversation by using other people's works.

Such understanding is not necessarily intuitive and often hinges on learning a new way to read scholarly literature. Chuck stated, "[Students] need us to model how to read a scholarly journal, which is different than reading a newspaper article, which is different than reading a popular magazine article, or reading a blog or, for goodness sake Facebook or Twitter."

Another key theme that emerged was the need for students to be aware of, and be able to evaluate, different types of sources. Allan, for instance, said, "I want students to identify the difference between what is real news, fake news, and satire. Oh yeah, I mean that's a big issue now." Chuck echoed this sentiment, explaining that what he thought was crucial was, "the idea of students being able to, first and foremost, judge information, evaluate information, critique information, question the source." As Carol noted, this issue of evaluation is closely connected to an understanding of who created the information:

> And that goes back to authority. You know, who's behind the information, how accurate is the information?… we really want our students to have a grounded understanding of there are so many different types of sources out there, what's published and what's actually not published, especially on the internet.

Several participants alluded to this issue of authority when they stated that they want students to become aware of the myriad resources available to them through the library, especially through library databases, as opposed to their default reliance on Google. Lauren, for example, said that, "I'm trying to teach them about getting good sources and good authority. I think for the community college level [that] is really the crux of how to get them moving and helping them forward." In order for that to happen, students need "just being exposed to what is available to them" (Penny), and they need help "in being able to identify what makes a source credible within the different types of sources that are out there" (Rhiannon).

Other aspects of IL that were deemed most important included asking focused research questions, developing effective search strategies, and understanding how to search databases. Not surprisingly, the term "critical thinking" was mentioned by several participants as being a crucial skill. Jasmine summed it up like this: "We really have to foster critical thinking, and we try to use as many techniques and methods as we can to get students to not be passive receivers of information."

Librarians' Perceptions of How Students See Their IL Strengths

Participants were asked to consider how community college students might describe their strengths and weaknesses related to IL. One strong theme that surfaced was a high level of confidence, especially about students' ability with technology and finding information online. Participants felt that many students see themselves as "expert researchers" (Allan) who have an innate curiosity. Participants also noted that students, in their personal lives, tend to recognize when they need information, and that this often motivates their search for and use of information for personal needs. Cathy said:

> So they know that there's a lot that they don't know, but what they also know… and they perceive as a strength is that they know that they have always been able to get the answers to questions that have pestered them.

Other IL strengths students may see in themselves include the ability to determine keywords for searches, having an awareness of the vast number of resources they have easy access to, and knowledge of reliable sources. Participants said students are aware that bad information exists and that there is reason to be skeptical, but they ultimately consider finding an answer to be more important than the quality of the information. Participants stated they think students generally believe that the information they find is "good enough." Maureen said that students "think that they're good at knowing what's believable and what's not… because I feel like that's, everybody feels that whatever they think is the best."

Participants also think that students see themselves as on top of popular culture, and abreast of cultural trends through the use of social media. Amy, for instance, stated "they are on the cutting edge of where information comes from in terms of social media, which is really an increasingly valid form of information with a really big asterisk." Participants described students as feeling well informed, as well as proud of being socially conscious, culturally tolerant, and knowledgeable about cultures other than their own. Several participants added the caveat that these generalizations mainly describe younger students, noting that there are many students, even younger ones, who struggle with technology. They describe older students as being less tech-savvy, less social media-oriented, more open to developing IL skills and knowledge, and more understanding of the importance of widening their exposure to technology and IL as part of their education.

Librarians' Perceptions of How Students See Their IL Weaknesses

In working with students, participants observed that the uncertainties students experienced started with not understanding what they are being asked to do when given a research assignment. Participants stated that students express a lack of understanding of research terminology, experience difficulty synthesizing information, and have questions about cit-

ing resources and disentangling how plagiarism differs from paraphrasing. Kayla noted the problems many students encounter in developing effective database searches: "Students often come to me saying they have trouble finding the right keywords and search terms to use…. when you're searching, you know, databases and, you know, academic journals, you have to be very specific and targeted with your search and they just don't have those skills yet." Barbara offered a similar observation, stating that while students may feel comfortable performing a Google search, "once they have these library resources in front of them, they're not really too sure."

Participants reported that another problem students vocalize to them is feeling overwhelmed by the amount of information they are confronted with. There is just too much information, and they do not know how to narrow it down. Likewise, students voice concerns about recognizing scholarly information and reliable information:

> That's the biggest follow-up question I get from students is how do I make sure this is a peer-reviewed source, but even if it's not a peer-reviewed source, you know, how do I make sure this is a good source…that's the thing they would recognize as being a weakness (Rhiannon).

Additional challenges that students have expressed to participants include language skills—especially among students for whom English is not their first language—and technology skills, especially among students who enrolled in college later in life.

Librarian Perceptions of Student IL Strengths

In addition to being asked about their perceptions of students' self-views, librarians were asked about their own views of students' IL strengths and weaknesses. In terms of strengths, participants felt that students were curious, motivated, eager to learn, flexible and adaptable, and aware that not all information is reliable. Not surprisingly, participants reported that students, especially younger students, have good technology skills; they are "good at formulating research questions" (Eleanor), "know how to get around the web" (Amy), and overall are "very tech savvy" (Lauren). They are particularly adept at using Google and social media. More than one participant noted that their students are digital natives, having "grown up in an online atmosphere" (Matthew).

One participant noted that students also know "what it means to be a citizen in the online world," and "are able to code-switch between the way that they should behave in an academic digital setting versus a social digital setting" (Samantha). Another reported that students sometimes use technology to seek information from a more "traditional" source, i.e., librarians: "It's amazing the different ways that they're able to find us, but they do seem to have a strong ability to find a way to ask us questions either through email or chat or just randomly coming into the library as well" (Matthew). Students' technology skills, according to one participant, represent an opportunity for librarians to help them build on existing knowledge: "[Google] is a good platform, but we have to take those skills that they've self-learned and, you know, kind of hone them so that they can learn how to use the tools that the library has available for them" (Amy). While the vast majority of participants agreed that students have some IL strengths, particularly in using technology and performing searches, one offered a different perspective, stating, "I feel like there aren't a lot of strengths there" (Stella).

Librarian Perceptions of Student IL Weaknesses

Although participants reported that students have a high level of confidence in their ability to find information, they themselves saw this as a significant weakness among students. This confidence, participants said, actually reflects students' inflated sense of proficiency related to their belief that access to Google is all they need. One participant talked about administering a diagnostic test at the beginning of a required course that assessed both IL and confidence and reported, "Everyone who did poorly, like couldn't even answer half the questions, rated themselves as experts, you know? …more adult students are very aware that they need a lot of help" (Peter). Another participant remarked, "I think if you pulled any student off the street, they would say, yeah, I know what I'm doing until they're confronted with perhaps, like an assignment" (Barbara). Participants felt that this is in part a result of students not knowing much about IL, libraries, and databases: "There's a whole area of expertise that they don't know is there. And once they become aware of it, that's when they realize that's their weakness" (Amy).

Participants reported that students do not understand that research is a process, that it takes time, and requires reading. Reading was mentioned as an issue by several participants. Chuck said that students "don't want to read. Reading has been demonized somewhere along the line in K–12." Eleanor offered a more nuanced view, suggesting that the problem is "reading comprehension of scholarly sources." Participants reported that reading is problematic for many English language learners, and for other students as well. For some students the issue is related to short attention span: "People are reading, but they don't have the endurance, let's say to read long-term and to kind of, you know, take it apart" (Inez).

This ability to "take it apart" is closely related to another weakness several participants identified: critical thinking skills. As a result, students have difficulty evaluating sources. As Chuck explained, "they're looking at stuff on Facebook and Instagram and they don't know to be skeptical. So I always try to get them to remember that before using a source for your research, you want to question its relevance, its accuracy, its appropriateness, who published it." Kayla lamented "the appeal of fake news and those types of sources that really catch your eye."

Somewhat surprisingly, many participants reported having students who lack technology skills. These were often identified as "older students" (Chuck), and "continuing education students or, you know, middle-aged students" (Teresa). These students with low technology skills are "pretty frustrated by technology …and just being bombarded by so much of it" (Jasmine), and "have difficulty navigating the website" (Neil). Peter reported, in extreme cases, "I have to help people turn on the computer." To be sure, some students are quite savvy with technology: "there is a divide, that digital divide, where overall there's, you know, certainly students who are really, really aware of how to use a computer and how to search the web and all that other stuff. But there's also students who really don't have that, those skills" (Rhiannon).

Librarian Perception of IL Skills by Program and/or Goals

On the question of whether they had noticed that students' IL skills vary depending on which program they are in and/or their post-graduation goals, participants were divided. A majority of participants said "yes." In general, participants reported that students who have been in college longer (as opposed to brand new freshmen) and students who are planning to pursue a

bachelor's degree have stronger IL skills. Nursing was singled out by a number of participants as a program that requires students to do research and, as a result, produces students with stronger IL skills: "their professors are making them look at, like, databases more. So they're in the catalog, they're in the databases" (Alfred). Several participants felt that the differences in IL skill levels among their students were tied more to high school experience: "If you have a student coming right out of high school, who hasn't done a lot of research, you know, all information literacy is brand new to them" (Amy). Interestingly, different participants reported different experiences with dual-enrolled students (i.e., high school students who are enrolled in community college courses). One said that, "dual enrollment students… would probably not be as good as the students, like, in a particular, if they're in a particular field" (Alfred). But another described a very different kind of experience: "I think there's a motivation piece there with those dual-enrolled students. And I also see them doing better and grasping the concepts more at an earlier place" (Carol).

Several participants stated that they felt the differences in IL skill levels had more to do with demographics than with individual programs or personal goals. Jasmine, for example, said:

> …that's the challenge with dealing with a very diverse population. We have students who are very young, that are immigrants. We have students who were born here that don't have any problem with language. We have students that are older going back to school for the first time who have a wealth of life experience….You have all these streams of different people, kind of from different backgrounds, coming together and some need so much help.

Some participants who responded "no" to the question offered similar opinions. Cathy said, "what they bring in is more critical to their information literacy competencies or dispositions than any program that they're in or any goal that they've set for themselves." But she went on to say that she found IL skill levels to be similar "across the board," a phrase that was also used by two other participants. Other participants were not sure whether IL skills varied by program or goals. One noted that her instruction mostly focused on the general education curriculum as opposed to program-specific courses, while another admitted that she had not given the question of IL differences across programs a lot of thought.

Discussion

Participants were asked to consider their beliefs about student needs and perceptions related to IL. Two key and somewhat unusual findings are: (1) librarians' perceptions are not that different from students' perceptions of their own IL needs, and (2) librarians recognize that reading comprehension skills directly impact IL skills. The most important aspects of IL, according to participants, are the ability to understand research as a process and to understand how scholarly communication works. Closely related to these concepts is the ability to evaluate sources based on an understanding of authority. These findings are similar to those of previous research in which a survey was administered to community college librarians. In that study, librarians ranked critical evaluation of information as most important for student success, followed by understanding the research process, and knowing how to find information.[19] In another study, interviews with community college students found that students themselves

consider technology skills to be important to IL along with the ability to evaluate information and to use it effectively.[20] In that respect, the findings from this study are somewhat unusual in that they suggest librarians' perceptions of students' IL needs are not that different from students' perceptions.

In terms of IL strengths, participants in the current study felt that students would consider their confidence in using technology and their confidence in finding information to be their greatest strength, although they themselves saw this inflated sense of confidence as a weakness. Indeed, as earlier studies have shown, community college students do tend to overestimate their IL abilities, with the lowest-performing students often having the most inflated view of their skills.[21] In addition, students, especially younger students, consider themselves to be proficient in using social media as a source of information about popular culture and current events. The participants agreed that students—again, especially younger students—tend to have good technology skills and were particularly good at using Google and social media. Students overall are curious, flexible, and aware that not all information is reliable. These findings are similar to those of previous research in which community college librarians ranked technology awareness as being students' greatest strength related to IL.[22]

In terms of IL weaknesses, participants believed that students would describe themselves as struggling with several issues: not understanding what they are being asked to do, lacking database search skills, and not understanding how to properly cite sources. Many students would admit to being overwhelmed by the sheer amount of information available to them. The participants themselves considered students' greatest IL weaknesses to be overconfidence in their ability to find information and their lack of understanding that research is a process. Related weaknesses, according to participants, are poor reading skills and lack of critical thinking skills, both of which negatively impact students' ability to evaluate sources effectively. These findings are different from those of a previous study in which community college librarians indicated that students' greatest weakness was the ability to critically evaluate information, followed by understanding how databases are organized.[23] In that study, understanding research strategies ranked fourth—tied with knowing how to find information—among students' IL weaknesses. In another study, community college students indicated they considered their greatest weaknesses to be the ability to find information, especially information in databases, and selecting relevant and reliable information.[24] Clearly, evaluation is considered to be an important skill—and also a weakness—across all three studies. However, only the current study found the perception that poor reading skills may have something to do with students' weakness in effectively evaluating information.

Many students begin college academically underprepared, especially in reading and math, and the issue is especially acute among community college students.[25] As a result, as many as half of them take remedial courses,[26] including courses in developmental reading.[27] No doubt, as the librarians in our study reported, poor reading comprehension skills negatively affect students' information literacy, especially their ability to evaluate and use information effectively. And even students with generally good reading comprehension skills may struggle with the conventions of academic discourse.

While generalized statements about student IL strengths and weaknesses were offered by librarians in the current study, these were tempered by a recognition of the diversity of the population served. For example, older, returning students are less confident than younger ones; not all students have access to technology, nor are they necessarily adept in its use;

students may be acquiring English language skills, and some may be struggling with basic literacy issues. In general, participants saw this diversity in backgrounds and situations as having more to do with individual students' IL strengths and weaknesses than the programs they are in or their ultimate goals beyond graduation. The diversity among community college students complicates understanding who they are, understanding their IL needs, and responding to those needs.

This study suggests several implications for the practice of IL instruction in community college libraries. A central concern is to meet the IL needs of students across extremely diverse subpopulations, which are a hallmark of community colleges. The old adage that instruction must begin with where students are is true. Thus, an important first step is for librarians to understand what community college students believe about their own IL needs, strengths, and weaknesses. While this may seem obvious, putting it into practice presents challenges. The constraints of the one-shot workshop (limited time, limited contact) make it difficult to provide in-depth instruction, never mind doing any real needs assessment. Librarians also need to interrogate their own beliefs about students' needs, strengths, and weaknesses; however, without meaningful data about students' perceptions, librarians have no way of knowing how their own perceptions compare. Given the diversity among community college students, the one-size-fits-all approach may not be the best strategy for addressing their needs. How, for example, should a librarian design instruction for a single class that includes both tech-savvy younger students and tech-phobic older ones? What about for a class that contains both overconfident students and students with low confidence in their abilities? These implications are important not only for practicing community college librarians, but also for those who educate pre-service librarians. Education for the instructional role must include an exploration of the various contexts in which librarians will work, including community college contexts, and the diverse needs of the students they will work with.

This study also suggests future directions for research. While the literature on IL is quite extensive, studies specific to community colleges are not. This means that there are many opportunities for researchers to contribute to the profession's understanding of this context and to improve IL instruction. The diversity of the student population requires extensive exploration of their IL needs, as well as how to support the transition of the population to a more sophisticated view of IL, thus defeating the problem of overconfidence among the nonproficient,[28] and making the integration of IL concepts into information seeking, creation, and use second nature. Dual-enrolled high school students offer a unique opportunity for community college librarians to expand these students' thinking about information before they start college or enter the workforce. Collaborating with high school librarians might offer one way to achieve this goal. Gaining a greater understanding of community college librarians' own, sometimes hidden, assumptions about IL and students' needs can help identify ways in which those assumptions are advancing—and ways in which they are perhaps undermining—instructional effectiveness.

Opportunities exist for research on the relationship between reading and IL, and for developing effective instruction in how to read scholarly literature. As noted above, a large percentage of community college students enroll in developmental reading courses. One strategy for improving IL among these students would be to offer ILI within the context of these courses. A recent two-volume work, *Teaching Critical Reading Skills: Strategies for Academic Librarians,* offers a variety of approaches to librarians teaching reading at the college level,

and not just in the context of developmental reading courses.[29] One of these is the Peritextual Analysis and Critical Thinking (PACT) instructional model, in which students are taught to critically examine the peritextual elements (such as author biographies, supplementary materials, author's notes, and source lists) surrounding the main text of a book or an article and consider the relationship of these elements to the main text.[30]

Limitations

The data collected in this study is from 30 community college librarians in two states in the U.S. and therefore does not necessarily reflect the views held by other community college librarians in those or other states. Participants were self-selected and thus may represent community college librarians who have particularly strong feelings, pro or con, about IL, IL instruction, and community college students' IL needs.

Conclusion

The community college environment is unlike that of other institutions of higher learning. The value of this study lies in the potential for identifying opportunities for improving IL instruction in community colleges, based on a better understanding of librarians' perceptions of students' IL needs, as well as their perceptions of students' self-views. Librarians consider the most important aspects of IL to be understanding the research process, including scholarly communication, and critically evaluating information. They believe that students are confident in their ability to find information that is "good enough," and are proficient in using technology, including social media, to find information. While librarians agree that students, especially younger ones, are proficient in using technology, they consider students' overconfidence to be an IL weakness. Other weaknesses include not understanding the research process, being overwhelmed by information, and in some cases having poor reading comprehension skills. Views are mixed as to whether students' IL skills vary based on their program of study. There is a bit of a disconnect between what librarians consider the most important aspect of IL—understanding the research process—and what they believe students consider to be their greatest strength—using technology to find information online. Understanding the similarities and differences between librarian views and student views is an important first step in helping effectively address students' IL needs.

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Appendix A. Interview Schedule

1. How long have you worked as a librarian?
2. What's the approximate size of the student body at your college?
3. What kind of information literacy instruction does your library offer to students? (one-shot workshop, academic classroom, credit course) and where (library, classroom, computer lab)
4. What aspects of information literacy do you think are most important for students' success?
5. What do you believe are students' information literacy strengths?
6. What do you believe are students' information literacy weaknesses?
7. What do you think *students* believe their information literacy strengths to be?
8. What do you think *students* believe their information literacy weaknesses to be?
9. Do you think that their information literacy strengths and weaknesses vary depending on individual students' goals for their college program?

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Determining Equitable Liaison Librarian Workloads: An Investigation into the Conundrum

Susan Alison Bolton

In 2020 a University of Saskatchewan Library Working Group investigated liaison librarian workloads across disciplines to help develop a clearer understanding of variance in disciplinary needs, which would then help inform equitable annual liaison assignments. This article describes the process and data used to compare liaison workloads across the health sciences, fine arts, humanities, science, and social sciences disciplines. Although the Working Group was able to formulate some general recommendations, there was uncertainty around how the COVID-19 pandemic, as well as the Library's shift to a functional organizational structure, might impact liaison librarian activities and annual assignments in the future.

Introduction

During the 2020–2021 academic year twenty librarians at the University of Saskatchewan Library (the Library) had liaison responsibilities as all, or part, of their assigned duties. These librarians were distributed across six library locations, with a small number embedded within the college buildings of their assigned discipline(s). Their liaison responsibilities included information literacy instruction, collection management, and consultation (reference) support for one or more colleges, schools, or departments. Although the Library has clusters that bring together librarians in four major broad disciplines—Arts & Humanities, Health Sciences, Sciences, and Social Sciences—most of the cluster work centres around collection management. There is some cross-population between clusters, but there is little opportunity for liaison librarians to develop deeper understanding of differing liaison demands and activity levels across the institution.

At the University of Saskatchewan librarians hold faculty status and the faculty collective agreement outlines the assignment of duties process. The agreement speaks to fairness of assignment of duties for the full range of academic responsibilities, but does not include any guidance around liaison librarian responsibilities, nor does it prescribe how faculty members should carry out any of their assigned duties.[1] Within the Library there have been long-standing perceptions of inequity in liaison librarian workloads. In June 2020 the Working Group on Equity Across Disciplines (Working Group) was formed, consisting of three librarians with liaison assignments in the health sciences, humanities, and social sciences respectively. The Working Group's proposed terms of reference were to:

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> Investigate and provide recommendations on how disciplinary/cluster differences in levels of instruction, consultation, collections activity, undergrad and grad student support, etc. could help inform the development of the annual assignment of duties. This will also help all of us better understand disciplinary and cluster demands.[2]

The Working Group was tasked with completing its work by December 2020 so that the recommendations in the report could be considered for the 2021–2022 assignment of duties process.

In considering equity of liaison librarian workload, factors such as implicit bias, racism, sexism, etc. were not taken into consideration, nor was the workload impact of other non-liaison assigned duties for those with hybrid assignments that included leadership or function-based roles in addition to liaison responsibilities.

This article is based on the Working Group's final report[3] and focuses on the process, the types of data used, the challenges and limitations of the data, and the key factors affecting liaison librarian workload regarding traditional and emerging duties. Data from the final report on liaison librarian activity for specific disciplines has been excluded from this article due to confidentiality concerns, as well as in recognition that there may be programmatic or curricular differences in disciplines from institution to institution. This research has been approved on ethical grounds by the University of Saskatchewan Behavioural Research Ethics Board.

Literature Review

A literature search was conducted using EBSCOhost's Library Literature & Information Science (the Full-Text & Retrospective versions), and Library, Information Science & Technology Abstracts databases; ProQuest's Library and Information Science Abstracts; the Library's discovery layer (USearch); and Google Scholar. No studies were found comparing or discussing the equity of workloads across disciplines. Instead, existing research related to disciplinary differences in libraries focuses almost entirely on either a single discipline, or on general groupings of disciplines—which most often compare the sciences, social sciences, and humanities. As existing studies do not typically differentiate the health sciences from the sciences in general, this limits, to some degree, the applicability of these studies' findings to the Library's situation where health sciences is a separate category. Also, the literature does not appear to compare academic library statistics for teaching or consultations by discipline grouping. However, there are clear patterns that emerge in the literature that offer some insights into how users in the respective discipline groups make use of, and access, academic libraries, as well as of the associated demands that these disciplinary differences put on librarians—especially related to collections work.

In an article published in 2020 in *College & Research Libraries* (*C&RL*), Anderson and Garcia point out that different subjects have different relationships with the library.[4] In their small-scale study, the authors created a library resource index and survey questions which explored the frequency of student use of library websites, library searches, article indexes and databases, electronic journals and articles, e-books, physical items, and special collections and archives.[5] The results of their study and surveys showed that use was, "quite a bit higher for graduate students than for undergraduates…with Humanities highest in usage," the Social Sciences second, and the Sciences third.[6]

Two robust studies, which focused on faculty use more than on student use of the library by disciplinary groupings, were completed by Ithaka S + R in 2013, and by Thompson at the University of Missouri in 2014. As with the C&RL study, these works provide evidence—through surveys and statistics—that faculty in the humanities placed the most importance on the library, both as a source of teaching and research support, and as an archive of resources.[7] These studies also found that the humanities, education, and the social sciences were more focused on library information seeking (in the catalogue, research guides, and in databases—though the latter had some variation by disciplines), while the sciences had a greater tendency to go further afield. This may be in part because open access resources are more prevalent in the sciences than in other discipline groupings.

The Ithaka study also found that, for teaching at all undergraduate levels, the heaviest reliance on textbooks was in the sciences; conversely, the humanities and, to a lesser degree, the social sciences, relied more on primary resources, monographs, and non-textual materials such as films. Journal articles were used in all disciplines though Ithaka again found "a strong disciplinary pattern" where fewer journal articles and more textbook readings were assigned by scientists to their students at the upper and lower undergraduate levels.[8] One similarity that exists among all disciplinary groupings is that "the role of the library as a Buyer was rated as highly important across the board for all disciplines."[9]

A review of the current and recent literature indicates, therefore, that the range of demands that faculty and students place upon collections work—in terms of diversity of acquisitions, knowledge of collections, and time commitment—can be significant depending upon the discipline, or group of disciplines, to which one is assigned.

Methods

In mid-July 2020 the Working Group met with the Library's Assessment Analyst to discuss what statistical data might be helpful. Acknowledging that each year has idiosyncrasies, the decision was made to include data for the previous three academic years (2017/18 to 2019/20) to allow for a more balanced perspective. The Assessment Analyst provided a variety of statistical reports from the University's statistical reporting site and the Library's SharePoint statistics gathering tool. The most useful data were the academic year enrollment headcount by level of student in each college, school, or department; fiscal year full time equivalent (FTE) for faculty and instructional employees by college, administrative unit, or department; and instruction and consultation statistics summary by participant group within each college or department. She advised that participant data for instruction and consultation (reference) support is "tricky to interpret," and "is sometimes double counted in cases where sessions were offered to more than one type of participant group;" in addition, she cautioned against "putting too much stock into the participant group data given its limitations."[10]

To inform work around collections, data generated by the Library's Collection Services unit was reviewed, together with related narrative information received from liaison librarians and cluster chairs. The current number of annually renewing library electronic resources was also identified by cluster. Individual liaison librarians' assignments for the past three years were reviewed to identify liaison coverage for the various colleges, schools, and departments. This information identified consistencies, inconsistencies, shared responsibilities, and gaps.

Liaison librarians were emailed an invitation to submit narrative descriptions of collections, instruction, consultation (reference) support, synthesis review activity, and any other

liaison work for each of their liaison areas during the 2019–2020 year (Appendix A). The narratives included information such as: time of year that a particular activity was more intense; the amount of new instructional content (e.g. classes, workshops, guides, and videos) created; the nature of instructional content (e.g. customized or repeat classes and in-person or online modules); collection development and organization, including budget responsibilities, major acquisitions, guides, projects; activities that span multiple years, such as a major collection review; and committee work external to the Library (e.g. memberships on college, school, or departmental committees in one's liaison area(s)). Sixteen liaison librarians submitted narratives for the report; twelve of whom consented to have information from their narratives anonymously included in this article.

An email was also sent to cluster chairs asking them to provide information on how their clusters currently function, in particular how often the cluster meets and for what purpose(s), what they feel their role is as cluster chair, how much time they spend performing this role, and any other information they would like to share about their cluster's work (Appendix B). All four cluster chairs submitted narratives, three of whom consented to have information from their narratives anonymously included in this article.

Findings

Instruction

At the University of Saskatchewan Library, librarian instruction activity includes one-off sessions or workshops, synthesis reviews, asynchronous learning modules, as well as multi-session and credit courses. Several factors were explored in an attempt to determine the number of instruction sessions delivered annually for each subject. Factors included: new topic/course vs. content taught previously for the same course(s) annually; general sessions vs. assignment-specific ones; time spent instructing (in hours); form of delivery (in-person on or off campus, online asynchronous class modules or objects); and level of instruction (entry, upper undergraduate, graduate, faculty).

The data did not identify: which instruction sessions were repeated from one year to another; instruction sessions delivered to multiple sections of the same class; how many instruction sessions consisted of new content each year; or whether instruction sessions supported a class assignment. Some liaison librarian narratives independently included this information, with varying levels of detail.

Data for general or multidisciplinary instruction sessions—such as graduate research workshops on developing your research profile, or open access publishing—are delivered by librarian volunteers, and generally reflect an individual's expertise or interest. These, and other topic-based instruction sessions delivered to disciplines outside assigned liaison areas, were also not separated out in the data.

Format of delivery was not analyzed, as delivery time was considered more relevant for measuring workload. Preparation time and assignment development and marking are not being captured in the SharePoint statistics form, so it was not possible to assess the workload impact of these activities. Some liaison librarian narratives noted that additional time was needed to prepare for instruction sessions in unfamiliar disciplines, and to develop sessions in familiar disciplines for courses that are either new, or whose content has substantially changed.

Synthesis review activity that is part of professional practice is captured in the instruction data, but only for the past couple of years; synthesis review activity, such as being a

co-investigator/co-author, is considered research activity and is documented elsewhere as research output.

Liaison librarian narrative submissions identified the following impacts on their instruction workload:

- Developing content from scratch (including 'traditional' content)
- Choosing relevant examples with limited subject knowledge
- Range or variety of classes taught and levels of instruction
- Customized content (assignment based or specialized topic), (e.g. scholarly communication, synthesis reviews, research data management)
- Distance or distributed students
- Instruction outside assigned liaison area(s) (discipline or topic-based)
- Integrated, graded assignments
- Online modules/courses
- Formal teaching of a course listed in the course calendar
- Development of specialized LibGuides beyond subject guides
- Repeated vs. customized sessions
- Audience—graduate, undergraduate, faculty, or for specialized audiences such as First Year Research Experience (FYRE), Student Undergraduate Research Experience (SURE), and Dean's Projects
- Class size

Consultation (Reference)

Librarian consultation (reference) activity includes in-office consults, as well as unscheduled reference questions received via email, phone, drop-in, or through referrals from library service point employees. Some librarians also record collections consults, but this was not being done consistently. The number of reference questions answered by liaison librarians during scheduled shifts at an information service point were not included in the data reviewed, as only a small number of librarians participate in this activity and very few of the questions they answer are related to their assigned subject disciplines. While the creation and maintenance of research guides is recognized as a factor in liaison librarian workloads, time spent on this activity is not being recorded.

Consultation (reference) data was comprised of the number and duration of consultations. The number of participants in the consultation sessions were not considered for the reasons stated in the Methodology section.

In their narrative submissions, liaison librarians identified the following impacts on their consultation (reference) workload:

- Embeddedness / outreach activity
- Distance / distributed clients
- Research intensiveness of subject area / number of research chairs[11]
- Follow-up consults from instruction sessions
- Percentage of international (graduate) students
- Undergraduate vs. graduates vs. faculty needs
- Number of synthesis review support requests
- Scheduled information service desk shifts
- Interpretation of reference vs. research

- Multidisciplinarity

Collections

Each year, liaison librarians are provided with monograph allocations for their assigned discipline(s). The amount of money fluctuates from year to year, and is determined by the Library's overall acquisitions budget allocation from the provincial government which takes into account previous years' allocations, price increases, and the exchange rate of the Canadian dollar. In addition to its annual acquisitions budget, the Library receives variable funding through donations, endowments, and similar arrangements. As most of these funds are used irregularly and with low activity, a three-year average was felt to be too insignificant to include in this investigation.

To represent the known yearly work for monograph selection, data was gathered on the number of new monograph orders per year. Allocations were not considered, although they may represent impact. However, due to variability in the price of monographs for different disciplines, the number of titles selected was considered more reflective of workload. Disciplines with the highest three-year average number of monograph selections per year were identified.

There was no way to quantify the ancillary work that comes with collection management. Selection methods—such as reviewing vendor-supplied title notifications/slips, consulting sources beyond the standard vendors and mainstream academic publishers, and using approval plans and standing orders—can vary between disciplines. The amount of time required to select titles does not directly correlate to number of titles selected, as some titles require more in-depth examination than others. Additionally, the time it takes to select fifty titles from one hundred slips is different from selecting fifty titles from 500 slips. An effort was made to gather data on the number of slips per subject to assess the amount of selection per fund, compared to the amount of publishing, but the data available did not allow for this analysis. The workload required to select and review an electronic resource—or a specific collection of resources in any format—is higher than the workload for selecting a single monograph, plus it can vary each year for any given discipline. The serials collection is not reviewed annually; however periodic reviews of subsets of serials are undertaken when reconsidering specific journal packages, or when cost cutting measures are needed. This work can be significant and is often unevenly distributed across clusters and disciplines. As reflected in the *Ithaka S + R Report* of 2013, disciplines in the humanities and—to a lesser degree—the social sciences, rely the most on primary resources, and on non-textual materials such as films, rare monographs, and microforms.[12] Acquiring specifically requested items or series, and building collections in these wide-ranging formats also often involves a major time commitment.

Some years liaison librarians may undertake additional work such as: major collection reviews for a program; projects (e.g., shared print archives projects or collection moves); and/or the acquisition or management of major collections (primary resource collections online, weeding, or handling major gifts). Because such work does not occur every year, the amount of it can vary significantly from year to year within a specific discipline.

Meetings with vendors about new products, consulting with departments about potential database collection purchases, responding to requests for specific resources from faculty and students, and reviewing electronic resources and serials for selection or cancellation are also factors in the collections management workload. Some of these decisions are discussed

within a cluster, between clusters, and others by one or two liaison librarians, depending on the nature of the resource and the source of the funding.

Liaison librarian and cluster narratives identified the following challenges that impact time spent on collections work:

- It takes time to develop sufficient disciplinary knowledge to select appropriately. Selection is more challenging if the liaison librarian does not have a background in the subject.
- Selection is also more challenging when a discipline has a high volume of publishing, or where the Library's fund allocation for the discipline is small in proportion to the amount of the discipline's publishing. In both cases, more time is involved in decision-making.
- Certain disciplines acquire unique or non-standard resources, or resources published outside of standard academic publishing. Others have esoteric subject areas within a discipline.
- Occasionally, a college, school, or department adds a new program. The liaison librarian needs to ensure collections support these needs as well.
- Requests for streaming video and other media are also received. Responding to requests for these materials is more time-consuming than standard monographs.
- The liaison librarian's role in acquiring gifts or donations, and the liaison librarian's role in processing these collections, requires significant subject expertise. They can also be very time-consuming and often get set aside due to capacity issues.

Cluster Work

Narratives from liaison librarians noted that collections work is a primary, and sometimes the only, focus of how clusters work together. In this context the clusters serve as a forum to discuss annual spending of discretionary funds, as well as acquisition, or cancellation, of electronic resources and/or serials subscriptions. Though not occurring every year, clusters can also hold discussions of year end spending opportunities. In addition, donation, endowment, and similar funds are often used to acquire resources relevant to multiple disciplines either within a cluster, or across clusters. These types of acquisitions require consultation with other liaison librarians, colleges, schools, or departments, as well as Collection Services employees, and are time-consuming to coordinate.

The nature and range of disciplines within the various colleges, schools, and departments vary within each cluster. The responsibilities assumed by each cluster chair can differ, as can the work each cluster engages in, ranging from collaborating to provide instruction and consultations to focusing primarily on collections work. Cluster meeting frequency, as well as membership in multiple clusters, can also impact the amount of work undertaken by each liaison librarian.

College, school, or department committee participation is sometimes required by liaison librarians working with certain disciplines, and can include attendance at regular faculty meetings, curriculum committee meetings, or membership on short-term working groups or task forces, etc. The liaison librarian's participation level is determined primarily by interest and capacity. Liaison librarians are also responsible for periodically preparing information for program and accreditation reviews for an assigned college, school, or department, as well as engaging in site visits. Additionally, liaison librarian support for, and co-applicant involvement in, grant applications with non-library faculty is increasing in frequency. Although there is no data currently being collected on this, it was noted in some of the liaison librarian narratives.

Discussion

Student enrollment and faculty and instructional staff FTEs in each college, school, and department were examined to inform how many people each liaison librarian is potentially responsible for supporting. Although no direct correlation can be made between these numbers and the number of instruction sessions, consultations (reference), or synthesis review consultations, nor the amount of collections activity, this data provided a window into the potential for activity.

A review of liaison librarian assignments over the specified time-period revealed that some colleges, schools, and departments had the same liaison librarian from year to year, whereas others had multiple liaison librarians over that time due to leaves, position vacancies, and re-assignments. Narrative information received from liaison librarians noted that it takes time to develop relationships with college, school, or department members, and that the requests for instruction, consultation (reference) support, and collections recommendations from faculty and students can increase over time as relationships become stronger.

Liaison librarian engagement with an assigned college, school, or department is driven by several factors, including faculty and student numbers, curriculum content, consultation (reference) support needs of faculty and graduate students, initiative on the part of the liaison librarian, and available human resources. Capacity to meet the needs of a college, school, or department may be influenced by the number of liaison librarians assigned to that college, school, or department, which in turn affects the data analysis. Although the liaison librarian narratives included anecdotal indicators of the above, their impact could not be quantitatively or qualitatively measured.

The impact of instruction related to student success is an important aspect of liaison work. In the absence of an assessment tool, or any survey data, it is impossible to measure impact beyond participant numbers and anecdotal evidence, such as a professor noting an improved quality of research papers.

The analysis of instruction, consultation reference, and collections data focused on the demands and requirements of the disciplines themselves, not on the current or previous liaison librarians for those disciplines. For example, interdisciplinary topics are reported by the college or department of the client rather than that of the liaison librarian.

There were also inconsistencies discovered with self-reported data. Liaison librarians are recording their reference statistics in different locations (e.g., LibAnswers, which is used by library employees at service points, versus SharePoint, which is used by librarians for 'in-office' reference questions for the Assessment Analyst's statistical reports). And questions not regarded as 'substantive enough' in the judgment of individual liaison librarians may not have been recorded at all. Not remembering to record instruction or consultation data also surfaced as a regular occurrence. These inconsistencies in statistics recording impacted the accuracy of self-reported instruction and consultation (reference) data. Revisions to the instruction and consultation (reference) statistics form over the past three years may also have contributed to inconsistencies in reporting. While the statistics could still demonstrate certain disciplines with a high demand for instruction or consultations (reference), it could not be definitively stated that only those disciplines make high demands.

There is a great deal of autonomy associated with liaison librarian work. One of the factors that is difficult to measure is how each liaison librarian approaches doing what they do. For example, the level of investigation prior to approving a resource purchase, refreshing

instruction sessions annually versus always delivering the same content, being proactive or reactive regarding engagement with a college, school, or department's faculty and graduate students, etc.

Conclusion

Although several recommendations were identified, they were relatively broad, rather than discipline or liaison activity specific. It was almost impossible to make recommendations at that level of granularity due to the wide variance in how liaison librarians approach their work, the irregular demands of some liaison activities, the time it takes to build relationships with assigned colleges, schools, or departments, etc. There were also a few internal data gathering process irregularities identified that once rectified or clarified will provide more comprehensive and more accurate data.

Recommendations

1. A clear and common understanding of how, what, and where to record data for liaison librarian instruction and consultation needs to be determined, including instruction and consultation in specialized areas such as Data and GIS. Accurate and more complete data should help ensure a more fair and equitable assignment of duties, improve the accuracy of our Library's status with the Canadian Association of Research Libraries and the Association of Research Libraries, as well as better demonstrate to the university the important role librarians play in supporting teaching, research, and learning on our campus.
2. Consideration should be given to the need for time to build subject knowledge when assigning duties, especially in the first year of tenure track appointments. A process for knowledge transfer when an assignment is transitioning should also be developed.
3. No liaison librarian should be assigned more than one discipline that requires significant instruction, consultation, and collections activity. Consideration should also be given to dividing disciplines that are extremely heavy in all three areas amongst two or more liaison librarians.
4. Consideration should be given to encouraging librarians who are currently without liaison assignments to accept a small liaison assignment. This would help distribute the liaison workload across a larger number of people, enhance connections to our teaching and learning mission, and better support areas of growth as well as disciplines that are currently under-resourced.
5. As part of individual Assignment of Duties conversations, liaison librarians should ensure that the Library Dean is aware of any changes or anticipated changes (e.g., to faculty, student numbers, curricula, research priorities, etc.) that impact liaison work in their currently assigned areas.
6. Opportunities need to be created to enhance knowledge sharing, communication, and collaboration between clusters and among liaison librarians.[13]

Substantive changes to the Library's delivery of services have occurred since March of 2020, both in the way liaison librarians conduct their instruction and consultation (reference) activities, and in how these activities are recorded. For example, there is now an option to record data on asynchronous learning object development, such as Panopto video creation. Once the COVID-19 pandemic has passed or subsided, it is anticipated that many of the

newer online instructional activities may, to varying degrees, blend with more traditional approaches where face-to-face sessions were the dominant method of delivery. Changes to remote academic course instruction and learning during the pandemic may also have a significant impact, either positive or negative, on future demands for library instruction and consultation (reference). Additionally, it is unknown how the Library's recent shift towards a functional organizational structure will impact liaison librarian activities.

One significant positive outcome of this investigation was a clearer picture—and a greater understanding amongst liaison librarians—of the volume of instruction, consultation (reference), and collections work that is being undertaken to support each school, college or department.

Acknowledgement

The author would like to thank Crystal Hampson and David Smith, co-authors of the Working Group interim and final reports, for their editorial contributions to this article.

Appendix A. Email to Liaison Librarians Requesting Narrative Description of Liaison Work for Internal Working Group Report

Hi Liaison Librarians,

The **Equity Across Disciplines Working Group** (Crystal Hampson, David Smith, and Susan Murphy) has begun gathering data and other information to inform its work. Our mandate is to "*investigate and provide recommendations on how disciplinary/cluster differences in levels of instruction, consultation, collections activity, undergraduate and graduate student support, etc. could help inform the development of the annual assignment of duties. This will also help all of us better understand disciplinary and cluster demands.*"

We are contacting you to ask you to describe for us what your work as a liaison librarian entails. We would like you to provide us with a narrative description of what collections, instruction, reference / research consultation, synthesis review activity, and any other liaison work looked like for each of your areas over the past year. This could include information such as time of year that a particular activity is more intense, the amount of new instructional content (classes, workshops, guides, etc.) that you created, the nature of instructional content (customized and/or repeat classes, in-person and/or online modules), collection development and organization (budget responsibilities, major acquisitions, guides, projects, etc.), activities that span multiple years, liaison committee work external to the library (e.g. departmental/college committees), etc. We do not need you to provide any statistics you have recorded in our Sharepoint Instructional Statistics site as Carisa will be providing that data for us.

The information you provide will complement the data that we are gathering for these activities and enable us to see a more complete picture of what liaison activity looks like for each discipline. We acknowledge that there is variance in liaison activity levels, which are driven by or reflect the needs of each discipline.

We are anticipating completing our work no later than December. If you could send your response to susan.murphy@usask.ca by **August 4**, we would be most appreciative.

Thank you,
Crystal, David, and Susan

Appendix B. Email to Cluster Chairs Requesting Narrative Description of Cluster Work for the Working Group Internal Report

Hi Cluster Chairs,

The **Equity Across Disciplines Working Group** (Crystal Hampson, David Smith, and Susan Murphy) has begun gathering data and other information to inform its work. Our mandate is to "*investigate and provide recommendations on how disciplinary/cluster differences in levels of instruction, consultation, collections activity, undergraduate and graduate student support, etc. could help inform the development of the annual assignment of duties. This will also help all of us better understand disciplinary and cluster demands.*"

We are reaching out to you, as Cluster Chairs, to ask how your clusters currently function. We will be contacting liaisons individually about their particular liaison work. We are interested in:

- how often does your cluster meet?
- for what purpose(s) does your cluster meet or work together? e.g. for collections discussions and decisions? for instruction? for research consultations?
- what do you feel your role is as cluster chair? How much time do you spend performing this role?
- any other information you would like to share with us about your cluster's work.

We acknowledge that there is variance in application of the cluster model, which may be driven by the needs of the respective disciplines. Gathering narratives describing how each cluster functions is important to understanding the story that cannot be told by pure data alone.

We are anticipating completing our work no later than December. If you could send your responses to susan.murphy@usask.ca by **August 4**, we would be most appreciative. Feel free to engage other members of your cluster in crafting your response.

Thank you,
Crystal, David, and Susan

Notes

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Student Stress and the Research Consultation: The Effect of the Research Consultation on Project Stress and Overall Stress and Applications for Student Wellness

LuMarie Guth and Bradford Dennis

Academic libraries have conducted studies on the importance of the library research consultation (LRC) regarding student learning and the impact on academic success. While there is a robust literature examining library anxiety, no study has been designed to measure the impact of the library research consultation on stress. Researchers at a mid-sized midwestern Carnegie Research 2 institution analyzed 108 surveys administered before and after the consultation. Findings confirm the LRC improves perceived stress levels at the project and overall level. The overall stress change and project stress levels were lower during the COVID phase of the study.

Introduction

Faculty reported that—two years into the pandemic—students continued to face heightened stress and burnout.[1] Gen Z (born 1997 and later)[2] students are present at all levels of the undergraduate curriculum. According to the American Psychological Association (APA) 2018 Stress in America survey—in its report introducing Gen Z—91 percent of Gen Z respondents claimed to have experienced physical or emotional symptoms due to stress, compared to 74 percent of adults overall. Gen Z adults were also more likely than other generations at similar life stages to report that they have been diagnosed with an anxiety disorder (18 percent of Gen Z) and/or depression (23 percent of Gen Z).[3] Several studies indicate that college student mental health is a contributor to student retention and academic success.[4] Therefore it is in the best interest of the student and the university to address mental wellness. Faculty knowledge of mental health disorders,[5] along with direct expressions of concern and support,[6] can have a positive impact on student mental health and academic success. Likewise, it has been the experience of this study's researchers that students express a sense of relief upon finishing a research consultation with academic librarians. However, is this just anecdotal? Is it possible to demonstrate that librarians leading the research consultation can have a positive impact on student stress reduction? In summer 2019 early results were being filtered out from a campus-wide survey

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and series of listening sessions indicating that students on campus wanted additional mental wellness support. Early discussions centered around building a campus referral system to a "wellness wheel" of services, such as tutoring, recreation, and counseling. The researchers saw an opportunity to investigate their anecdotal experiences to see if the research consultation could serve as an effective option, among others, for triaging academic stress. The library—as an academic service on campus—has a mission to contribute to student success by providing the resources and services they need for their academic research. One such service is the library research consultation, which students can schedule to get individual assistance for their project(s). The consultation differs from the reference interview in that it is pre-scheduled versus conducted at a drop-in point-of-service. Since there is dedicated time allotted for the consultation, there is more flexibility to guide the patron through the research process and to impart information literacy skills. In the consultation, the librarian typically works with the student to develop their topic, determine the best research strategy, conduct initial searches to find sources, and evaluate the sources found for relevancy.

The researchers began their investigation in the fall of 2019 and paused collecting data when the university announced a move to fully remote instruction in March 2020. When it was evident that the pandemic would be long term, the researchers recognized the opportunity to include analysis of pre- and post-COVID data to measure its effect, if any. They conducted a second round of data collection from October 2020 to March 2021 while most classes were online and library research consultations were exclusively offered virtually.

Literature Review

Students and faculty believe the research consultation is helpful in learning library research skills[7] and is an important factor in academic success.[8] However, research linking the consultation with academic success metrics has been mixed. A University of Minnesota study on library use and academic success did not find any significant differences in GPA or retention between those who scheduled a peer research consultation and those who did not.[9] A similar study at University of Wisconsin—Eau Claire found that students who used reference consultations earned marginally higher grade point averages than non-library users.[10] Researchers at the University of Northern Iowa examined the effect of the research consultation on course performance and found that students who had research consultations had higher course grades than those who had not. However, they also found that students seeking consultations were more likely to live on campus and be full-time students, introducing the prospect of sampling bias in analysis of the effect of research consultations on academic success since students who are already more likely to succeed academically may be more likely to seek out a research consultation.[11]

Kuhlthau's ISP model offers an early examination of emotions experienced during the research process. In the origin study at Rutgers, Kuhlthau surveyed and interviewed high school seniors in AP English classes on their research process, and developed a new model for the information search process (ISP) which mapped each stage to a series of emotions.[12] Kuhlthau's ISP model argues that feelings of uncertainty increase after the initial optimism of the topic selection stage as students begin searching for sources. However, as the topic becomes more focused and students gather more pertinent information—as typically happens during the research consultation—feelings of clarity and confidence emerge, followed by relief at the end of the information gathering process, and then final satisfaction or dissatisfaction with the commencement of the

writing of the paper. Further testing of this model on users from a range of libraries found that academic participants showed the largest growth in confidence from the initiation to closure of the search project.[13] An advantage of the research consultation is that it expedites the information gathering process to move students more quickly to clarity and confidence.

Mellon constructed a grounded theory of "library anxiety" drawing on data collected from 6000 students over two years by 20 English professors. Three concepts emerged from these descriptions: 1. students generally feel that their own library-use skills are inadequate while the skills of other students are adequate; 2. the inadequacy is shameful and should be hidden; and 3. the inadequacy would be revealed by asking questions.[14] Bostick developed the Library Anxiety Scale[15] and researchers administered it to 493 students at two US universities; they found that library-anxious students tend to experience negative emotions such as fear, apprehension, and mental disorganization, therefore limiting their ability to use the library effectively.[16] Frustration associated with the search for information resources in libraries or information systems is one of the most prevalent forms of academic anxiety because most students are required to conduct research as a part of their academic program.[17] Researchers at Kent State found that 50 percent of respondents in first-year writing classes were, "mostly sure about how to begin a general search for information," but 48 percent agreed or strongly agreed they were, "unsure about how to begin research;" 63 percent of respondents felt "uncomfortable searching for information," and 67 percent did "not want to learn how to do their own research."[18] These numbers reflect a persistent need to work with students to make them more comfortable and confident in their research. Library anxiety and research performance are inversely related, and library anxiety represents a negative experience for the student.[19] Experiencing a successful search could lead to a reduction in search anxiety.[20]

Recent studies have shown that course instructors can play a role in recognizing and supporting students with mental health disorders by referring them to resources on campus.[21] As instructors, librarians can help minimize the effect of research anxiety, or "library anxiety."[22] Kracker developed and administered a Research Process Survey based on Kuhlthau's ISP model along with a standard anxiety test to a writing course at the University of Tennessee—Knoxville. The study found a significant decrease in anxiety about the research paper assignment in the test group after a 30-minute presentation on the ISP model, compared to the control. This finding indicates that instruction on the research process and on the expected emotions of that process, can mitigate negative emotions.[23] Students are less anxious when they know what they are experiencing is normal.

Student perceive the research consultation as a learning experience that extends beyond information literacy in the classroom.[24] Students undergoing the research consultation view the librarian as a teacher, and agree that the consultation helps improve their skills in conducting a literature search. A particular benefit of the consultation is modelling how to address the natural challenges of the research process.[25] The research consultation is an important service because it occurs at a point of need. Students often seek out the research consultation after already attempting research and meeting with challenges,[26] and frequently cite time savings as a benefit.[27] Reinsfelder[28] describes the unique advantages of the consultation: "the method of instruction can be quite effective and is used frequently by on-campus tutors and writing centers because these personal meetings allow for greater attention to detail and the ability to address unique concerns of each student in a way that is not possible in larger groups."

Several studies have found that students report increased research confidence after the consultation[29] and this confidence can have lasting effects beyond the project at hand.[30] Fewer studies investigate the effect of the research consultation on stress and anxiety and, when they do, it is not the central focus of the study. In a small study at Colorado State University—Pueblo undergraduate participants exhibited mild decreases in library anxiety over the course of one semester. However, the study included both instruction and consultation and it was not determined which had a greater impact on anxiety, if any.[31] In a study conducted at Utah State University, 80 percent of students who expressed library anxiety prior to the consultation were comforted by the professional knowledge of the librarian.[32] Although the central focus of their research was not stress, Magi and Mardeusz[33]—in their qualitative study at the University of Vermont—found, after coding the open ended comments, that students reported increased confidence and reduced stress after the consultation. Of the 52 students in the study, more than one-third said they felt overwhelmed before the consultation and about 20 percent referenced a feeling of stress or anxiety in their comments. After the consultation all but one remarked on a positive change. Responses in the appendix show 40 percent of the students mentioned feelings of confidence/readiness/preparedness, and about 20 percent mentioned feelings of relief or relaxation after the consultation.

The observation of heightened stress for Gen Z in the beginning of the COVID-19 pandemic is supported by the findings in the APA 2020 Stress and America report. Gen Z adults (aged 18–23 in 2020) reported high levels of stress with a 6.1 rating on a 10-point scale, compared to 5.0 for all adults. Eighty-two percent of Gen Z adults in college said that the uncertainty going into the 2020–21 school year would likely result in stress.[34] However, in the 2021 study Gen Z stress levels had lowered to 5.6, the second highest cohort after Millennials. Several studies have found that COVID-19 directly affected student stress levels. Active Minds surveyed undergraduate students in September 2020 and found that 89 percent reported that COVID-19 has had an impact on their stress/anxiety levels. When asked what the most stressful factor was, college students ranked having troubles focusing on studies and/or work as the third highest stress factor at 14 percent.[35] In interviews of undergraduates at Texas A&M in April 2020, 71 percent of respondents reported that their stress and anxiety had increased due to COVID-19, 89 percent of respondents reported difficulty concentrating, and 82 percent were concerned about their academic performance.[36] In contrast, a study comparing measurements before and after the University of Vermont moved all instruction online due to COVID-19 did not find significant changes in stress levels in their study. They hypothesized that the lack of stress changes could be attributed to moving back home, or to the additional pandemic-related accommodations instructors provided.[37]

Methodology and Demographics

Students who scheduled a research consultation with four of the nine instruction liaison librarians at Western Michigan University were invited to participate in the study, which was reviewed and approved through the IRB process. These four librarians served the areas of fine arts, business, health sciences, and education and were selected because of their breadth of disciplines, as well as their history of having a high volume of research consultations. Study participants were not asked why they sought the consultation, but there are a variety of incentives at the university. In some classes it is required. In others the instructor recommends the service, particularly when a student is struggling, or offers extra credit for using the service. Students in the business college can use the research consultation as an option for obtaining

a badge in a microlearning credentials program. Multiple librarians at the university have reported that students seek consultations for individual assistance after an instruction session was delivered to their class. There were 209 students eligible for participation and 108 opted into the study resulting in a response rate of 52 percent. The pre- and post- questionnaires were on the same Qualtrics web-based survey with a page in between asking students to keep the tab open and pause to resume the session. Prior to the study students were asked to self-report their feelings related to their project with the question: "How much stress do you feel about this project?" (possible responses were: None at all (1), A little (2), A moderate amount (3), A lot (4), A great deal (5)); and were asked about their overall stress via the question: "How much overall stress do you feel this semester?" (possible responses were: None at all (1), A little (2), A moderate amount (3), A lot (4), A great deal (5)). Definitions of project and overall stress were not provided, leaving interpretation to the students. Immediately after the consultation students were asked to report how their project and overall stress levels had changed with the questions: "How is your project stress after the research consultation?" (possible responses were: Much better (5), Somewhat better (4), About the same (3), Somewhat worse (2), Much worse (1)), and "How is your overall stress after the research consultation?" (possible responses were: Much better (5), Somewhat better (4), About the same (3), Somewhat worse (2), Much worse (1)). The study launched in week six of the fall 2019 semester and was suspended in week ten of the spring 2020 semester when it was announced that the following week campus would move to virtual services because of the COVID-19 pandemic. The study resumed in week six of the fall 2020 semester and ended in week ten of the spring 2021 semester to measure changes in reported project and overall stress before and during the COVID-19 pandemic. The weeks correspond to late October and early March. During the study period prior to the pandemic, the four librarians collecting responses for the study conducted 92 percent of their consultations in-person and none via web conferencing; while during the pandemic none of their consultations were in-person and 93 percent were via web conference. Other mediums for consultations included IM/Chat and phone.

SPSS version 27 was used in analysis of the data. The researchers consulted with the Associate Director of the Office of Institutional Research on the appropriate statistical tests, following up to verify the validity of the findings. Three of the factors were condensed in order to increase within-group sample size. Class standing was reduced from five categories (first year, sophomore, junior, senior, and graduate student) to three categories (first year/sophomore, junior/senior, and graduate student). Project stress and overall stress were reduced from five categories to two categories: low (none at all/a little/a moderate amount) and high (a lot/a great deal). Additionally, project stress change and overall stress change were transformed from much worse, somewhat worse, about the same, somewhat better, and much better to –2, –1, 0, 1, and 2 respectively to quantify the magnitude and direction of change of respondents from their previous state.

Of the 108 respondents, 43 percent (n=46) took the survey before the COVID-19 closures in Michigan and 57 percent (n=62) of respondents took the survey during the COVID-19 pandemic when library services and most courses were offered virtually. Eighty-five respondents gave their age. The ages of respondents ranged from a minimum of 17 to a maximum of 50 with a mean of 22.2 and standard deviation of 4.6. The ages and dates of participation were used to sort students into generations. Seventy-nine percent (n=67) of respondents who gave their age were from Gen Z, 19 percent (n=16) were Millennials, and 2 percent (n=2) were from Gen X.

Class Standing

Twelve percent (n=13) of respondents were first years/sophomores, 76 percent (n=82) were juniors/seniors, and 12 percent (n=13) were graduate students. This indicates that the primary audience for the research consultation service, at least among librarians in the study, is juniors/seniors.

There was a significant association between COVID and class standing ($x^2(2)=10.306$, $p=.006$), as exhibited in table 1. More respondents than expected were graduate students before COVID (late October 2019 through early March 2020), and there were more first years/sophomores than expected during the COVID phase of the study (late October 2020 through early March 2021). Examining LibAnswers consultation reporting statistics of librarians in the study, there were many more undergraduate consultations (178 versus 78) and slightly more graduate consultations (18 versus 16) during the COVID phase. While the researchers do not have an explanation for the change in graduate students, there was a first-year class that was strongly encouraged to meet with one of the librarians in the study during the COVID phase.

Results

Stress Change

TABLE 1
Class Standing and COVID (n=108)

			Class Standing		
			First Year / Sophomore (n=13)	Junior / Senior (n=82)	Graduate Student (n=13)
COVID	Before (n=46)	Count	1	36	9
		Expected Count	5.5	34.9	5.5
	During (n=62)	Count	12	46	4
		Expected Count	7.5	47.1	7.5

The primary interest of the study was to observe whether or not students reported an improvement in perceived stress after the research consultation. Thirty-seven percent (n=40) of respondents reported high levels of project stress and 64 percent (n=69) reported high levels of overall stress before the consultation. Respondents reported an improvement in both project stress and overall stress after the research consultation. Frequencies can be seen in figures 1 and 2. Respondents in the study experienced a mean positive change in project stress of 1.5 units and a mean positive change in overall stress of 1.2 units.

Chi-square Goodness of Fit Test Analysis

Using crosstabs, the researchers performed a chi-square goodness of fit test to explore associations between the variables and found significant associations between: 1. Project Stress and Covid; 2. Overall Stress Change and COVID; 3. Project Stress and Overall Stress; and 4. Project Stress Change and Overall Stress Change. One area of interest was whether participants in the study demonstrated higher levels of stress during the COVID phase of the study than in the pre-COVID phase.

There was a significant association between COVID and project stress before the consultation ($x^2(1)=10.297$, $p=.001$), but the data showed there were more respondents than expected

FIGURE 1
Project Stress Change Histogram

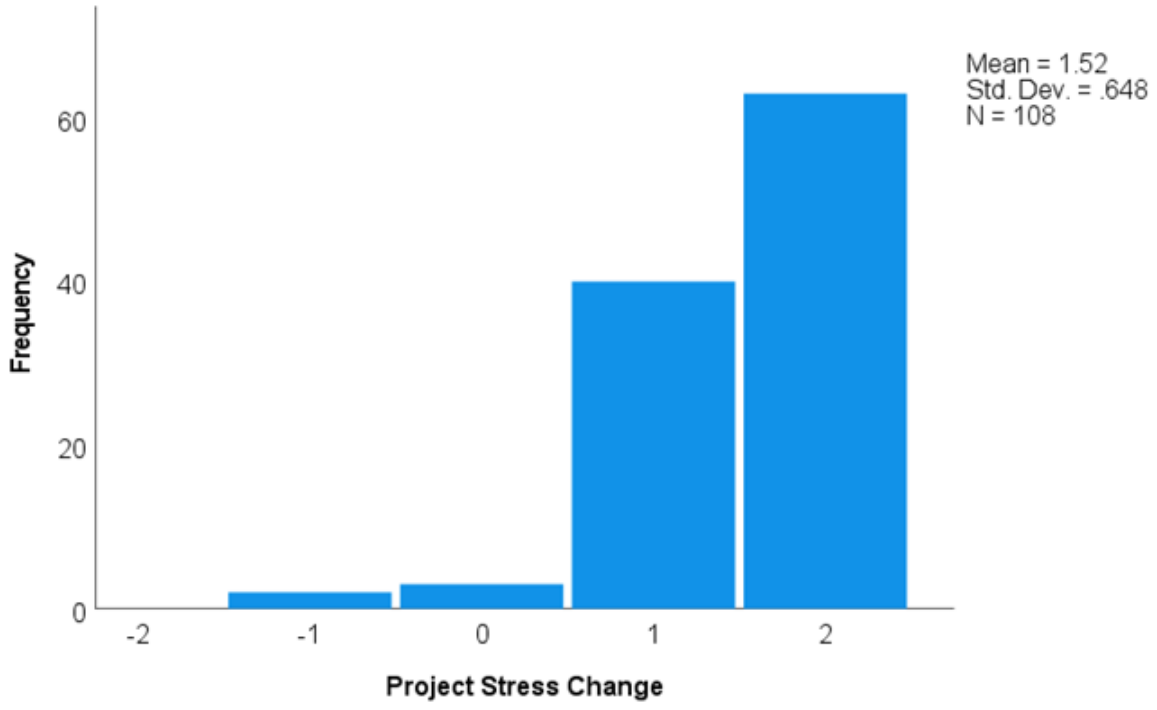
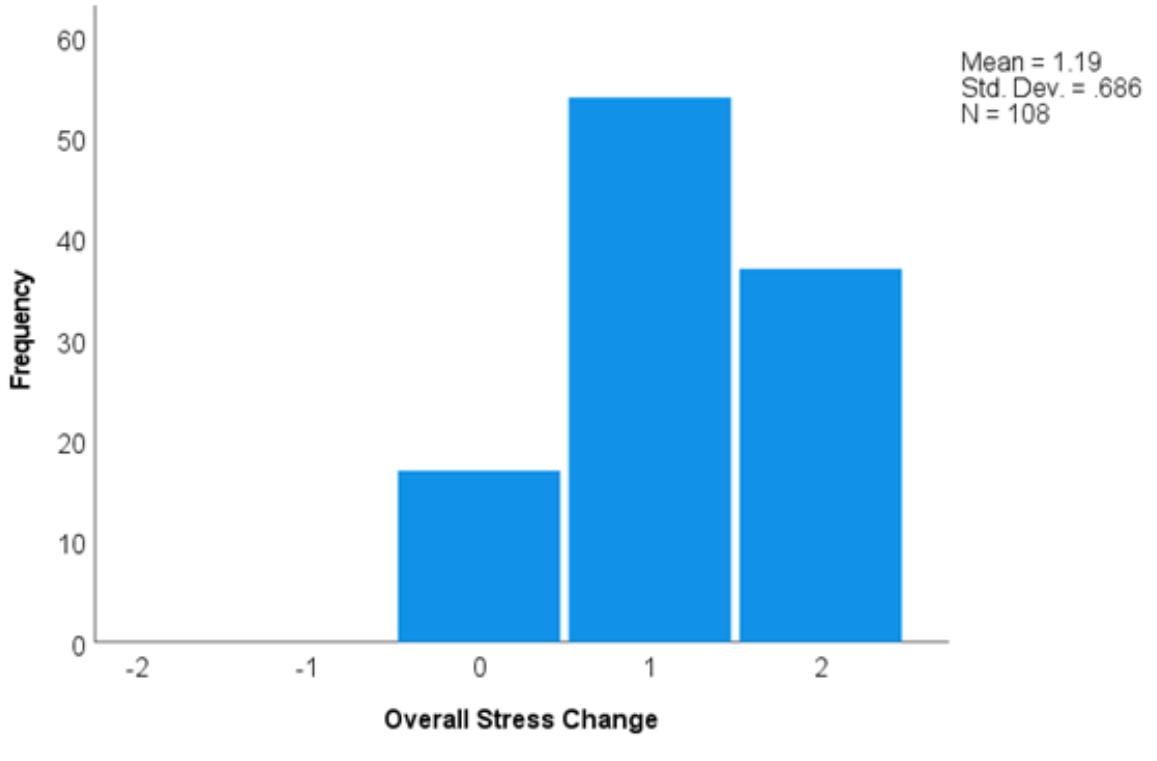


FIGURE 2
Overall Stress Change Histogram



reporting high project stress *before* COVID (late October 2019 through early March 2020). Likewise, more respondents than expected reported low project stress *during* COVID (late October 2020 through early March 2021) as shown in table 2. A similar analysis on overall stress before the consultation did not show a significant association with COVID.

TABLE 2
Project Stress and COVID (n=108)

			Project Stress	
			Low (1–3) (n=68)	High (4–5) (n=40)
COVID	Before (n=46)	Count	21	25
		Expected Count	29	17
	During (n=62)	Count	47	15
		Expected Count	39	23

There was a significant association between COVID and overall stress change ($x^2(2)=6.725$, $p=.035$). There were more respondents than expected reporting a positive overall stress change by two units before COVID, and more than expected reporting no overall stress change, or a positive stress change by one unit during COVID (see table 3). No students reported a negative overall stress change. In general, improvements in overall stress were higher before COVID. A similar analysis on project stress change did not show a significant association with COVID.

TABLE 3
Overall Stress Change and COVID (n=108)

			Overall Stress Change		
			0 (n=17)	1 (n=54)	2 (n=37)
COVID	Before (n=46)	Count	5	19	22
		Expected Count	7.2	23	15.8
	During (n=62)	Count	12	35	15
		Expected Count	9.8	31	21.2

In addition to the difference between initial project stress and COVID, there was a significant association between project stress and overall stress ($x^2(1)=5.101$, $p=.024$). There were more respondents than expected with both low project and overall stress, and likewise more than expected with both high project and overall stress (see table 4). In general, students with low project stress also had low overall stress and students with high project stress also had high overall stress.

TABLE 4
Project Stress and Overall Stress (n=108)

			Project Stress	
			Low (1–3) (n=68)	High (4–5) (n=40)
Overall Stress	Low (1–3) (n=39)	Count	30	9
		Expected Count	24.6	14.4
	High (4–5) (n=69)	Count	38	31
		Expected Count	43.4	25.6

There was also a significant association between project stress change and overall stress change ($x^2(6)=35.181$, $p < .001$). In general, students that showed large positive changes in project stress were more likely to show large positive changes in overall stress (see table 5).

TABLE 5
Project Stress Change and Overall Stress Change (n=108)

			Project Stress Change			
			–1 (n=2)	0 (n=3)	1 (n=40)	2 (n=63)
Overall Stress Change	0 (n=17)	Count	2	1	12	2
		Expected Count	.3	.5	6.3	9.9
	1 (n=54)	Count	0	2	23	29
		Expected Count	1	1.5	20	31.5
	2 (n=37)	Count	0	0	5	32
		Expected Count	.7	1	13.7	21.6

Regression Analysis of Project and Overall Stress Change

An ordinal regression model using the Cauchit link function in SPSS was used to estimate the relationships between changes in stress and possible explanatory variables including: COVID, Millennial, Gen Z, class standing, and initial project/overall stress respectively. The use of this model was affirmed by the model fitting, Pearson, and Deviance tests.

The ordinal regression model for project stress change found two explanatory variables that were statistically significant (see table 6). Students in the pre-COVID portion of the study reported stronger positive changes in project stress on average than students in the COVID portion (beta = 1.817, se = 0.885, p = 0.040). Students with low project stress prior to consultation reported stronger positive changes in project stress on average than students with high initial project stress (beta = 1.986, se = 0.876, p = 0.023).

TABLE 6
Regression of Project Stress Change

Parameter Estimates

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[ProjectStressChange = –1.00]	–20.649	21.738	0.902	1	0.342	–63.254	21.956
	[ProjectStressChange = .00]	–5.065	4.333	1.367	1	0.242	–13.556	3.427
	[ProjectStressChange = 1.00]	2.664	1.615	2.721	1	0.099	–0.501	5.829
Location	[GenZ=0]	0.964	1.003	0.924	1	0.336	–1.002	2.930
	[GenZ=1]	0[a]			0			
	[COVID=0]	1.817	0.885	4.220	1	0.040	0.083	3.551
	[COVID=1]	0[a]			0			
	[ClassStanding=1.00]	1.645	1.450	1.286	1	0.257	–1.198	4.487

TABLE 6
Regression of Project Stress Change

Parameter Estimates

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Location	[ClassStanding=2.00]	0.863	1.078	0.640	1	0.424	–1.251	2.977
	[ClassStanding=3.00]	0[a]			0			
	[ProjectStressHigh=.00]	1.986	0.876	5.146	1	0.023	0.270	3.702
	[ProjectStressHigh=1.00]	0[a]			0			
	[ProjectStressHigh=.00]	–20.649	21.738	0.902	1	0.342	–63.254	21.956
	[ProjectStressHigh=1.00]	–5.065	4.333	1.367	1	0.242	–13.556	3.427

Link function: Cauchit.

[a] This parameter is set to zero because it is redundant.

A cross tab analysis shows the responses to these questions and illustrates the difference between the estimated and reported values (see table 7). Respondents before COVID reported a higher-than-expected project stress change of two units and a lower than expected change of one unit while those during COVID reported a lower than expected project stress change of two units and higher than expected change of one unit. In general, respondents reported lower levels of project stress change during COVID than they did before.

TABLE 7
Project Stress Change and COVID (n=108)

			Project Stress Change			
			–1 (n=2)	0 (n=3)	1 (n=40)	2 (n=63)
COVID	Before (n=46)	Count	1	2	13	30
		Expected Count	.9	1.3	17	26.8
	During (n=62)	Count	1	1	27	33
		Expected Count	1.1	1.7	23	36.2

Table 8 shows that respondents who reported high project stress (4–5) reported lower-than-expected results for a positive project stress change factor of two and higher than expected results for zero project stress change and a positive project stress change factor of one.

TABLE 8
Project Stress Change and Project Stress (n=108)

			Project Stress Change			
			–1 (n=2)	0 (n=3)	1 (n=40)	2 (n=63)
Project Stress	Low (1–3) (n=68)	Count	2	1	21	44
		Expected Count	1.3	1.9	25.2	39.7
	High (4–5) (n=40)	Count	0	2	19	19
		Expected Count	.7	1.1	14.8	23.3

In general, participants reported lower levels of project stress change when they had high initial project stress than when they had low initial project stress.

Similarly, the overall stress change regression found overall stress and COVID to be the two significant explanatory variables (see table 9). Students in the pre-COVID portion of the study reported stronger positive changes in overall stress on average than students in the COVID portion (beta = 2.252, se = 0.837, p = 0.007). Students with low overall stress prior to consultation reported stronger positive changes in overall stress on average than students with high initial overall stress (beta = 1.594, se = 0.646, p = 0.014).

TABLE 9
Regression Analysis of Overall Stress Change

Parameter Estimates

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[OverallStressChange = .00]	–0.759	1.044	0.528	1	0.468	–2.805	1.288
	[OverallStressChange = 1.00]	3.136	1.300	5.820	1	0.016	0.588	5.683
Location	[GenZ=0]	–0.451	0.771	0.341	1	0.559	–1.963	1.061
	[GenZ=1]	0[a]			0			
	[COVID=0]	2.252	0.837	7.238	1	0.007	0.611	3.893
	[COVID=1]	0[a]			0			
	[ClassStanding=1.00]	2.011	1.287	2.442	1	0.118	–0.512	4.534
	[ClassStanding=2.00]	0.400	0.894	0.200	1	0.655	–1.353	2.153
	[ClassStanding=3.00]	0[a]			0			
	[OverallStressHigh=.00]	1.594	0.646	6.086	1	0.014	0.328	2.860
	[OverallStressHigh=1.00]	0[a]			0			

Link function: Cauchit

[a] This parameter is set to zero because it is redundant.

Respondents before COVID had a higher-than-expected overall stress change for two units and lower than expected change for zero and one units (see table 10). Respondents during COVID had a lower-than-expected overall stress change of two units and a higher-than-expected change for zero and one units. In general, respondents reported lower levels of overall stress change during COVID than they did before and when they had high initial overall stress.

TABLE 10
Overall Stress Change and COVID (n=108)

			Overall Stress Change		
			0 (n=17)	1 (n=54)	2 (n=37)
COVID	Before (n=46)	Count	5	19	22
		Expected Count	7.2	23	15.8
	During (n=62)	Count	12	35	15
		Expected Count	9.8	31	21.2

Respondents who reported high overall stress (4–5) reported lower than expected results for a positive overall stress change factor of two and higher than expected results for zero overall stress change and a positive overall stress change factor of one (see table 11). In general, respondents who reported higher overall stress had lower levels of stress change than people with lower overall stress.

TABLE 11
Overall Stress Change and Overall Stress (n=108)

			Overall Stress Change		
			2 (n=37)	1 (n=54)	0 (n=17)
Overall Stress	Low (1–3) (n=39)	Count	5	18	16
		Expected Count	6.1	19.5	13.4
	High (4–5) (n=69)	Count	12	36	21
		Expected Count	10.9	34.5	23.6

Discussion

The most impactful finding of this study is the consistent positive change in reported student stress after the research consultation. While the researchers were expecting to see a positive change in project stress, the researchers were very encouraged to see a corresponding positive change in overall stress. The overall stress change was lower in magnitude during the COVID phase of the study. This study did not ask students to describe the factors contributing to their overall stress and stress factors may have been more persistent during COVID times than prior. In their study of 243,694 students seeking counseling support, the Center for Collegiate Mental health found that levels of distress related to academics, eating, and family were heightened in 2020.[38] The finding that project stress levels were lower during the COVID period of our study was surprising. Anderson, Fisher, and Walker[39] analyzed 3,331 reference encounters at Georgia State University from the fall 2019 and spring 2020 semesters, coding them for level of difficulty, and found that transactions during COVID were more difficult than those before COVID. However, as the Vermont study speculated, accommodations from instructors during the COVID period of change may explain reduced stress.[40] Western Michigan University faculty may have improved communication and support—many faculty went through professional development when transitioning their courses online in the spring and summer of 2020. Additionally, the registrar offered students the opportunity to change their grading structure to pass/fail during the COVID lockdown with no penalty. In Texas A&M's study students reported increased stress due to COVID.[41] There was no significant difference in reported overall stress before and during COVID in our study or Vermont's,[42] but it's possible that students saw the project as a lower weighted stress factor in comparison to factors that arose from the context of the pandemic. The regression analysis found that, similarly to overall stress change, project stress change had a lower magnitude during the COVID phase of the study.

The findings in the regression analysis that respondents with lower initial project stress, or lower initial overall stress, experienced greater change is unexpected because there was less opportunity for change—if stress is already low, you wouldn't expect it to have as much room for improvement. However, it is easier to remove a small amount of stress than a large amount, and students going from some stress to none could see this as a great improvement.

Researchers at Rutgers University studied subjective factors—such as happiness and confidence—before and after six web search tasks; they found that those who were happy before the search, and who thought the search task would be easy, felt better after the search.[43] In the same study, subjects who felt unhappy before the search did feel happier, as well as more confident and satisfied with the results if the results found were complete and relevant. So, it may be that patrons going into the consultation with low project stress are likely to report improvement afterward regardless of the relevancy of the sources found, but patrons with high initial project stress are more reliant on relevancy for perceived improvement. These findings emphasize the importance of the librarian considering the research question fully and making connections between the information found in the consultation and the research question clear to the patron.

While the study gathered sufficient responses from Gen Z and Millennials to run a comparison, they were too close in age to represent the breadth of their generations. Additionally, there were only two Gen Xers in the study. Over the span of the study from October 2019 through March 2021, the mean age was 22.2 and the standard deviation was 4.6. Sixty-seven percent of respondents who gave their age were between 20 and 23 years old. Our finding of no difference in stress levels by generation is also in line with the APA *Stress in America 2021* study where Gen Z and Millennials report the most similar stress levels of any generation, at 5.6 and 5.7 out of 10 respectively. The researchers theorized there would be a stress difference by class standing—that as students gained experience in their programs, they would gain research and coping skills. However, this may be offset by the increased difficulty of the assignments in the upper levels.

The research coincided with a movement toward personal wellness at the Western Michigan University campus due to groundswell support from students during a series of educational innovation town halls held in 2018 and 2019. In pursuing this goal, the campus adopted the Wellness Wheel model derived from Hettler's Dimensions of Wellness.[44] The wheel adopted included eight dimensions: social, emotional, physical, environmental, financial, purpose/spiritual, occupational, and intellectual. Selected campus services were assigned a dimension and provided to students seeking education on campus wellness options. Through this study the researchers were able to get the research consultation service included on the menu of services for the dimension of intellectual wellness in spring 2020, joining others such as the tutoring and the writing center. Additionally, the library sought out mental health first aid professional development opportunities offered to all employees and invited the Assistant Director of Mental Health Outreach to present at a library all staff meeting.

Limitations and Opportunities for Future Research

The study gathered a sample of 108 completed responses which may limit generalizability to the larger student population at the university. The study did not collect demographic factors beyond class standing and age. Additionally, responses were self-selected and reported on perceived stress, which increases subjectivity. The mode of delivery of the consultation (virtual meeting vs in-person) may have influenced stress levels; this was not explored because the shift in delivery due to COVID was unexpected at the initiation of the study and thus was not included on the survey instrument.

Future opportunities for research include analyzing changes and perceived stress by comparing students who sought the research consultation intervention to a control of stu-

dents who did not seek a consultation. This would likely have the additional advantage of gathering a larger sample size. While the study focused on having a short survey in order to increase responses and to decrease consultation time dedicated to the survey, additional demographic questions could be included to analyze differences by gender, race, ethnicity, GPA, and first-generation status, among others. The post-test was administered immediately following the consultation. Future studies could investigate persistence of the effects further into the semester. One of the librarians in the study does collect Project Outcome data on the research consultation at the end of the semester and received 26 responses during the period of the study. Ninety-six percent reported using the resources for their assignment and 81 percent reported they applied what they learned to another research task; however, these responses do not touch on stress. Overall and Project Stress also could be further segmented. Future studies could include the incorporation of assessment metrics, such as the Perceived Stress Scale (PSS) or Bostick's Library Anxiety Scale. Another opportunity would be to conduct a study incorporating factors of confidence, happiness, stress, and library anxiety, which are frequently studied separately.

Conclusion

Findings of the study confirm the researchers' hypothesis that the library research consultation improves perceived stress levels at the project and overall level in the population surveyed. While the researchers want to affirm their belief that the consultation is not in any way a replacement for professional counseling services, the results show that it is a wellness-focused student service that can help students to reduce academic stress. Therefore, they argue it could be included with other campus services promoted to students seeking wellness triage, particularly for students who seek intellectual wellness. The researchers hope this is just the beginning of librarianship interest in utilizing the research consultation to its fullest potential not only in student learning but also as one of several academic services contributing to student wellness.

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The Faculty Role in College Affordability: Syllabus Creation and Resource Affordability

Sarah Rose Fitzgerald, Christine Turner, and Anne Graham

This study investigates how instructors consider resource cost and availability when compiling assignments in their course syllabi. It uses the academic planning model from Lattuca and Stark to frame the influences on instructional material selection. It employs a critical incident technique method, asking instructors to take into account one course syllabus when making assignments. Findings address differences across formats including books, chapters, articles, and video. Findings show differences between disciplines and concerning lack of familiarity with fair use. It concludes that increased consultation with library personnel regarding course books would help provide students with affordable materials in compliance with fair use.

Introduction

Participation in higher education can be very expensive and the costs of course resources can be prohibitive for students. The average undergraduate student spends $1,200–$1,300 per year on textbooks and supplies, and this number is rising (Jenkins et al., 2020). Students who are struggling to pay for their educational materials also struggle to persist and succeed in college. They borrow more money, work more hours, register for fewer courses, and sometimes choose not to purchase required materials for courses (Jaggers et al., 2019). The issue of course material affordability is recognized at the federal level. The Higher Education Opportunity Act of 2008 required institutions to disclose the cost of textbooks and supplemental materials, "to ensure that students have access to affordable course materials by decreasing costs to students and enhancing transparency and disclosure with respect to the selection, purchase, sale, and use of course materials" (HEOA, Section 112). This study set out to explore how the costs of information resources contribute to instructor decisions when assigning course materials, specifically books, book chapters, articles, and media. Using a critical incident technique, the study examines faculty practices in a specific course of their choosing. Much research has focused on the development and use of Open Education Resources (OER), such as open textbooks. The goal of this study, however, was to look more broadly at affordable educational resources—including resources acquired by libraries and Open Access (OA) publications—and their use by discipline and format.

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Resource cost by discipline is important because of its variation. The average price for academic books is higher for STEM fields than in other disciplines (Gobi Library Solutions, 2021). For instance, the average social science ebook costs $117.20 while the average science ebook costs $136.06. The average cost of subscription to an academic journal is $1,704, and this rises to $2,479 in the STEM fields (Bosch et al., 2021). These variable costs, as well as differences in preference for information format, led us to include discipline as a factor in our study.

Instructors sometimes adapt syllabi from previous instructors of a course, or from courses they took during their own education. This enables them to develop a course with a few adjustments rather than starting from a blank slate. However, it may lead instructors to overlook the cost variable when assigning texts. Undergraduate courses focused on foundational knowledge may be updated less frequently than graduate courses. Courses in disciplines with longer shelf lives for research (such as humanities compared to sciences) may also be updated less frequently. Academic libraries can be of use to faculty when selecting course materials by: directing faculty to open access research and open educational resources; purchasing materials for students to use in coursework; and obtaining instructional materials in alignment with Fair Use principles. The goal of this study was to understand how faculty choose instructional materials, and to learn what circumstances cause them to consider cost to students when assigning learning materials. This study reveals opportunities for greater collaboration between faculty and academic library personnel to not only reduce costs of instructional materials for students, but also to ultimately contribute to greater student success.

Literature Review

Students are concerned about the cost of learning materials. Nyugen et al. (2020) note that students make choices about what courses to take based on the cost of course materials. Strategies to mitigate the cost of learning materials to students include the use of Open Educational Resources, open access content, and materials provided by a library. Issa et al. (2020) found that undergraduates have a positive attitude towards using OER, regardless of discipline. Libraries are also concerned with the cost of learning materials as subscription prices for scholarly research rise (EBSCO 2021). Library budgets are not growing to match the rise in costs of scholarly resources. Faculty and librarians from the Ohio State University have recognized the importance of collaborating to address student needs for low- or no-cost access to course materials together (Nguyen et al., 2021; Dotson and Olivera, 2020). Further, they appeal to higher education institutions to allocate more money to library collections and open and alternative educational resource initiatives (Nguyen et al., 2021).

Despite the concerns of students and libraries regarding cost of course materials, faculty have not rushed to adopt OER for their courses. Todorinova and Wilkinson (2020) found that faculty awareness of OER varies widely. While OER uptake has been growing among faculty, only 22% of faculty use such resources (Seaman and Seaman, 2022). Tillinghast (2020) conducted interviews with faculty and found that OER adoption was influenced by attitude, performance expectancy, effort expectancy, technology self-efficacy, and facilitating conditions. Martin and Kimmons (2020) found that faculty are concerned with quality, copyright issues, technical difficulties, and sustainability concerns.

In addition to open textbooks, a growing body of scholarship that is available via open access. At least 28% of scholarly literature is available OA, and the proportion is even higher for more recent publications (Piwowar, 2018). Like resource price, the availability of open ac-

cess resources differs by discipline and content type. For example, OpenDOAR, a directory of open access repositories, indexes repositories of OA journal articles (4,110); dissertations and theses (3,419); books, book chapters, and sections (2,284); and datasets (464) among other material types, with social sciences receiving the most coverage (4,393), followed by science (4,320), and humanities (4,140) (OpenDOAR, 2022). Assigning open access materials as learning materials could save students and academic institutions some of the growing cost of for-profit scholarly publishing.

It is not clear from the literature that faculty make a practice of reviewing the instructional materials in their syllabi for the express purpose of reducing costs for students. Rather, they revisit their syllabi to integrate new topics, such as sustainability (Biasutti, 2016), or to improve alignment with program goals (Zimmer and Keiper, 2021). There is evidence, however, that faculty are concerned about the cost of course materials. Blankstein and Wolff-Eisenberg (2019) found that, "approximately 87% of faculty often or occasionally give preference to assigning low- or no-cost textbooks, while 59% give preference to assigning course texts or materials that are available through the library." In keeping with academic libraries' historic role in selecting and acquiring materials in support of student learning, Dotson and Olivera (2020) discuss librarian efforts to conduct curriculum mapping to recommend course materials to faculty on the basis of cost to students.

Seaman and Seaman (2017) report the average cost of textbooks in the following disciplines: Health and related ($182), Professional ($155), Business ($132), Natural Sciences ($101), Education ($87), Social Sciences ($74), Liberal Arts and Sciences ($69), Computer and Information Science ($68). They also found the importance of cost in selection of curriculum materials by instructor varied by age, with those 55 or older rating cost as very important (53%) or important (33%); these numbers increased to 64% as very important and 26% as important for those under 35 years of age. Furthermore, they reported data by tenured, tenure track, and not tenure track, as well as full and part-time faculty. Non-tenure-track and part-time faculty rated cost as very important in their selection of materials at a higher rate than tenured/pre-tenure or full-time faculty. Dotson and Olivera (2020) cite studies underscoring faculty concern with both cost and efficacy of textbooks, as well as with the cost of education for college students. Faculty concerns about cost and intent to include low-cost materials are challenged by difficulty finding appropriate materials, insufficient numbers of resources, and concerns about quality (Seaman and Seaman, 2017; Dotson and Olivera, 2020). Building on these findings, this study explores these questions through the method of critical incident technique, asking faculty to speak to their practices with the books, book chapters, articles, and media they assigned on a particular syllabus, rather than generalizing about their habits. We employ critical incident technique to increase the validity of our study rather than relying on faculty to be able to accurately generalize about their experiences. Faculty information seeking habits are often studied in a generalized way or with a focus on information seeking habits related to their own scholarly work. For instance, Ellis (1989) developed a set of common habits used by faculty in information seeking including starting, browsing, monitoring, chaining, differentiating, and extracting. Much library science research has built upon Ellis' original findings. For example, Meho and Tibbo (2003) added four other common information seeking habits of faculty: accessing, verifying, networking, and information management. Tenopir et al. (2012) found that academics located about a third of the articles they read through searching, 11% through browsing, and the remaining 56% of their articles through citation chaining, colleague

recommendations, or did not recall the method of discovery. In contrast, academics primarily located books through word of mouth. Meho and Tibbo's (2003) findings of differences in information seeking practices by format led us to delineate our investigation of instructional resource use by format as well. The researchers also found that older academics tend to read more books than younger academics. Despite the studies on faculty information seeking for scholarship purposes, studies examining faculty information seeking—as it relates to how they assign course materials to their students—are uncommon. This study seeks to fill that gap by asking faculty to consider and describe how they create a syllabus through critical incident technique. This study advances the research on affordable educational materials by addressing specific faculty practices for finding syllabus materials, rather than generalized beliefs about affordable materials or practices on conducting research.

Conceptual Framework

Lattuca and Stark (2009) offer an academic plan model to describe the factors that influence course design. They include instructional resources as one of the central influences on academic planning. As they point out, many instructors organize their courses around a textbook they select. This is especially true in structured fields such as math and science. Lattuca and Stark highlight the importance of considering the needs of learners in the learning process, one of which is affordability. The cost of course materials dictates perceived affordability of a course. A focus on instructional materials within Lattuca and Stark's (2009) academic plan model is important at this time because market forces have changed. Library staff are now increasingly able to obtain ebooks with more inclusive licenses for coursework, educators have created more open educational resources, students bear higher costs to attend college, and student debt is in the national spotlight.

This study takes a closer look at instructional resources and how they interact with other factors in Lattuca and Stark's model. Lattuca and Stark call out the influence of market forces and discipline on instruction. For higher education generally, market forces include matching courses to job market demand and to student interest. For instructional resources, market forces include different publishing models, such as nonprofit versus for profit, and open versus proprietary licenses. Market forces drive the cost and availability of instructional materials for libraries and students. We examine how these factors influence faculty choices for what they assign. We ask how often faculty evaluate and adjust the instructional resources they use. We consider how faculty demographics and discipline contribute to attitudes regarding affordability of instructional resources. We address two research questions: 1.) how do faculty locate their instructional materials? And 2.) do faculty consider various methods of making their instructional resources affordable to students? Because the markets are different across disciplines and formats, findings are presented with these variables in mind.

Methods

We consider this a pilot study because there has been little research on the question of how faculty consider library availability when assigning reading and viewing assignments. This is a mixed methods study combining quantitative and qualitative data from a survey (See Appendix for survey instrument). The quantitative questions allowed us to look for trends in syllabi creation habits by discipline and resource format. The qualitative question allowed us to get an understanding of why faculty were making the choices they did regarding content assignments.

Based on Ellis' (1989) and Meho and Tibbo's (2003) lists of common information seeking habits of faculty, we asked faculty how they discovered the resources they assigned to their students. We asked them whether they located their resources by searching for information, monitoring scholarship in their field, or finding them through their network of colleagues. This allowed us to understand whether consulting a librarian would be helpful in limiting costs at the information discovery stage, or primarily at the information access stage. Our premise is that librarians have greater opportunities to suggest materials to those faculty who are searching for information. Because Tenopir et al. (2012) noted significant differences in information seeking habits by format, we differentiated the questions in our study by format. Their findings about the impact of years of teaching on format preferences also led us to include years of teaching service as a variable. Our survey questions were reviewed and approved by library administrators and university assessment experts before distribution. The survey was distributed to all 1,775 instructors at the University of Massachusetts Amherst, which is classified as "Doctoral Universities: Very High Research Activity" (Carnegie Classifications, 2022). We employed critical incident technique (Flanagan, 1954) to ensure faculty had a specific course and syllabus in mind rather than generalizing their habits. We received 172 responses, a ten percent response rate. We provide descriptive statistics regarding the responses to the survey, as well as qualitative discussion of the open-ended responses. We consolidated nine disciplines into four disciplinary categories in accordance with the categories outlined by Anthony Biglan (1973) to ensure there were large, consistent sample sizes for each category. The following table displays the response rate by discipline.

TABLE 1
Faculty Response Rate by Discipline

Discipline	Responses	Response Rate
Natural Sciences, Information and Computer Sciences, Engineering	56	9%
Social and Behavioral Sciences, Education, Management	52	12%
Public Health and Health Sciences, Nursing	19	11%
Humanities and Fine Arts	36	10%
Did not specify discipline	9	

Respondents were asked to keep a particular graduate course (24%) or undergraduate course (76%) that they were teaching in mind as they responded to the survey questions. Fifteen percent of the respondents were teaching their course for the first time, 32% had taught their course two to four times, and 53% had taught their course more than four times. Five percent of the respondents were answering based on an online course, 78% were answering based on an in-person course, and 17 % were answering based on a hybrid course. Thirty-nine percent of respondents had been teaching for fewer than ten years. Twenty-seven percent had been teaching for 10 to 20 years, 22% had been teaching 20 to 30 years, and 11% had been teaching for more than 30 years.

Findings

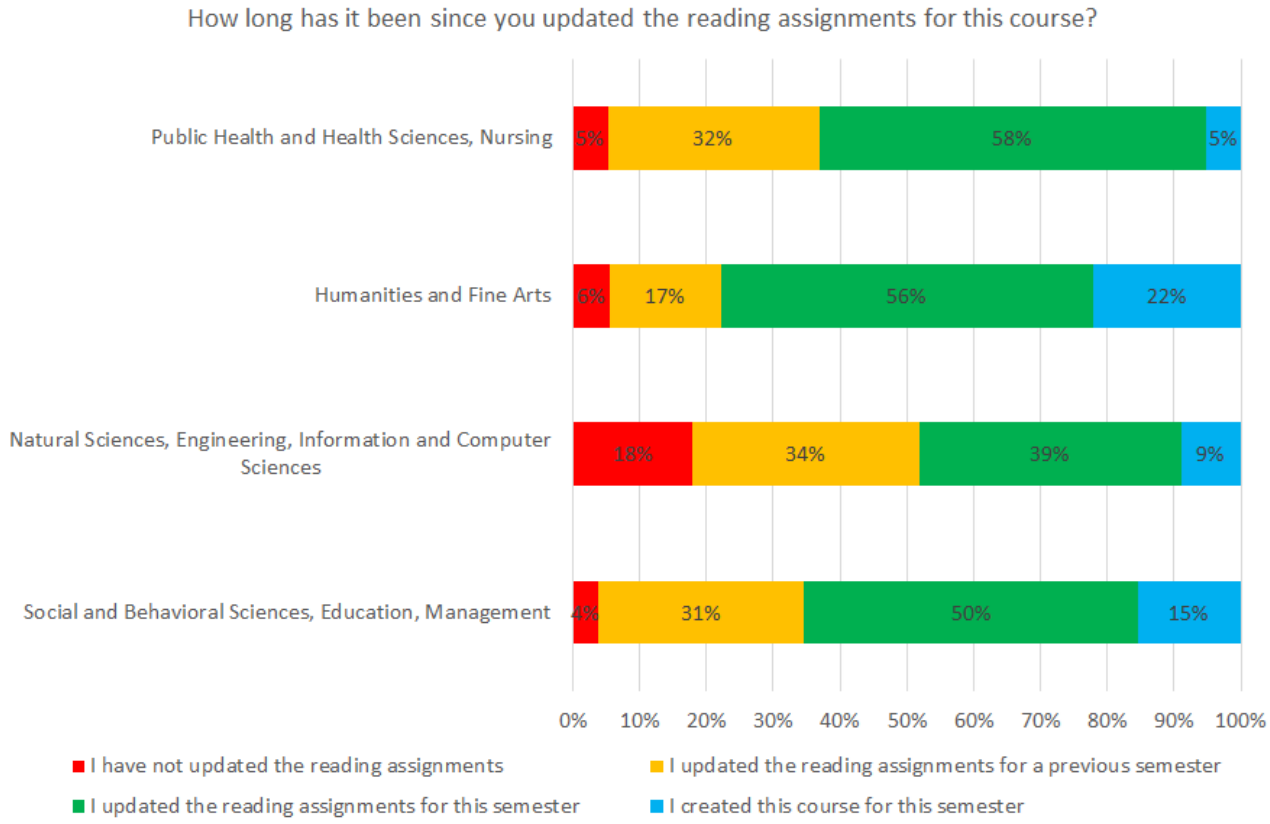
We begin with general observations by discipline about format, means of identification, and factors considered in selection. Next, we delve into the data by instructional resource format:

books, chapters, articles, and media. For each format, we consider disciplinary differences, common methods of discovery, and types of affordability (open access, library availability, and direct cost to students). Books emerged as the format for which there is the most opportunity to engage with faculty about affordability, and to inform those conversations; we also examine preferences for books as a format by faculty's career length. Qualitative responses that support quantitative data are intermixed in these sections.

General Observations

Opportunity to select affordable materials occurs at two points: when a course is taught for the first time, and when a syllabus is revised. Most of the syllabi in the survey were either created (15%) or updated (48%) for the semester the course was being taught (See Figure 1). We were pleased to see that new and experienced faculty alike were diligent about updating their syllabi. Graduate and undergraduate courses were updated at similar rates. One education faculty member mentioned, "I generally update at least half of the syllabus every time I teach a course."

FIGURE 1
Proportion of Respondents Reporting How Recently They Updated Their Syllabus, by Discipline



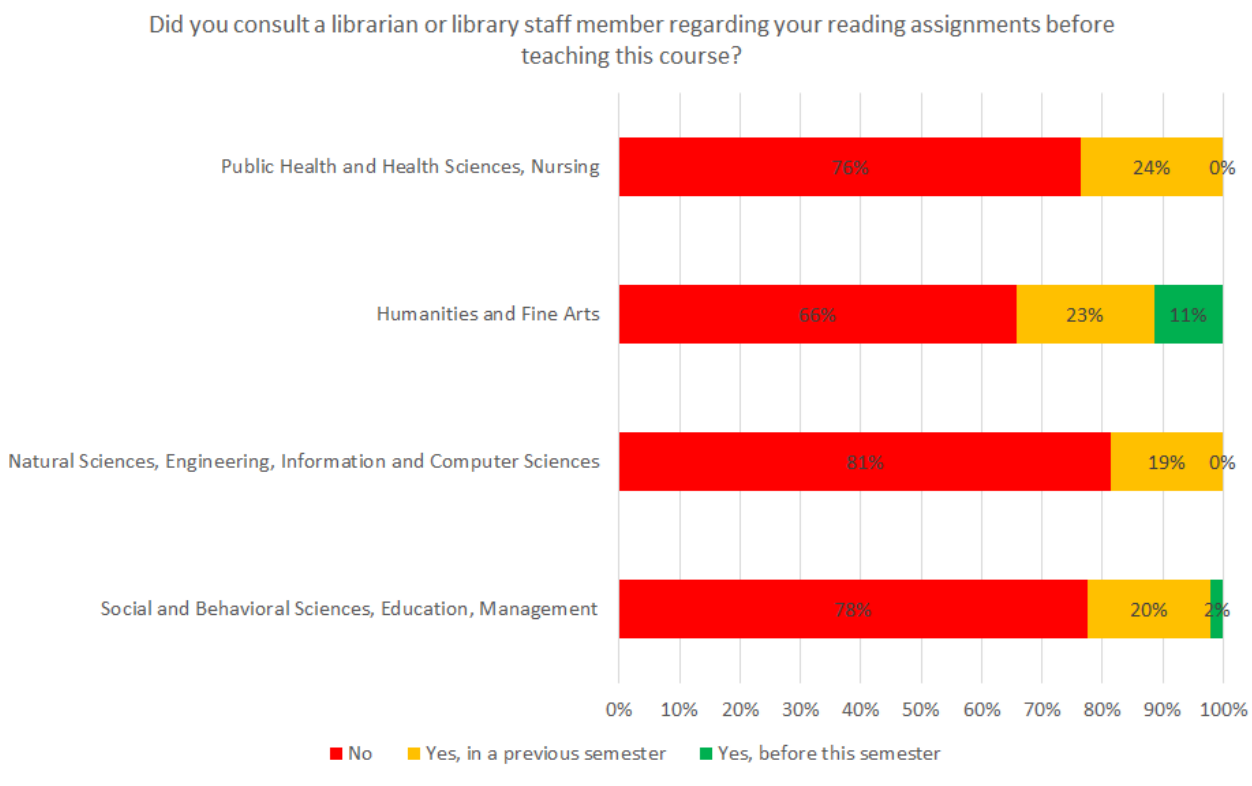
Most faculty (76%) had never consulted a librarian or library staff member regarding their course materials before teaching their course (See Figure 2). We find this concerning because faculty missed an opportunity to provide students with materials from the library at no cost to students. If their assigned materials were not already available at no cost to students through

the library, library personnel could at least investigate procuring articles, books, ebooks, or streaming video, or they could suggest alternative resources. The qualitative data demonstrates opportunities for outreach to faculty who may benefit from working with librarians and library staff. One experienced Education faculty member wrote, "I probably don't ask for help enough, but honestly don't have a good sense of what help a librarian might offer me for this." This is an unfortunate lost opportunity because this faculty member has had several decades to develop relationships with library personnel. A Science faculty member expressed a similar sentiment, saying, "I don't think I know enough how much a librarian can help me put together readings for my course." Another stated, "I've only reached out to librarians *after* I find a resource I want to use and can't find it in the library or online. Are there times I should reach out before that?" A Social and Behavioral Science faculty member stated, "I typically determine the articles I want students to read and figure out access after-the-fact, as opposed to the other way around."

One faculty member did not see value in consulting library personnel regarding their course materials. This faculty member, who assigned a book and some articles for their course, said:

> due to online resources, the [university] libraries are currently under-utilized by our department both in research and in teaching/learning. By far, their main use is as a quiet study space for the students. From the point of view of our department, either the libraries should adapt to make themselves more useful to [university] academic goals (not sure how), or else they should downsize.

FIGURE 2
Proportion of Respondents Reporting Consulting a Librarian Regarding Their Course Content Assignments, by Discipline



They indicated that they looked for open access availability of articles, suggesting that their discipline may have many open access resources available. However, their comment does not recognize the role libraries play in open access publishing and in providing no to low-cost materials for students.

While many faculty members did not contact library personnel, those who did were generally pleased with their experiences. In the qualitative responses to our survey, many faculty expressed thanks to librarians and library staff who work with them on fair use/copyright issues and who manage library materials for courses on the campus learning management systems. For example, a management faculty member said, "my goal is to assemble relevant readings through course reserves in the Libraries, or open source materials so that students do not need to buy a textbook. I am very grateful for the work of the librarians who clear the copyrights and permissions." A humanities faculty member noted:

> I have worked with librarians particularly to get ebooks and films for courses I teach, and I've been incredibly happy with how committed they were. I try to keep the cost of courses as close to zero as possible for the readings for the students, and the library has been really super at helping me meet this goal.

An engineering faculty member said, "I look for resources that the students have access to through the libraries. The subscriptions to journals in my field are very important for this, because this gives students online access to the most relevant literature in the field without having to pay." From a public health faculty member we heard, "e-books available through the library are important and very helpful. It kills me when students pay to 'rent' books." A Science faculty member related enthusiastically, "the video streaming through the libraries has been an excellent addition! I also appreciate the streamlined online system for requesting videos for course reserves/streaming."

Format

Regardless of discipline, the majority of respondents who assigned articles to their classes (65%) reported creating or updating their reading assignments for the semester they were teaching the course. This suggests that the assignments updated most frequently may be the article readings. Unfortunately, since article readings are often provided through the libraries free of charge to students, updating these readings does not have as much potential for impact on affordability as updating book reading assignments. Perhaps assigning articles and book chapters is a method faculty are using to choose content while considering cost to students. An Engineering faculty member stated, "I copy chapters and articles and scan them and put them in [my course website] for the students to read. I am concerned about affordability." Most faculty across all disciplines assigned at least one article (See Figure 3). Books, chapters, and media varied in popularity by discipline.

In the natural sciences and engineering, faculty were the least likely to assign media, articles, chapters, or books compared to other disciplines. Natural Sciences, Computer Science and Engineering use media much less than the other three disciplinary categories. A Social and Behavioral Science faculty member said, "this course does not use "media" (videos, podcasts, and the like) but does use public websites of international organizations, international courts, foreign ministries, and national courts."

FIGURE 3
Proportion of Respondents Who Assigned Articles, Books, Chapters, and Media, by Discipline

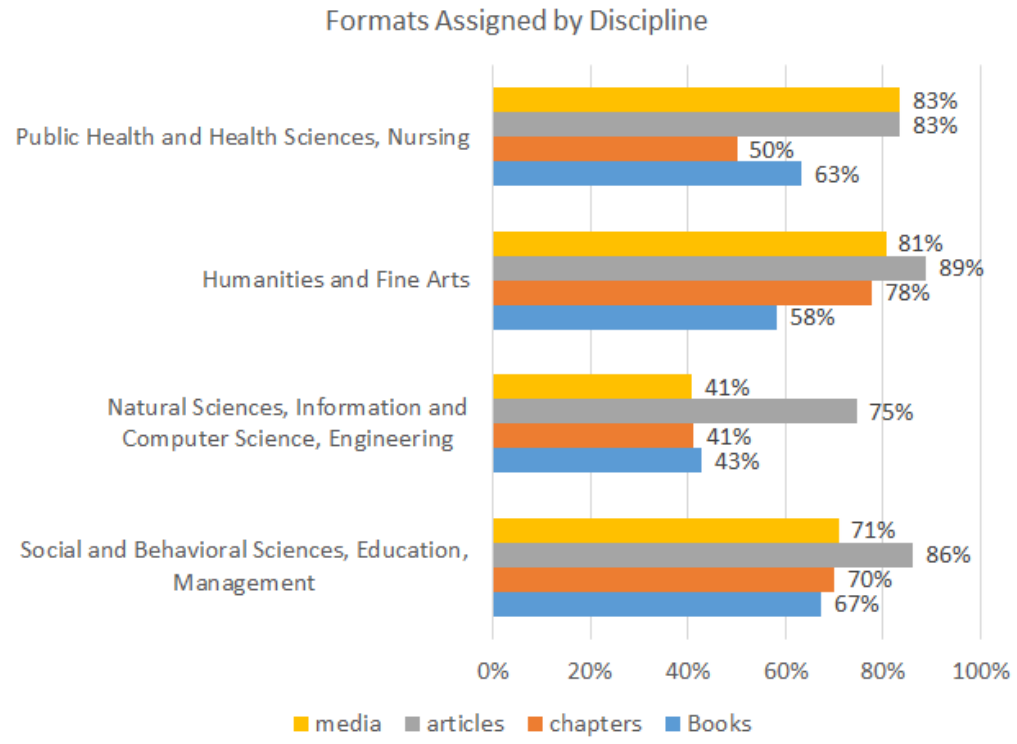
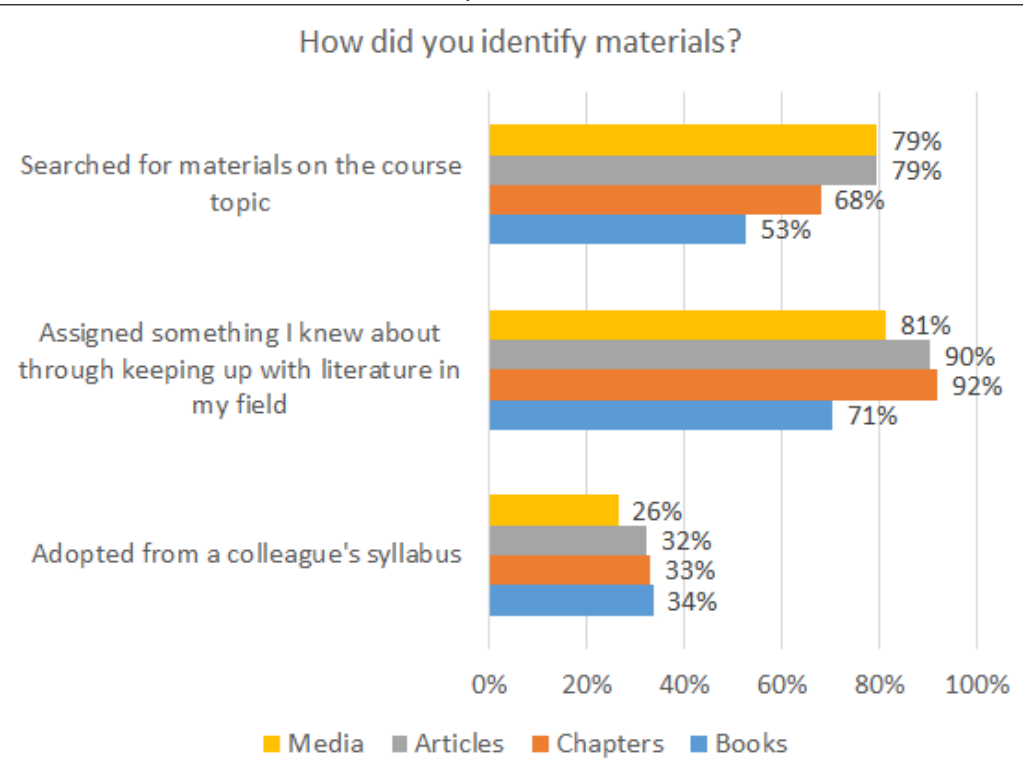


FIGURE 4
Proportion of Respondents Reporting How They Discovered Materials for Their Course, by Format



Means of Identification

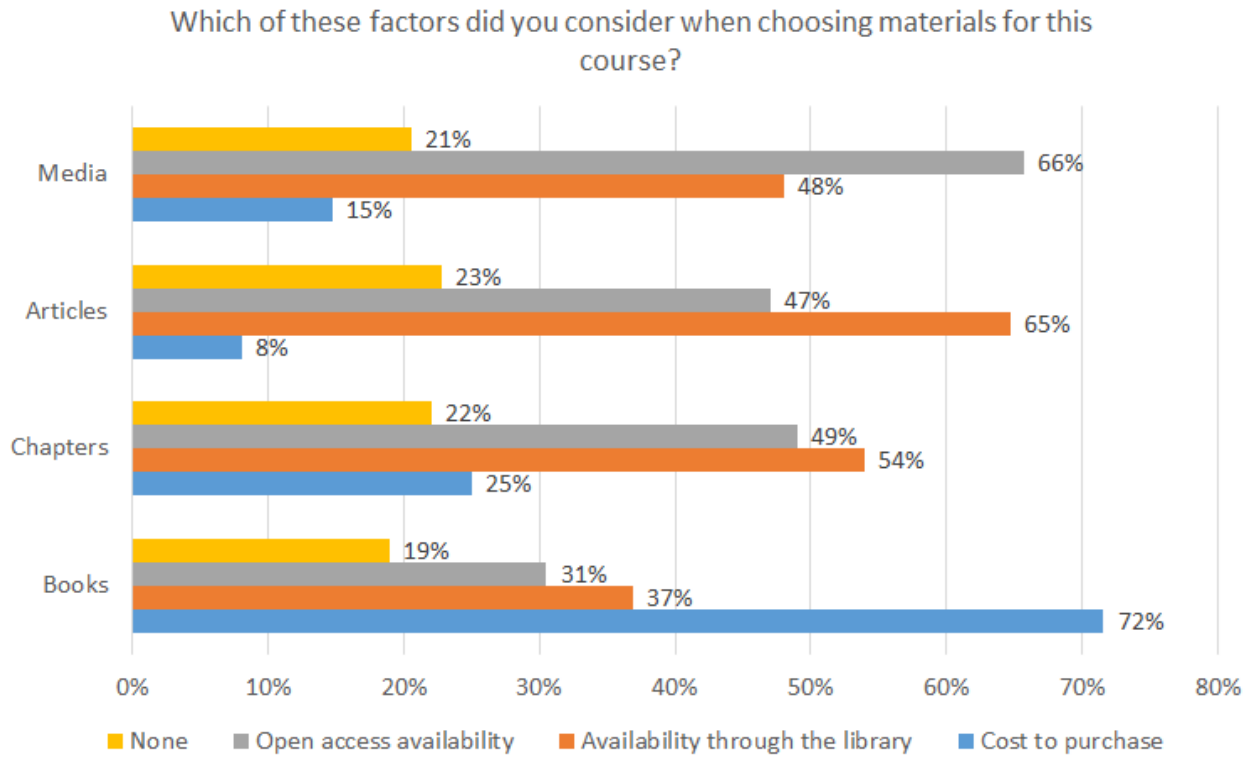
The least popular way for faculty to identify course materials across formats was adopting them from a colleague's syllabus (See Figure 4). However, one new Nursing faculty member mentioned: "because it was the first time I taught it, it was easiest to use the previous instructor's preferred text. I plan to change texts next semester."

Factors Considered in Selection

We asked faculty to indicate which factors they considered when choosing course materials: "open access availability," "availability through the library," "cost to purchase," or "none." We did not define "open access." Across material types, between 19–23% of faculty considered "none" of the factors that would ease student use of the material, which suggests these instructors give no regard to course material cost (See Figure 5). However, most indicated that open access availability, availability through the library, or cost to purchase are priorities when they consider choosing course materials. One unidentified-by-discipline faculty member stated:

> I would like to use more ebooks and multimedia in my courses, but I don't want to require students to buy them, and I'm concerned that the library's licenses to use such products may expire before students are done with them. Being able to download content for use indefinitely would be helpful. I am also interested in being able to search and download more open access content via the library as a way of dealing with this concern.

FIGURE 5
Proportion of Respondents Reporting Affordability Factors They Considered When Assigning Content, by Format



This multifaceted set of concerns demonstrates the need to communicate with a librarian who can address the complex licensing models vendors offer libraries, and the options for finding open access content. Those who have found and successfully used open access content seem pleased. A Science instructor quipped, "OEM for the win!"

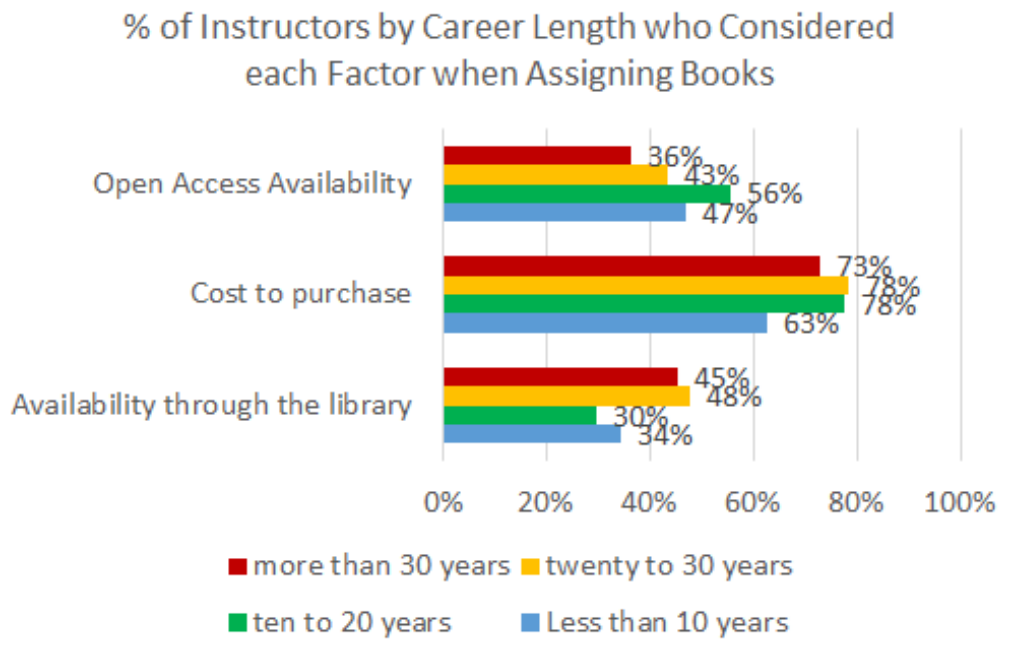
Books

Instructors across disciplines were likely (56%) to assign at least one book for their courses. However, this did not hold true for instructors in Natural Science and Engineering (see Figure 3). This might be related to the fact that books in STEM disciplines are the most expensive on average (Gobi library solutions, 2021), and may indicate that faculty in these disciplines have considered the cost implications of requiring students to purchase books.

Instructors mostly (71%) assigned books they knew about by keeping up with the literature in their field, but many of them (53%) reported searching for books on the course topic (Figure 3). The least reported method for discovering books was adopting them from a colleague's syllabus (34%). However, more faculty reported adopting books from a colleague's syllabus than reported adopting the other material types from a colleague's syllabus.

In our sample, 72% of respondents considered the cost to purchase when assigning books (Figure 5). Thirty-seven percent of instructors considered availability through the library. Seventeen percent considered open access availability. Nineteen percent did not consider any of these factors when assigning books. The proportions of those who considered cost and library availability are significantly lower than those found by Blankstein and Wolff-Eisenberg (2019) when not employing critical incident technique, suggesting that faculty support affordability more in theory than in practice. When selecting book assignments, faculty respondents from the Humanities and Fine Arts considered cost to purchase, availability through the library, and open access availability more often than the other disciplines.

FIGURE 6
Proportion of Respondents from Four Career Stages Who Considered Various Affordability Factors When Assigning Books



Instructors who had been teaching more than 30 years were less likely to consider open access books compared to instructors with less experience (Figure 6). While Seaman and Seaman (2017) found younger instructors ascribed more importance to cost in selection of curriculum materials, our study found that—while newer instructors were more likely to be interested in open access books than instructors who had been teaching more than 20 or 30 years—they were less likely to consider in cost to purchase books or availability through the library.

Book Chapters

Most (60%) instructors assigned at least one book chapter for their courses. However, this did not hold true for Natural Science, Engineering, or Nursing (see Figure 3). This aligns with the finding that STEM disciplines are less reliant on whole books as well.

The majority of respondents (92%) reported locating book chapters by keeping up with literature in their field (see Figure 4). It may be more effective to locate book chapters through chaining from reference lists since individual book chapters are not always as discoverable as books and articles through search engines and database searches.

In our study, 16% of respondents considered the cost to purchase book chapters when assigning readings (see Figure 5). Thirty-four percent considered availability through the library. Thirty percent considered open access availability. It makes sense that faculty are more interested in library availability than cost to purchase for book chapters than books, because they are likely not asking students to purchase the books containing assigned chapters, but are instead providing links to the chapters on course websites. It is also easier to obtain a chapter of a book through interlibrary loan for an entire class than a whole book. It is interesting that more faculty considered open access availability for book chapters than for books, since book chapters, like books, are less likely to be available open access than articles.

Articles

Most (82%) instructors assigned at least one article for their course. This majority held true across all disciplines (see Figure 3). Even the majority (75%) of STEM instructors assigned at least one article to their classes despite their tendency to assign fewer instructional materials. Many respondents reported locating articles by keeping up with literature in their field (90%) or searching for materials on their course topic (79%) (see Figure 4).

In our sample, five percent of respondents considered the cost to purchase articles when assigning articles (see Figure 5). Forty percent considered availability through the library. Twenty-nine percent considered open access availability. It makes sense that faculty consider library availability and open access availability more frequently than cost to purchase for articles, since they are unlikely to ask students to purchase articles, but do rely on links to library or open access article sources.

While faculty in most disciplines were more likely to respond that they considered availability through the library than open access availability for articles, faculty in natural sciences were more likely to consider open access availability than availability through the library (see Figure 7).

Media

In our study, 63% of respondents assigned media such as videos, music, or podcasts on their syllabi. Instructors assigned media at a higher percentage than books or book chapters,

FIGURE 7
Proportion of Faculty by Discipline Who Assigned Articles Who Considered Open Access Availability, Cost to Purchase, or Availability through The Library

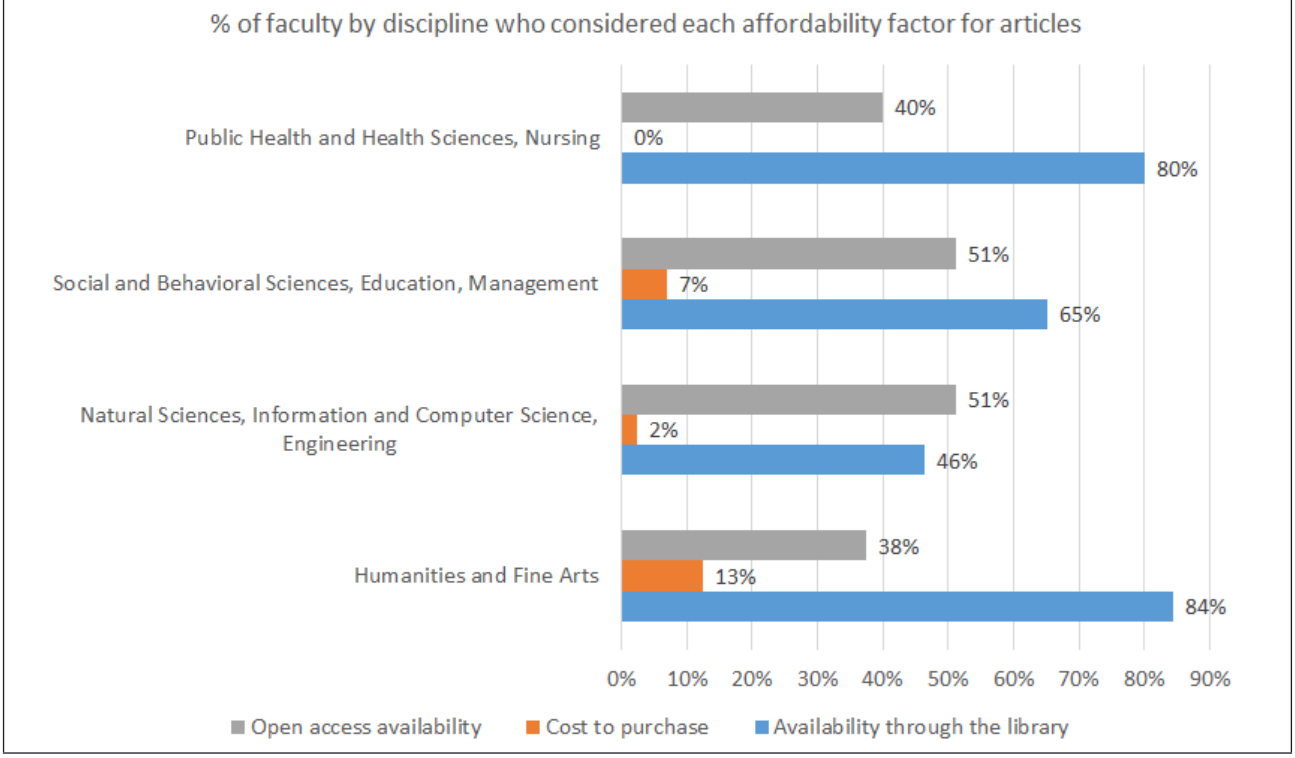
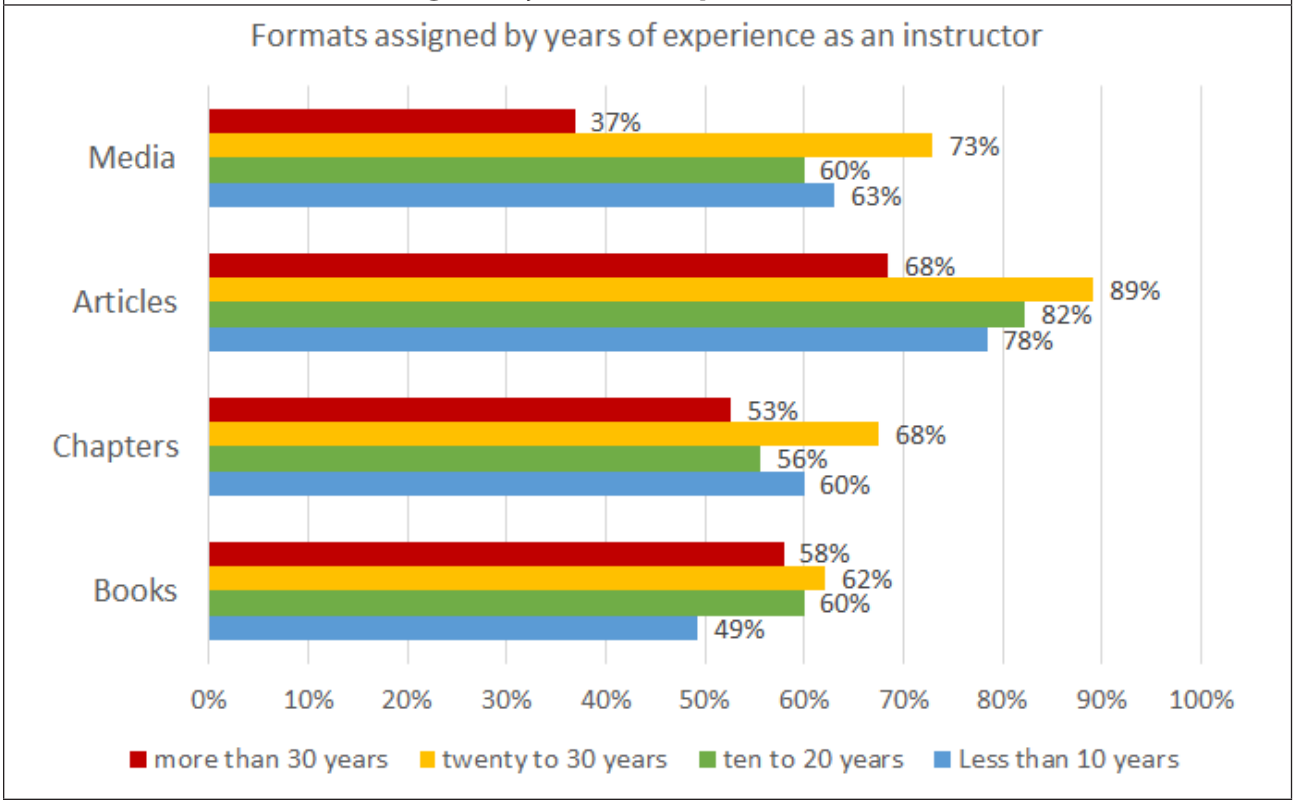


FIGURE 8
Formats Assigned by Years of Experience as an Instructor



but lower than articles. This speaks to the growing importance of audiovisual materials in academic libraries. While a majority of faculty who had been teaching for less than 30 years assigned media, the majority (62%) of faculty who had been teaching for more than 30 years did not (see Figure 8). Respondents who had assigned media were more likely to say they had updated the content assignments on their syllabi than those who had not assigned media. Faculty in Natural Science, Information and Computer Science, and Engineering were less likely to assign media (see Figure 3). This finding may reflect different teaching styles in these disciplines.

Most respondents who assigned media (81%) reported that they identified media for inclusion in their syllabi by keeping up with developments in their field. The percentage of faculty who said they discovered media by searching for materials on the course topic (79%) was particularly high compared to other formats (see Figure 4). This could be an indication that searching for media is more necessary than for other formats because scholarly communication often takes place via articles and books rather than audiovisual formats. Only 26% of respondents reported adopting media from a colleague's syllabus. Since this format is of emerging importance for teaching, existing syllabi may not provide faculty with media to adopt for their own course.

In our sample, nine percent of respondents reported considering the cost to purchase when assigning media (see Figure 5). Twenty-seven percent considered availability through the library. Thirty-eight percent considered open access availability. As with chapters and articles, faculty were more interested in library availability and open access availability for media than they were in cost to purchase. This suggests that they are providing links to media in their course sites rather than expecting students to purchase these resources.

Discussion

The frequency at which instructors update their reading lists is excellent for maintaining currency and relevance for students, and potentially for seeking low or no cost options. To realize this potential, faculty and library personnel must be in regular communication about course material requirements, yet we didn't find this to be a common area of collaboration. The pressure on libraries to keep up with changing syllabi could be mitigated by supporting more open access publication of research and educational materials, as well as by assigning more open access and educational materials. Furthermore, calculations about the costs of supporting open access publishing should factor in the affordability benefits for students.

Results show instructors rarely consult librarians about availability of their assigned materials before the semester begins. This suggests a lack of awareness of library services, as well as an opportunity for more outreach about topics such as acquiring access to course materials for student use, adding existing library resources to course reserves, developing open educational resources, identifying relevant open access content, and consulting on copyright and fair use. The qualitative feedback from Natural Science, engineering, and nursing showed that these faculty could use additional outreach on copyright, and on providing electronic course materials through their learning management systems. With a higher rate of faculty/librarian collaboration and a focus on cost through the early stages of course material selection, students could realize the cost savings and ease of access about which faculty indicated concern.

Faculty who responded to the open-ended questions often recognized the value librarians could bring to bear on costs of student course materials, or at least had some awareness of the

potential. Faculty have enthusiasm and confidence—particularly for the course reserves and copyright/fair use services that library personnel provide—and this can be a building block for more collaboration around course material selection and provision. Scaling up collaboration around open educational material creation and/or course material selection and acquisition across curricula would necessitate higher levels of staffing. This is ultimately a shift of cost from students to the academic institution.

Relating our findings back to Ellis's (1989) scholarly information seeking behaviors, we observe that the faculty in our study were not regularly "starting" their information seeking with the libraries or with the collaboration of a librarian, as they may have done in 1989. We recommend to faculty concerned over resource affordability that they consider "differentiating" their selections based on affordability in addition to quality. We urge librarians to reach out to faculty about course material affordability considerations. Nyugen et al.'s research (2021) found that students are more likely to choose courses that have lower course material costs, and faculty want to teach courses that students want to take. Departments may consider evaluating faculty instruction based on their attention to affordability of course materials. Collaboration with library personnel during the course material selection process will help faculty meet or exceed this expectation.

Although the number of instructors who selected course materials based on a colleague's syllabus was comparatively low (26–34%, depending on material type), this method of content selection can lead instructors to overlook the affordability aspect of their course content assignments. We recommend that instructors who adopt course material assignments from their colleagues investigate the affordability of those resources before assigning them to students. This recommendation extends to materials instructors encounter by keeping up with literature in their field. Better yet, library personnel could work with faculty who teach with open educational resources, open access publications, and materials from library collections to become influencers on their colleagues' choices of course materials.

An overwhelming majority of instructors reported assigning articles for their courses. This is another area where instructors could collaborate with library staff to navigate the options. Faculty are already sourcing many of the articles they assign from libraries. In addition, instructors can consider assigning open access articles and publishing their own research with open access licenses to facilitate affordable course materials for other instructors and students worldwide. To facilitate this, it is important that each liaison librarian has knowledge of processes for open access publishing and discovery.

The majority of instructors reported assigning books for their courses, and this can present challenges when some publishers do not sell ebooks they deem to be textbooks to libraries, preferring instead to maximize sales to individual students. Furthermore, the myriad access levels at which publishers sell ebooks can inhibit their use for courses if only limited access is offered, or if unlimited access is prohibitively expensive. These are some of the negative market forces that libraries can work to counterbalance by investing in non-profit, open access publishers. Publishers can contribute to the increased discoverability of book chapters by providing metadata which includes chapter titles, chapter level subject classifications, and chapter authors.

Cost to purchase, and availability through libraries, are particularly important concerns for books because—unlike articles and book chapters—whole books cannot usually be loaned from another library for use by an entire class of students, and for the duration of the course. Any amount of cost can be a barrier for students purchasing books, and it is concerning that

faculty are more likely to consider cost to purchase than availability through the library. This tendency may indicate a lack of knowledge that library personnel are willing to purchase books for courses, or frustration that publishers may not sell ebooks to libraries. Because faculty are more concerned about the cost of books for their students than the cost of articles, course books are an area where librarians have an opportunity to rectify a problem that is important to faculty and students. Our data show that instructors who had been teaching more than 20 or 30 years were interested in reducing student costs, but less likely to be interested in assigning open access books, indicating that older faculty members may need library outreach—especially on open access books. Newer instructors who had been teaching fewer than ten years were interested in reducing resource costs, but were less likely to be interested in availability of books through the library, indicating that they may need additional outreach about library services. Books, with their longer publication cycles, are more likely to remain on a syllabus longer. Furthermore, because more faculty look for article availability more often than book availability through libraries, there is greater potential for impact on course material costs through faculty-library personnel collaborations that focus on books, especially in those disciplines that tend to be more book and chapter dependent than article dependent. This will include Education, Information and Computer Science, Social and Behavioral Science, and Public Health and Health Science.

Our data demonstrated that even more faculty assign media than books, and that faculty with less than 30 years of experience assign more media than late career faculty. Therefore, libraries would do well to consider collection practices that give relatively more weight to streaming media in the future. The Science faculty member who commented so favorably on the library's streaming media services is likely a bellwether of this need.

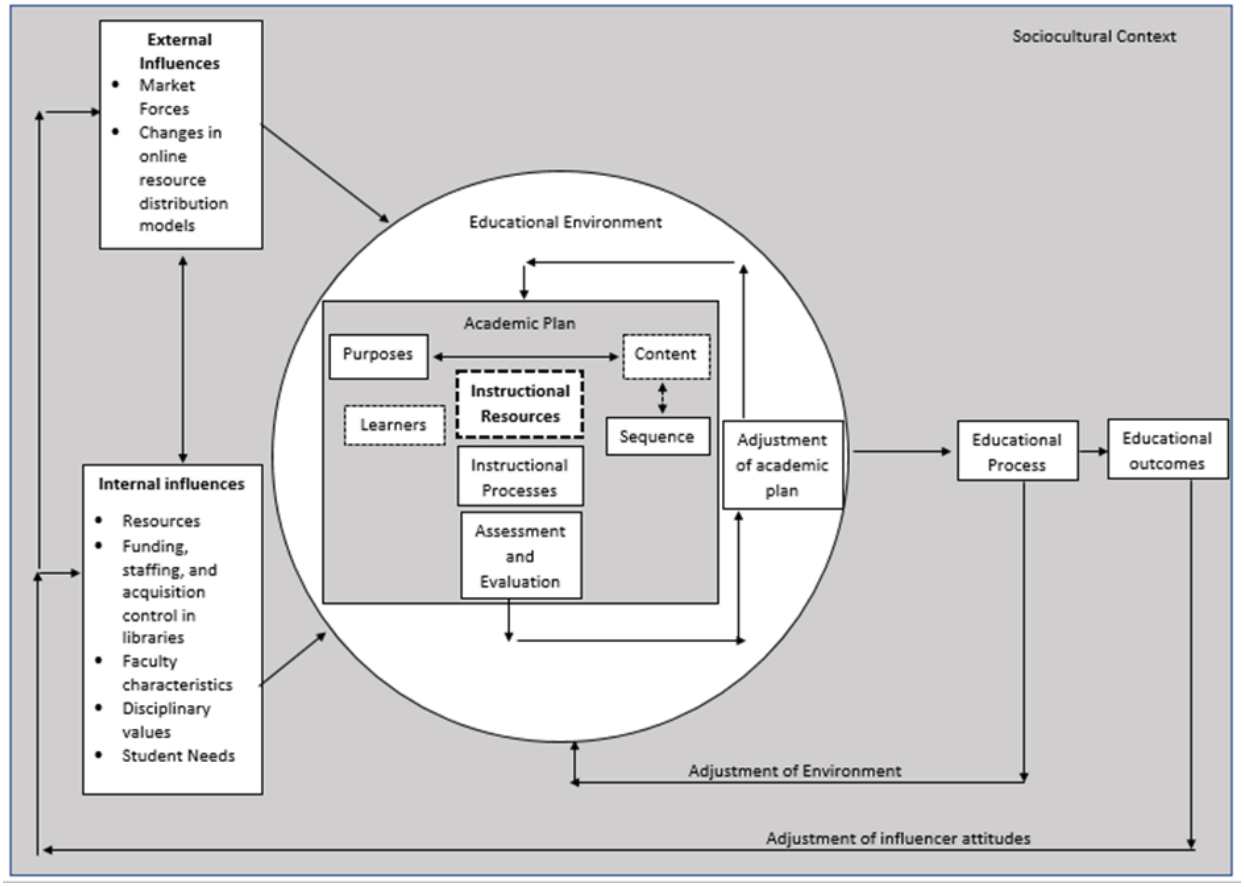
Lattuca and Stark (2009) explain that instructional materials are interrelated with instructional purposes and instructional content. That means that one aspect of educating students to become lifelong scholars is modeling sustainable avenues to obtain educational materials. Along with the disciplinary content students learn in each class, they also learn how to discover and use information in their field. We call on faculty to evaluate and adjust their instructional resource assignments with cost to students in mind in accordance with our adapted interpretation of Lattuca and Stark's (2009) model for academic planning (see Figure 9). Our alterations of the model include consideration of course material distribution models and funding, staffing, and decision making in libraries. As Lattuca and Stark (2009) make clear, academic planning has many influencers beyond faculty. Publishers, policy makers, and institutional administrators have roles to play in ensuring affordable instructional materials are available to students. We call on librarians to familiarize themselves with the factors in the academic plan model as well to better support the faculty and students in the disciplines they serve.

We were hoping to share our data with readers, but felt that the combination of discipline, institution, and number of years teaching allowed the data to be too readily reidentified. In future studies, working with researchers at several institutions to create a combined dataset representing multiple institutions could facilitate data sharing.

Implications for Research

This is a pilot study that makes an initial foray into this research topic, and we have laid the groundwork for the reliability of the instrument to be tested in subsequent investigations of the topic. Further research could investigate whether faculty consider the availability of ebooks

FIGURE 9
Adaptation of Lattuca and Stark's (2009) Academic Plan Model Focused on Instructional Resources



through the library differently than print books. It will be important to investigate faculty awareness that libraries can sometimes provide unlimited access to online books for use in courses. Further studies on this topic could employ interviews or focus groups to discuss with faculty their perceived advantages and disadvantages of obtaining course materials through the library versus open access or freely available on the web. The authors wonder how scholars in this study understood "open access," and whether they may have confused open access materials with materials available for free on the internet. In future research, scholars may want to provide a definition of open access for faculty. An investigation of faculty approaches to course material selection at other institutional types beyond public research universities would reveal if private colleges and community colleges, for example, are concerned more or less with affordability. As library personnel encourage greater adoption of low or no cost course materials, it would be worthwhile to study the effectiveness of targeted outreach and collaborative activities.

Conclusion

Higher education is about building knowledge and student success. Affordability is a significant factor in student success, and institutions should be addressing the course material costs students are bearing. Purchasing and providing course materials centrally is more cost

effective. Academic libraries are traditional and effective centralized providers of educational materials. The costs of educational materials to students can be defrayed with more investment in academic libraries, both for collections and staff, from higher education institutions. In turn, more public investment in higher education—as well as shifting scholarly communication from for-profit publishers to non-profit publishers—both reinvests in the research and learning ecosystems, and makes course materials more affordable for higher education institutions and students. Faculty and library personnel collaboration throughout the course material development and selection process has great potential to reduce student costs.

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Appendix. Survey Instrument

For the purposes of this survey, please think about a syllabus for a course you are teaching or have taught in the last year.

Q1 What college(s) is this course affiliated with?

Q2 What is the level of the course?

- □ Undergraduate
- □ Graduate

Q3 How is the course delivered?

- □ Online
- □ Face to face
- □ Combination

Q4 How many times have you taught this course?

- □ This is the first time
- □ 2–4 times
- □ More than 4 times

Q5 How many years have you been an instructor?

Q6 How long has it been since you updated the reading assignments for this course?

- □ I created this course for this semester
- □ I updated the reading assignments for this semester
- □ I updated the reading assignments for a previous semester
- □ I have not updated the reading assignments

Q7 Did you assign any books on your syllabus? (Meaning students should read all or most of the book, not just a chapter or two)

Q8 How many of the books on the syllabus did you identify using each of these methods?

- □ Adopted a book from a colleague's syllabus
- □ Assigned a book I knew about through keeping up with literature in my field
- □ Searched for books on the course topic

Q9 Which, if any, of these factors did you consider when choosing a book(s) for this course?

- □ Cost to purchase
- □ Availability through the library
- □ Open access availability
- □ None of the above

Q10 Did you assign any book chapters for this course? (For this question, do not consider books you asked students to read extensively, just chapters where only a small portion of the book was assigned)

Q11 How many of the chapter readings on the syllabus did you identify using each of these methods?

- □ Adopted from a colleague's syllabus
- □ Assigned a chapter I was familiar with through keeping up with literature in my field
- □ Searched for information on the topic

Q12 Which, if any, of these factors did you consider when choosing chapters for this course? Mark all that apply

- □ Cost to purchase
- □ Availability through the library
- □ Open access availability
- □ None of the above

Q13 Did you assign any articles for this course?

Q14 How many of the article readings on the syllabus did you identify using each of these methods?

- □ Adopted an article from a colleague's syllabus
- □ Assigned an article I was familiar with through keeping up with literature in my field
- □ Searched for articles on the topic

Q15 Which, if any, of these factors did you consider when choosing articles for this course? Mark all that apply

- □ Cost to purchase
- □ Availability through the library
- □ Open access availability
- □ None of the above

Q16 Did you assign any media on your syllabus? (Videos, music recordings, podcasts, etc.)

Q17 What percent of the audiovisual media assignments on your syllabus did you identify using each of these methods?

- □ Adopted media from a colleague's syllabus
- □ Assigned media I was familiar with through keeping up with information in my field
- □ Searched for media on the topic

Q18 Which, if any, of these factors did you consider when choosing audiovisual media resources? Mark all that apply

- □ Cost to purchase
- □ Availability through the library
- □ Open access availability
- □ None of the above

Q19 Did you consult a librarian or library staff member regarding your reading assignments before teaching the course?

- □ Yes, before this semester
- □ Yes, in a previous semester
- □ No

Q20 Do you have anything else you would like librarians to know about how you develop and update reading lists for your courses?

Growing OkraOut: A Case Study

Lessons from 5 Years of Collaborative Design, Development, and Implementation While Building an LGBTQ+ Library Outreach Program

Afton Fawn Ussery and Sofiya Petrova Dahman

In the past five years, Delta State University's academic library has made significant efforts to develop sustainable outreach programs that support the LGBTQ+ (Lesbian, Gay, Bisexual, Transgender, Queer+) community. This program has increased the library's visibility and enhanced its image among its students, faculty, and staff. The article describes the outreach program's effort, and the collected data will provide a framework for others interested in designing and hosting such programs, including adaptability during the COVID-19 pandemic.

Background Information

Members of the Roberts-LaForge Library at Delta State University have hosted an LGBTQ+ Pride event for the past five years. The event and committee are known as OkraOut, which refers to the university's student mascot of the Fighting Okra. The student body voted on the mascot in the late 1980s/early 1990s as the school's unofficial mascot. Inspired by Boyer's (1996, p. 18) definition of scholarship of engagement, this committee held diverse events to promote library services, while also increasing the quality of engagement activities for the local community and the university population at a small college campus.

Problem Statement

The LIS literature on the information needs of, and specific outreach to, LGBTQ+ students is an emerging focus of Academic Libraries, yet there are still few examples in the scholarly literature of programs like OkraOut. This case study aims to detail the process of developing such outreach to help address that gap. This study also adds to the current body of research, examples, and knowledge concerning collaborations between universities, across campus, and the community in outreach programs.

Introduction

Many libraries provide inclusive acknowledgments in their mission or vision statements. However, equally important is how libraries can do more to celebrate and proudly serve all users. We, as librarians, must go the extra step to celebrate and give visibility to our most "invisible

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regulars" (Naidoo, 2013, p. 40). This article suggests ways for academic libraries, specifically, to be more proactive and to move beyond simple steps such as mission statement language, or buying more LGBTQ+ books for June Pride displays.

The Seeding Stage

The authors met and began working together at Delta State University in 2016. They witnessed a need in their community and were motivated to create an event celebrating a specific population of patrons. ALA's (American Library Association) Gay, Lesbian, Bi, and Transgender (GLBT) Round Table Toolkit states that:

> It is vital to create a welcoming environment for GLBT library users in their communities, campuses, and schools. Library users of all ethnic and racial backgrounds, nationalities, socio-economic classes, and abilities look for materials that include and celebrate diverse experiences within GLBT communities and promote accessible and inclusive programming. With this statement in mind, the authors recognized that their academic library was not fulfilling the needed accessible and inclusive programming.

This need was even more crucial as the authors' library is located in the middle of the Mississippi Delta. Delta State University is a small four-year public university with library services that serves around 5,000 students, faculty, staff, and community members. According to the University's mini factbook of 2020–2021 (Delta State University, 2021), Mississippi and Tennessee are the top two states represented among the students. Two thousand four hundred forty-one students were from Mississippi, and sixty-two were from Tennessee, two hours north of Cleveland, Mississippi.

Currently, there are no explicit, comprehensive statewide non-discrimination protections for gay, lesbian, bisexual, or transgender people in Mississippi. Instead, there are discriminatory anti-LGBTQ+ laws, including the MS HB 1523 and the Religious Liberty Accommodations Act. The legislature allows people and organizations to decline services to queer people based on religious beliefs. In 2021, Mississippi's governor signed SB 2536, an anti-transgender sports bill, marking the first piece of specifically anti-transgender legislation to become law. These laws restrict and negatively affect the LGBTQ+ community. Unfortunately, the number of harmful laws against the LGBTQ+ communities is rising nationwide; the Human Rights Campaign (HRC) declared 2021 the "worst year for LGBTQ+ state legislative attacks" (Ronan, 2021).

Tennessee is also home to sweeping anti-LGBTQ+ legislation. Such bills include anti-transgender legislation SB126, which restricts access to gender-affirming care by limiting health providers' ability to prescribe Hormone Replacement Therapy to prepubertal minors. Violations of this bill result in a misdemeanor. Along with the anti-transgender sports bill that the Tennessee Governor signed into law, the HB3 and SB228 bills prohibit transgender students from participating in school sports and require student-athletes to be gendered as assigned at birth, demonstrated by their original birth certificate. Outside the school buildings and inside the state's communities, there are the HB1182 and SB1224 bills, which require businesses that allow people to use restrooms according to their gender identity to post a warning at the entrance of the building and bathrooms.

The authors were aware of the political atmosphere in their region; in addition, they witnessed an interest on campus for LGBTQ+ displays within the library, so they sought to create an event or outreach opportunity for inclusion. Previously, there was a Gay and Lesbian Alliance Student Organization, but it had declined in interaction over the years. At the inception of OkraOut, there were no current on-campus, or even in-community, support groups or events for LGBTQ+ individuals. Outreach activities allow libraries to serve users by being more visible, and developing more substantial campus and community relationships, and so the authors started planning what would become OkraOut.

Keeran and Forbes (2018, p. 250) note that the four critical elements of a successful outreach program are: 1. strategic vision and planning; 2. program development and implementation; 3. community outreach; and 4. expanding outreach audiences. This article's authors relied on these elements and worked specifically to expand outreach to include all patrons. Librarians and staff have an ethical and professional duty to provide information to all they serve. For example, the American Library Association's *Library Bill of Rights and Codes of Ethics* urges librarians and libraries to offer resources and services to all persons, regardless of their backgrounds or views. The authors assembled a committee to contribute ideas, planning, and developing and implementing action. The duties of the event planning committee also included providing information on sexuality, gender identity, and coming out for library patrons. This outreach was to position the library as a key information source for the queer community.

Literature Review

As mentioned, the information needs of LGBTQ+ students in academic libraries is an emerging focus of LIS literature. Strategies, case studies, and best practices for providing library support and services to specialized student populations are responses to this need. The authors have included similar studies within this literature review for further interest.

Research suggests that LGBTQ+ students may experience higher than-usual stresses and difficulties when transitioning from high school. According to Dentato et al. (2013), identity formation often occurs during high school and further on through the colligate experience. There is a growing understanding that libraries must also be active in supporting that development (Dentato, et. al, 2013, p. 10). Renn and Bilodeau (2005, p. 42) add that the post-secondary curriculum—including the library—is vital in facilitating LGBTQ identity development. They viewed models of identity development through the perspectives of student affairs professionals. Doing so developed helpful literature concerning LGBTQ+ people of color, life span approach to LGBTQ+ identity development, and approaches to transgender identity development.

Mehra and Braquet (2011, pp. 401–422) examined the reference department and how they assisted LGBTQ+ patrons. They created an exploratory practice-based framework that identified strategic goals, objectives, and activities for each of the five areas of modern-day references, such as access to electronic resources, user instruction, library commons, outreach liaison, and virtual reference, with a focus on meeting the needs of LGBTQ individuals during the coming out process. They utilized qualitative studies and action research conducted by two library and information science professionals in an academic library. They sought to extend the idea of a traditional reference interaction—one focused solely on information provision—to a more encompassing conceptualization and implementation that designs, delivers, and accesses

reference services in a community engagement context to develop fair and equitable services for LGBTQ patrons. Todorinova and Ortiz-Myers (2019, pp. 66–87) engaged public services librarians working in administrative or managerial positions in a conversation about LGBTQ+ needs. There was uncertainty between the library's role in promoting LGBTQ+ friendliness and the role of the larger university, which may be related to the uncertain position of the library in the campus environment. However, the empathy that librarians, in both decision and non-decision-making roles, have towards LGBTQ students opens up the possibility of deeper conversations and proactive, innovative support services in the future.

Hawkins et al. (2017, p. 316–327) detail conversations among professionals in health sciences librarianship about the needs of LGBTQ patrons. The authors echo the importance of understanding the terminology, and of developing standard cultural competencies in serving LGBTQ users. An example of this in action is hosting safe space training. Safe space training workshops provide information on LGBTQ+ culture and engage in identifying and avoiding microaggressions in speech or actions.

Another example of the importance of providing resources that support and celebrate underrepresented communities is creating helpful library guides. Kohout-Tailor and Klar (2021, p. 173) recommend creating multiple guides and working with various partners on campus. They wrote, "once you identified areas that may need support, creating or growing a partnership to make sure the resources truly meet a need is next. Communicate with colleagues both within and outside of your library or institution to make connections and start the conversation of how best the library can provide resources that support EDI programs or initiatives." They offer a starting point on how to begin a form of outreach.

Editor and Student Engagement Librarian at the University of Tennessee in Knoxville, Zoe Bastone (2020, p. 24) explains, "that while there is a wide agreement that outreach is a necessary component in an academic library's operations, there is a gap in the literature regarding how to create outreach programs that are efficient and effective and can account for unexpected additions to the outreach program." This article helps fill that gap by discussing the programming of a small academic library. The outreach examined in this article developed through collaborations between universities, across campus, and within the community. However, as mentioned, there is a lack of previous research in academic libraries on building LGBTQ+ outreach events within a case study format. For example, while the authors searched in the database LISTA, "case study" and "outreach programs or outreach services" brought up only 90 hits between 1978 and 2022; 42 included academic libraries, and none included the words "queer or LGBTQ or gay or LGBT or lesbian or homosexual or transgender." The authors will focus intensely on outreach to develop strong outreach campaigns for underserved groups. This is especially important given the continued growth of minority enrollment in higher education (Puente et. al, 2009, p. 30). The article will reveal the methods of adaptability that the committee used to meet the changing needs of their outreach program over five years and during a world pandemic.

Research Questions

The research questions for this study were as follows:

RQ1. How to start an outreach initiative?

RQ2. How to continue to grow an annual program?

RQ3. How to react during a period of dramatic upheaval and change?

Data Collection

Methodology

There is published research that quantifies the development, and even influence, of library outreach on student and community involvement with their academic library, as academic libraries commonly host events to attract students and the surrounding community. These events can provide opportunities for interaction, generate informative discussion, and familiarize students with the library's services. Yin (2017, p. 5) describes qualitative case study methodology as: "Whatever the field of interest, the distinctive need for case studies arises out of the desire to understand complex social phenomena. Case studies allow you to focus in-depth on a case and to retain a holistic and real-world perspective." This article presents a checklist of the four critical elements of a successful outreach program. The checklist includes strategic vision and planning, program development and implementation, community outreach, and expanding outreach audiences. The objective of this article is to provide academic libraries and their staff with practical application of this checklist by linking all its four elements with the authors' experiences.

The definition of the case study evolved through the work of the library committee, which works tirelessly to conduct an event each year. Collaboration between the authors began during the Summer of 2017. Shortly after, the authors met to work together and—over an extended period—shared similar thoughts and feelings in order to understand and analyze the university's overall climate, where LGBTQ+ issues remained largely unaddressed. This unified desire for outreach grew into a huge show of celebration of LGBTQ+ people that also provided exploratory data-collecting possibilities. The resulting committee included university staff, faculty, and students. The committee later incorporated more help from community volunteers as well. Officially, the committee was first called to order by two library staff members and three university faculty members. The group's strategic vision was to grow campus LGBTQ+ support and engagement and then have the student organizations take the eventual reigns. This committee never saw themselves as the sole owners of OkraOut, but as developers and supporters of the campus need. They built the programs and structure. The committee began meeting at the beginning of each Fall semester. For the first couple of years, weekly meetings were held in the library up until the event occurred in October. After the event, a meeting would be held to review and start plans for next year. As the COVID-19 pandemic began, the resulting committee meetings were held through email and occasional Zoom meetings.

Delta State University's campus is a small area with close collaborations. Because of that, library administration, as well as other departmental administrations, were updated frequently on the developments; this event planning committee would not have been able to accomplish its visions without their support. Committee members were also provided time for the meetings and events. The committee itself had to be built up before building OkraOut. At first, the committee members were similar-minded individuals that were supportive of each other and known to each other through different outreach programs. Then, after the event began to be known throughout campus as an annual event, more volunteers and students reached out. The effort led to the development of a significant LGBTQ and ally network that facilitate future programming and support. This article represents the actualized and envisioned library services for the progressive support of LGBTQ individuals, as described in the following section.

Findings

RQ1. How to Start an Outreach Initiative?

Germination Stage

Strategic vision and planning are the first critical elements of a successful outreach program. The beginning of the growing stage of okra is called the germination stage, in which the seeds will produce some roots and leaves. Following this metaphor, the OkraOut program first sprouted in October 2017. That year, Chase Ollis published an article through the Association of College and Research Libraries (2017) calling for libraries to "Standing Up for Our Communities." He wrote:

> Faced with a dramatic policy shift that contradicts the core values of libraries, an awakening of hate groups empowered by the shift, and the perpetual suspense that accompanies uncertain times, librarians are rising to the challenge of maintaining safe spaces in America's libraries by advocating for intellectual freedom and declaring that libraries are for everyone.

Ollis illustrated the charge for engagement in communities. While providing access to LGBTQ+ resources is essential, providing a diverse, inclusive space and educational opportunities is crucial.

In October 2017, the university held the first LGBTQ+ History Month Celebration with an inaugural event called initially OkraOut Front. The event's purpose was to bring together the university students, faculty, staff, and local community members who support and advocate for an inclusive and diverse society. More importantly, the event ensured that queer people on campus and in the local community were being represented and recognized with access to diverse collections and services—a priority for the library. The idea for the OkraOut Front library outreach event first appeared in June 2017 after one of the authors posted a picture promoting the academic library's pride book display. The image received a lot of interest on social media, and the authors began further engaging with students who had revealed that they were queer. The positive engagement revealed a need as little was held to support queer people on campus and locally.

The first step in growing OkraOut was to find collaborators. Both authors held staff positions at the library at the time but were supported by the library's administration to pursue various campus and community engagements. Identifying nonprofit organizations and LGBTQ+ allies was time-consuming, but not impossible. A partnership with the academic library on the university's campus and statewide organizations was essential to the development of the event. Locally, there were a few campus and community organizations, including the University's Quality Enhancement Plan, Diversity, Equity, and Inclusion Committee, the Gender and Sexuality Alliance student organization, and the Mississippi Department of Health with its HIV/AIDS chapter. Most organizations supporting diversity were based in Jackson, a two-hour drive from campus. These groups included the Human Rights Campaign of Mississippi and Free Mom Hugs of Mississippi. The authors also sought assistance from other university organizations. For example, in the program's first two years, the committee collaborated with the Sarah Isom Center for Women and Gender Studies, as well as the Center for Inclusion and Cross-Cultural Engagement at the University of Mississippi. This partnership helped extend awareness and provided additional educational and planning tips for the OkraOut committee.

The University of Mississippi's organizations had more funding and experience in offering diverse programs. Such support watered OkraOut's roots. The authors conducted research and held conversations. A small committee began to grow, and their first act was to plan the first pride event for the university.

On October fifth, 2017, the OkraOut outreach celebration was held a week before National Coming Out Day. National Coming Out Day is an annual LGBT+ awareness day observed on October eleventh to support lesbian, gay, bisexual, and transgender people in "coming out of the closet." The event was advertised in the first-year seminar courses, campus publicity, via social media platforms (Facebook), among staff and faculty members, and printed materials were distributed around campus and placed on community boards. The side of the library's lawn stood as a stage where student bands, poets, and ensembles performed music written or composed by queer individuals throughout history. The Delta State University's marching band opened the event by playing "Over the Rainbow." The authors prepared an LGBTQ+ movement history timeline to provide more information, resources, and facts.

The program included 114 RSVPs and was free, open to the public, and family-friendly. The event educated the audience about the use of pronouns, acknowledged Mississippi organizations that support LGBTQ+ people, illustrated how to find help or answers, and identified persons that would provide support and assistance on campus and in the state. This first event was seen as a success. With that in mind, the committee and the library administration decided that the program should continue to grow and become an annual library outreach event. The first crucial step of starting an outreach initiative was deemed a success by the feedback from participants. For example, a community member wrote on Facebook:

> God sent you here for a reason, and keep doing great things so that all people can feel love and acceptance!!! You are amazing and I can say that even though we have never met!!! I feel compelled to share my story of my family and the struggles we have faced Much Love to you and yours (Anonymous, community user, 2017).

Further, a student commented, "Thank you so much for sharing! This is amazing" (Anonymous, DSU student, 2017), and a faculty member added, "Great job tonight! Thank you for your efforts! My class enjoyed!" (Anonymous, DSU Faculty, 2017).

The second step of a successful outreach program is the development and implementation stage. Once ideas are promising, it is important to continue to repeat and build upon them. In 2018 sprouting occurred again, and the OkraOut committee met to repeat the successful library outreach event. Many of the setup props as the previous year were used again. To continue the music essence, "Vogue" was settled as the theme of the 2018 LGBTQ+ History celebration.

The guest speaker in 2018 was someone whom one of the authors befriended the previous year when researching OkraOut, Dr. Jaime Harker. She spoke at the event and again the next day at Delta State University's art gallery about her book, *The Lesbian South*. Before the event, the committee advertised a Google form that allowed patrons to share their personal coming out stories, including the option of remaining anonymous or releasing their name. The stories were then printed out and shared at the outreach event. Later, the university's archives and museum archived the responses with permission.

At the end of the 2018 event, a local dance teacher was invited to teach classic vogue dance moves, and then the crowd could take part in voguing down the stage. The university's then

president and vice president of student affairs led the voguing. Students, faculty, and families took part in the large dance party. The dancing crowd was large, growing from around 100 to 200 participants from the previous year. Officially on the OkraOut Facebook website, 129 people RSVPed. A student later commented on the site, "love that they included an ally flag" (Anonymous, DSU student, 2018). A faculty member wrote, "Love this!" (Anonymous, DSU faculty, 2018). After the event was officially over, an open mic night for poetry was held down the street at a local coffee shop.

RQ2. How to Continue to Grow an Annual Program?

Young Seedling Stage

OkraOut saw a change in its direction and size as it further bloomed in 2019. The third step of a successful outreach program is the inclusion of community outreach; thus, in 2019 the OkraOut committee sought entertainers from outside the university. In a bit of foreshadowing, Liam Stack had written, earlier that year, a piece in the *New York Times* titled, "Drag Queen Story Hour Continues Its Reign at Libraries, Despite Backlash" (2019). He wrote on the rise of Drag Queen Story hours throughout the country, even in areas with discriminatory laws. Stack (2019) noted that:

> Drag performers regularly entertain children at libraries and community centers in progressive enclaves like New York and Los Angeles as well as red-state towns like Juneau, Alaska, and Lincoln, Neb….Melissa Bean, who started the Middle Tennessee chapter of Drag Queen Story Hour, agreed. Unfortunately, backlash often takes place as well. For example, two libraries in central Ohio canceled drag events after receiving what the library council said were "hostile threats." Stack poignantly added in the interview a quote from Ms. Bean, the statistics of the L.G.B.T. community and how many people might be in it don't change because of your ZIP code and your population density, said Ms. Bean, who lives near Sparta, population 5,029, There are L.G.B.T. people here who need us.

At OkraOut's first committee meeting of the year, members agreed that 2019's outreach event should be more extensive, including multiple activities and outreach formats, as the previous two years had been so successful. Inspiration for a theme came from the New York Public Library, which held a program called Love & Resistance: Stonewall 50, referring to the Stonewall Uprising—a series of protests by members of the gay community in response to a police raid at the Stonewall Inn in New York City—in 1969. Those protests have become a symbol of resistance to social and political discrimination.

With that in mind, the theme emerged as OkraOut Resistance and History: An event to celebrate the 50th Anniversary of the Stonewall Uprising, a milestone in the LGBTQ+ History movement. To celebrate in a larger fashion, the committee enthusiastically chose to host the first-ever drag show on campus. The committee utilized social media, including dressing up in unicorn costumes, printing flyers, creating videos, and advertising on the university's marquee. This event was free and family-friendly. The music, costumes, and performances fit a family-friendly event. A rainbow cake and cupcakes were shared, and various campus and equality organizations, such as the Human Rights Campaign, MomHugs.org, and My Brother's Keeper, hosted tables with provided information on resources.

Because of backlash to the wording of being family-friendly and some negative messages on social media in response to a drag show, the location was moved from the library's lawn to a theater on campus for easier security. Those security concerns were brought to the attention of the campus police. Although they were found unwarranted, the event has moved indoors to monitor entrances better. This proved helpful as, according to the RSVPs on the group's webpage, the committee was expecting at least 133 people. However, the event had its largest turnout, and the performance theater—which has 350 seats—was standing room only.

The OkraOut committee experienced support from faculty, staff, students, and community members. Before the event, community members posted support on social media by writing, "Y'all come out and support Okra Out! this Thursday. Bring your kids. Show them that the diversity of humans is beautiful. And if you disagree with that, keep your hatefulness to yourself" (Anonymous, Community member A, 2019). After the show, many community members reached out with stories such as the following:

> I couldn't believe people I know and thought I liked were saying horrible things. I lost so much respect for many people bc of all of that I'm proud dsu is doing this and proud people like you guys are here to help They talk about bullies in schools where they are the bullies of this town in my opinion. It's so sad If there is ever a time for others to learn I'll be happy to share how my own family learned to accept my trans brother And there is way way more to the story (Anonymous, Community member B, 2019).In response to the first drag show on campus, attendees posted, "This was our 3rd year to go to Okra Out as a family. It was such an amazing event, as usual, and our family and friends had a ball!" (Anonymous, drag show attendee A, 2019) and, "We had so much fun at the 3rd Okra Out! The kids absolutely loved the first-ever drag show at DSU" (Anonymous, drag show attendee B, 2019).

Before the drag show, a faculty member held an OkraOut Pride yoga session outside the theater. Also, an exhibit of the national campaign from Zeiss Lenses Americas shared different interpretations of love in the theater's lobby. With the permission of the local photographer, Rory Doyle, his photographs of local members of the LGBTQIA+ community—including Delta State University professors and students—were also displayed (with the subjects' permission).

The OkraOut committee 2019 produced a series of zines for the first time in 2019. Three zines were created and published with information submitted by students, faculty, staff, and community members. The authors and artists included personal stories, poetry, artwork, and words of encouragement. They were promoted by the Language and Literature department. Once printed, student volunteers distributed the zines and left them throughout the student union and other sitting locations throughout campus. Two years before, Kate Kitchens, an academic reference and instruction librarian, presented the idea of zines at the Iowa Library Association conference in a presentation called "Moving Beyond Queer Acceptance: Creating a New Community Culture" (2017). This presentation focused on their guide, "Librarian Field Notes," for librarians who wanted to provide services to support their queer patrons but did not know where to start. Using zines was an avenue that offered a way to understand queer communities and their unique needs better. During the first year zines were printed in a faculty member's office, so they were in black and white. Student volunteers used crayons

to color in part of the title page. Later, when more funds were available, the committee could print the zines in color. The OkraOut zines became an essential and creative asset to the outreach events and continue today.

RQ3. How to React during a Period of Dramatic Upheaval and Change?

Flowering During Frosting Stage

The fourth element in a successful outreach initiative is to continue to expand the outreach audience. This aspect was even more necessary in the fourth year of OkraOut. Sometimes growth is difficult and must be pushed through, and the year 2020 certainly taught everyone a lesson in resilience. Association of College & Research Libraries' (ACRL) Standards for Distance Learning Library Services state,

> All students, faculty members, administrators, staff members, or any other members of an institution of higher education are entitled to the library services and resources of that institution, including direct communication with the appropriate library personnel, regardless of where they are physically located in relation to the campus; where they attend class with regard to the institution's main campus; or the modality by which they take courses. Academic libraries must, therefore, meet the information and research needs of all these constituents, wherever they may be. In 2020, every student became a distance learning student due to the pandemic of COVID-19, and the OkraOut committee had to decide how to provide services and outreach safely. Because OkraOut has evolved over the past few years into a multifaceted and flexible program, it could adapt during the COVID-19 pandemic.

Greenblatt (2001) argues that the LGBTQ community has been transformed with the help of the Internet and social media. Those outlets contribute many opportunities for academic libraries to bring value to LGBTQ students in terms of information services, programming, collections, and much more. Many projects were fast-tracked to meet this unique need, including creating a webpage to host our events and present our mission statement and other information. The Systems librarian built an OkraOut online archive (https://www.deltastate.edu/library/okra-out/) to collect and make accessible photographs, personal stories, and additional information about the events of 2020 and previous years. To further spread the program's outreach and protect the collected stories, the committee contacted the Invisible Histories Project and sent OkraOut information to the Library of Congress for their LGBTQ+ archives.

By October 2020, the committee felt comfortable hosting one in-person event within federal guidelines. A Pride walk on the campus quad, a grassy area at the Delta State University entrance, was held. The event occurred outside, and there was enough room for social distancing while wearing masks. Pride packs were presented to the first 100 attendees. They contained stickers, flags with a tutorial on making them a face mask, zines, and LGBTQ+ fast facts. At the start of the walk, representation flags were displayed, and volunteers were encouraged to write stories and create artwork for future zines.

OkraOut grew in 2020 to be more than just the celebration on or around National Coming Out Day. It was a whole month of celebration, and outreach and virtual events were held throughout October. Through the new webpage, the library shared a drag queen story time of

a fabulous reading of Mariah Carey's "All I Want for Christmas." The webpage also provided a link to the screening of the independent film Gay Chorus Deep South and a zoom pride yoga session. The site recorded 93 views that month.

Because of the program's growth, the committee also wanted to help the LGBTQ+ student organization on campus and looked for ways to increase visibility. In 2020, committee members applied for a grant with the L.G.B.T.Q. Fund of Mississippi to do just that. OkraOut was awarded a grant of $3,500, which was used for safe space training on campus for faculty, staff, and students and to help establish the student organization.

The committee sought to find a medium to meet the needs of the students on and off campus, and to continue the trend of increasing the number of events each year. To meet this challenge, they ensured an equal number of virtual events and in-person events in case of cancellations because of COVID-19 case spikes. OkraOut hoped for more in-person events in 2021, but the reality of the COVID-19 pandemic continued to prove challenging. Nonetheless, 2021's theme was chosen as LOVE IS LOVE, and throughout October, a LOVE is LOVE Wall was present on the first floor of the Student Union. This poignant but straightforward theme reflected the past two years of trauma felt by the unceasing pandemic.

With the support of the Office of Student Life, Delta State University's Diversity, Equity, and Inclusion committee, and the academic library, OkraOut held an adult drag show and fundraiser for the student pride organization at a local restaurant. Then a Rainbow Run on the campus's quad and a family-friendly drag show were held on campus. After Delta State University's second drag show, the audience was welcomed to visit tables with representatives and information about supporting health organizations. One of the article's authors also created the university's first Diversity, Equity, and Inclusion library guide in honor of OkraOut. This library guide quickly became the most viewed LibGuide for the Roberts-LaForge Library. As of September 2022, the DEI library guide has been viewed 1,144 times. The following closest number of views is the Dual Credit LibGuide, with 539 views.

Academic presentations were also held, one in-person and one virtually. In a first collaboration with the University of Memphis, author Dr. Phillip Gordon was invited to both campuses to discuss his book, *Gay Faulkner*, and present a lecture on acknowledging the Queer South. While Delta State University did have a moderately well-attended in-person event, the University of Memphis used live stream technology and witnessed a more significant online presence than the in-person event. OkraOut's virtual event included a presentation on "Teaching, Learning, and Living the Queer South" by Dr. David Baylis, a former faculty member. The online components were viewed 389 times.

With the grant funds described above, the Diversity, Equity, and Inclusion Committee Chair organized virtual Safe Space training workshops throughout October. It worked with OkraOut committee members to help reorganize the Pride student organization at the university. The Pride student organization now includes 40 members, representing 1.64 percent of the student body.

The committee did recognize the difficulty of having lower on-campus numbers than in previous years. Nonetheless, during Homecoming—the last week of October—OkraOut had a float in the university's parade for the first time; the float increased visibility on campus and in the community. Responses to that year's OkraOut effort on social media included a comment from a community member that, "A colorful time was had by all," and a student posted, "Thank you for making this world a better and a little bit safer place!"

Plans for the Future of the Program, Okra Pod Bearing Stage

Feedback on OkraOut's outreach events was essential to gather because a few weeks after each event, we held a post-event committee meeting to determine improvements for the next year, and to celebrate our efforts to advocate for diversity and inclusion. Even with the trials of the last few years, the OkraOut committee has retained its excitement and vigor. The committee has only grown and continued to bring in individuals from all university areas. They all look forward to the future of the outreach programs. Most importantly, they plan to continue and strengthen collaborations with other higher education and nonprofit institutions. Building those connections and networking will boost the outreach possibilities. Of course, there is also a need to better utilize technology for virtual attendance in this new era.

Larger ideas include creating a statement about the commitment to diversity and inclusion, publishing that statement on our library site, and possibly planning monthly events instead of only holding in one month to encourage further engagement. More previously discussed, centralized events include having a gay mass in partnership with the local Episcopal Church, and creating a queer and trans-community closet with the university's Career Services. Currently, the committee is also looking at grants to use within the greater community. Again, these events rely on teamwork and the relationships built from them. The OkraOut program is sprouting new growths every year. The committee, which began with one event in 2017 has, five years later, hosted nine events throughout the month of October.

Conclusion

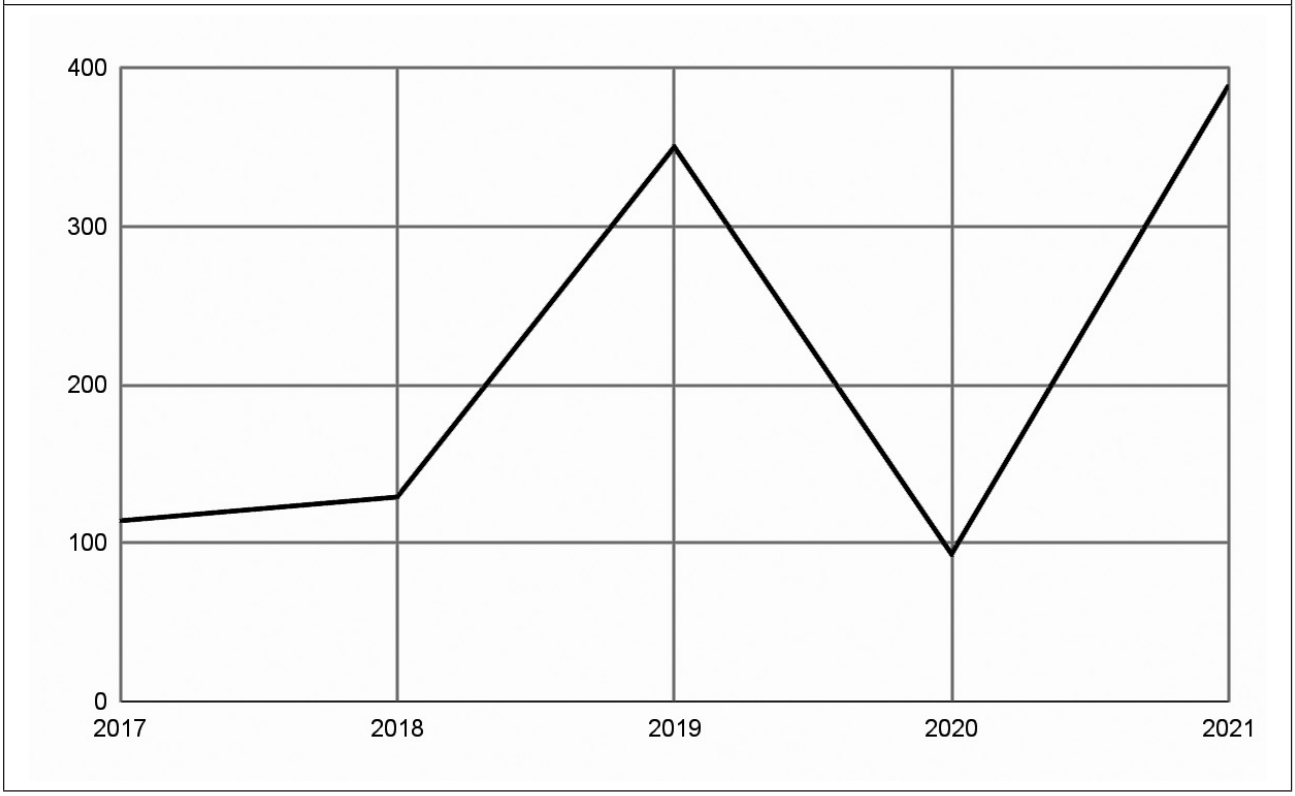
In repeating a statement from the methodology, this unified hope for outreach grew into a vast celebration of LGBTQ+ people, and provided exploratory data-collecting possibilities.

Through starting an outreach program, the authors realized that initiative and collaboration take time to implement successfully. However, the first step for librarians and staff is to recognize the power of library promotion and embrace the issues of their community. Services, resources, and materials are only small parts of what makes an academic library valuable to its campus community. The librarians and staff also have a one-on-one impact on the students and community. Over the past five years, OkraOut's committee has grown from five members to sixteen members, and has been chaired by a library staff member in four out of five years. This growth exhibits the volunteer spirit of the committee members.

Also, during that time, the committee witnessed the attendance of events swell from 100 people to over 350 people attending, with an understandable dip to 93 in 2020. (As seen in Figure 1.)

The main takeaway from that growth is that a library's marketing, outreach, and promotion should illustrate that the library cares and that it, with its partnerships, takes service seriously. This also exhibits the support and the resulting need for the outreach initiative. As illustrated, libraries, especially academic libraries, can and should play an integral role in helping LGBTQ+ students, faculty, and staff feels seen. Support should spread further than just an LGBTQ+ collection in the library. The Library Bill of Rights puts it best: "To that end, libraries and library workers should embrace equity, diversity, and inclusion in everything that they do." With the spread of outreach and the audience growth, Robert-LaForge Library's staff members have taken an active role in educating the community by instructing Safe Space sessions and utilizing grant funding. Safe Space training sessions have become a valid workshop on campus. Faculty, staff, and students are welcome to attend these semesterly sessions

FIGURE 1
Event Attendance



to learn more about pronouns and stereotypes to reduce the often unwelcoming, and biased, environment that LGBTQ+ people navigate daily. Ally connections are strengthened, and students will be aware that places of shelter are needed. A comment shared by a student after the fifth OkraOut expressed that it was truly appreciated.

This article concludes with the hope that the audience continues to give visibility, celebrate, educate, support marginalized communities, and identify ways to get engaged and advocate for queer people on campus and in their communities. The efforts can be small or large, but the action should remain. OkraOut was planned to be educational, festive, and entertaining while also bringing to the table essential questions about diversity and inclusion, thus showing support, and giving visibility to the queer people and allies on campus, and in the community. By spreading the idea that the library was an institution that guards and supports everyone's right to access knowledge and culture and advocates for all patrons, OkraOut positioned the library as a safe space. This article exhibits small and large efforts, but the essential fact remains that the ideas were planted, watered with support, and that the outreach began to grow.

Further Impact and Studies

Despite some improving social circumstances for some LGBTQ+ people, much progress still needs to be made. This article, in particular, can be helpful to libraries, librarians, and universities in recognizing the required progress. Librarians may realize that they need more training on LGBTQ+ terminology, culture, and information resources. Library administrators may find this paper useful in identifying connections between librarian outreach goals and the larger vision of library services.

Beyond the library, university and student affairs administrators may find this paper interesting as it emphasizes the role of collaboration. It also provides a valuable example of how the library can partner in broader university outreach initiatives and that wide-reaching impact can be felt with any outreach efforts. Ultimately, research will be needed to illustrate in more detail how well librarians address LGBTQ+ needs within their universities and communities and the role of academic libraries in those outreach initiatives.

Acknowledgments

We wish to acknowledge and thank those who helped grow OkraOut. This was a collaborative effort within the library, the institution, the community, and the state. The following is just a snapshot of organizations and people who made this outreach event possible:

Okra Out Planning Committee | DSU Library Services Administration | DSU Department of Music | DSU Department of Languages and Literature | DSU Diversity, Equity, and Inclusion Committee | DSU Pride Alliance | DSU Office of Student Affairs | Delta Music Institute | Campaign for Southern Equality | DSU Department of Art | DSU Division of Social Sciences and History | DSU Canterbury Ministry | DSU Office of Student Life | DSU Police Department | Human Rights Campaign of MS | Free Mom Hugs of MS | Sarah Isom Center for Women and Gender Studies | Center for Inclusion and Cross-Cultural Engagement at the University of Mississippi |

Dr. David Baylis | Dr. Jaime Harker | Danza Locke Reifers | Kayla Selby | Michelle E. Johansen | Brandy N. Collins | Jonathan Szot | Dr. Karen Fosheim | Robin Webb | Brittany K. Mann | Haley B. Scroggins | Holly E. Senter | Elizabeth C. Swindle | Charles T. Salazar | Rochelle Owsley | Maia Elgin-Wegmann | Maya M. McGinnis | Dr. William J. Ash-Houchen | Dr. Kelsey Evans-Amalu | Dr. Melanie R. Anderson | Sykina Butts | Mr. Bill LaForge and Mrs. Nancy LaForge | Jeff Slagell | Dr. Vernell Bennett-Fairs | Dr. Jamie Dahman | Denisha Cook | Dr. Jacqueline Goldman | Kara Goldman | Lynne Lambdin | Celeste ArgiFlex | Tiko Jones | Gunter McCourt | Aubrey Ombre | Zoey Adams | Iris Lefluer |

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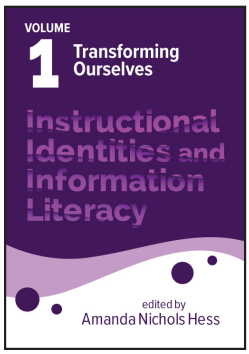
Instructional Identities and Information Literacy: Transforming Ourselves, Volume 1, Amanda Nichols Hess (ed.), ACRL, 2023. 194p. Softcover. 9780838939680 (Review 1 of a 3-volume title)



Instruction Identities and Information Literacy is a three-volume set edited by Amanda Nichols Hess, the Coordinator of Instruction & Research Help at Oakland University Libraries in Rochester, Michigan. Volume 1 of *Instruction Identities and Information Literacy* is titled *Transforming Ourselves* and is divided into three parts: Part 1: "Personal Identities and Perspective Transformation," Part 2: "Professional Practices and Instructional Identity Development," and Part 3: "Collaborative Experiences for Instructional Identity Development." Through each part of this first volume, the reader is taken through the experiences of academic librarians and their transformative experiences, which led to the development and transformation of their instructional identities.

Each chapter of this volume is presented as a case study, detailing the contributors' personal experiences with transformative learning theory and how they applied various techniques, pedagogy, and other theories to achieve their instructional transformations. These unique experiences highlight the innumerable ways in which transformative learning theory can be applied to an individual's instructional persona. The unifying theme in each of these experiences is the application of transformative learning theory in a variety of situations and settings. Other learning theories and practices are also filtered through the lens of transformative learning theory to further explain the development of instructional identities over time.

Before delving into the chapters in *Transforming Ourselves,* it is essential to understand Jack Mezirow's transformative learning theory. Hess provides a preface to the book which gives background information, summarizes the concept, and explores its applications. Transformative learning theory is centered on adult learners and looks at the "process of effecting change in a frame of reference," with frames of reference being the experiences and expectations that shape beliefs and views of the world (Mezirow, 1997, p.5). Shifts to these internal frames can be due to either a singular event or adjusted gradually over time. Mezirow explains, "the process involves transforming frames of reference through critical reflection of assumptions, validating contested beliefs through discourse, taking action on one's reflective insight, and critically assessing it" (1997, p.11). Throughout each chapter in this volume, readers can follow the experiences of individual academic librarians as they move through this process.

Part 1, "Personal Identities and Perspective Transformation," focuses on the personal growth in instructional identity of the authors. Writers trace the journeys of librarians finding and altering their instructional identities. They share their personal reflections and experiences with: antiracist and feminist pedagogy; career changes; the intersections between personal, professional, and instructional identities; and visual literary instruction. Contributors detail how they applied transformative learning to their classes. They work through critical reflection, journaling, analysis of transformative timing, disorienting dilemmas, and emotional responses, resulting in awareness of self and others, and self-actualizing of both the instructor and students. Part 2, "Professional Practices and Instructional Identity Development," shifts to a more

professional application of the transformative learning theory. Authors in this section discuss their experiences with imposter syndrome, storytelling, analyzing changes in post-instruction reflection, advocating for student needs during the COVID-19 pandemic, building professional skills, and using curriculum mapping to develop a full strategy to enhance student learning. Collaborating with other teaching faculty, they have implemented the ideas of transformative learning theory into their professional identity by adjusting their own beliefs and values. Part 3, "Collaborative Experiences for Instructional Identity Development," examines group learning and professional development. Topics include experiences with trauma-informed approaches and radial empathy, developing a professional learning community, and transformative role playing. The writers detail how they worked with librarians, as well as colleagues outside the library, to implement the tenets of transformative learning theory and to help create an overarching instruction identity for other academic departments.

Many of the chapters in this first volume focus on topics that are timely and of interest to the library community, such as impacts of the COVID-19 and the experiences of Black, indigenous, and other people of color (BIPOC). Modifying instructional identities against the backdrop of collective traumatic events, such as the pandemic and the death of George Floyd, is something that academic librarians might keep in mind, especially because an increasing number of today's college students were potentially affected by these events. Each chapter in Volume 1 concludes with a section titled, "Critical Reflections for Instructional Identities," where the author(s) apply what they have learned to librarianship and instruction. The text includes critical questions—along with their answers—to make this a useful guide for academic librarians adapting their own pedagogical practices to reflect shifts in learning. *Instructional Identities and Information Literacy: Transforming Ourselves*, Volume 1 would be at home on the shelf of any academic instruction librarian, especially those who are looking to create or reflect on their own instructional identities, and in the library collection of any university with a library and information science program. — *Stephanie Cicero, Roberts Wesleyan University*

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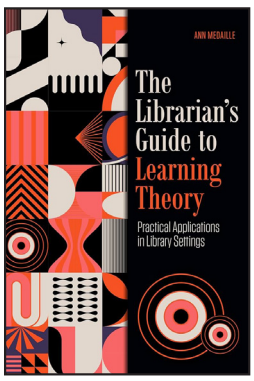
The Librarian's Guide to Learning Theory: Practical Applications in Library Settings, Anne Medaille. ALA Editions, 2023. Softcover, 192p. $54.99. 9780838939581



Ann Medaille is director of research and instructional services at the University of Nevada, Reno Libraries. Her most recent publication, "The Librarian's Guide to Learning Theory: Practical Applications in Library Settings" (2024) reviews theories related to learning in its widest definition; not just the learning that takes place in the classroom, but in a variety of settings. This book examines various learning theories taken from a predominantly Western, Global North canon and shows how they can be supported by library settings, both virtual and online. The book also links theory to librarians' classroom teaching practices, though that is not its main scope. Although the parts related to space design could be useful for all libraries, the book is clearly aimed at academic librarians or library space managers within education.

The book is clear in its intent to summarize and encapsulate the application of the theories themselves and is well-structured to support this. Each chapter is themed around a topic such as "Dialogue," or "Constructing Knowledge," and includes useful parenthetical cross-references to indicate where the book explores theories across these topics. The chapters are consistent in format, and it is textbook-like in its inclusion of reflective questions for the reader, as well as case studies.

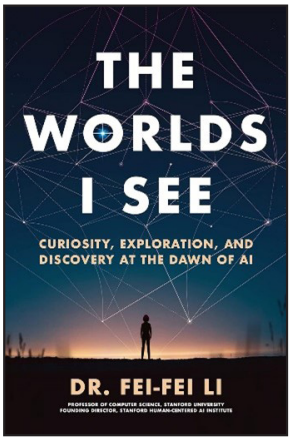
Through the clarity of her writing, the author gives the reader the vocabulary needed to successfully articulate—and reflect on—learning moments librarians may have experienced themselves in their work with students, and to link these with relevant, contributing theories. This may lead the reader to reflect on their own actions or contributions to learning practices, and to further inform their future praxis.

For a slim volume, the book covers a lot of ground, albeit with very little depth. Each chapter includes bulleted lists of suggested actions librarians can take to help people learn in their spaces. The book's main weakness is that these actions often depend on the "ideal" scenario where librarians have as much power, money, space, time, and autonomy as needed to implement them. The tips ("librarians should/librarians could") are extremely broad and range from space-based changes, to ideas for programmes the libraries could run, to maker-space use within libraries, and continuing on to changing the culture of use within the library's stakeholders. But these are just tips, not strategies—additional, detailed case studies exploring how to do this work in would make this book more useful for library-space managers. For tips that might be difficult thinking: Also, the recommended reading lists of can-dos were repetitive, which was frustrating at times.

This book is also very shallow in its exploration—or critique—of the often extremely complicated and nuanced theories it is summarizing. The writing comes across as deliberately non-partisan, aiming to explore how learning (in the Western Global North context) has been theorised in a non-judgemental way. However, the book lacks criticism—or even acknowledgement—of the sometimes racist, neoliberal agendas behind globalised education systems, which certainly includes libraries. There are also notable absences within the book's references to scholars exploring learning in culturally responsive, or restorative ways, as well as to supporting learning for neurodiverse or disabled populations. Because of this, the book seems curiously out of touch with much of the current discourse within librarianship surrounding learning and pedagogy; however, this is not the book's stated purpose, and as a textbook guiding librarians new to established populist learning theories it does its job well.

This is not a practical guide to implementing learning theory in an information literacy or academic skills classroom (although there are sections for librarians working in this area). Rather this book is, as the title suggests, most useful for evaluating library settings, and how they are set up to encourage learning. I certainly learned a lot from some parts of the book: the chapter on "Observation" was the stand-out for me in explaining Badura's theory of triadic reciprocality in a way I could fully understand for the first time. In addition, the book includes helpful illustrations, which further assist understanding of the included theories. *The Librarian's Guide to Learning Theory* would be most useful for librarians, or library space managers, looking for inspiration on how to make their spaces more suitable for learning. Librarians new to teaching may also find value in how the learning theories—often mentioned in librarianship literature with an assumption of prior knowledge—fit in with their own work. — *Jess Haigh, Leeds Beckett University*

The Worlds I See: Curiosity, Exploration, and Discovery at the Dawn of AI, Fei-Fei Li, Flatiron Books, 2023. 324p. Hardcover, $24.99. 9781250897930



When we consider artificial intelligence, we may think about the recent generative artificial intelligence tools making the news, such as OpenAI's ChatGPT, Google's Bard, or Microsoft's Bing. However, AI has been a scientific discipline since the 1950s; AI was originally trained to perform very specific tasks and generally did such assignments very well (e.g. playing chess). Academic libraries such as Stanford University Libraries have also been discussing the role of artificial intelligence and its applications in higher educations, business, and society. AI is now being incorporated into the mainstream due to recent developments in these generative tools that are becoming readily available. Dr. Fei-Fei Li, Professor of Computer Science and Founding Director of Stanford Institute for Human-Centered AI at Stanford University, writes in her memoir, *The Worlds I See*, about her curiosity, affinity, and engagement with artificial intelligence. The author explains how she came to understand the promises and perils of AI through her encounters, projects, and collaborations over two decades.

Li begins her memoir describing her upbringing in China and New Jersey. She shared with readers her high school experiences, her academic journey from Princeton University, Cal Tech, and Stanford University, as well as how she became interested in artificial intelligence. Writing about the potential impact of artificial intelligence in society, Li found similarity in her relationship with her family and her relationship with artificial intelligence—each having an evolving nature over time. In sharing her perspective on modern artificial intelligence and predicting its implications for humans, Li writes, "we see the world holistically, not just identifying but understanding its contents—their relationships, their meanings, their pasts, and their futures. The gist. We aren't merely witnesses but storytellers. It felt like it was time for algorithms to learn how to do the same" (p. 229).

Li suggests that AI is not the work of an individual but of a collective—a collaborative effort. The author writes about her own experiences with researchers and students involved in her labs, and incorporates a history of the development of AI, discussing how substantive progress requires institutional collaborations between higher education and tech industries across the globe. Li emphasizes that no single expert can work on AI technologies without consulting other professionals in the field. Yet geopolitics—such as the present condition between China and the United States—can disrupt global cooperative partnerships, creating isolation, borders, and competitions regarding AI technologies—a point that Li fails to address in the book. Because of this lack of coverage, the reader is left wondering how the author perceives current geopolitics and its implications for developing technologies. Does Li think that such competition creates effective AI technologies, or does it stifle collaboration?

Another consideration is that AI technologies require access and knowledge to utilize such tools. In libraries, the concept of the digital divide where access is limited to those who can afford it is the concept "information privilege" at play. Similarly, individuals who have affiliations with well-resourced institutions may have advantages over those who do not have such connections or relationships. As subscription fees in tools such as ChatGPT emerge, those who can afford to pay subscription fees will have access to technology that others do

not. These paywalls can hamper creativity and may perpetuate existing information privilege issues, which then exacerbates existing inequalities.

Enriching the book is the fact that Li's work in AI draws on multidisciplinary approaches, from medicine to information science. Li has worked side-by-side with numerous researchers, tech CEOs, experts, and everyday people. The author does an excellent job of synthesizing and breaking down complex ideas and topics within the field of AI. Li describes how her own interest began with working on an image recognition project—the ImageNet database, which involved researchers classifying millions of digital images that became training data for AI systems back in 2006. And she discusses apprehension surrounding AI and surveillance, comparing how ImageNet scraped millions of photos to generative AI tools aggregating large amounts of data for its knowledge base. This initial project, along with others in which she's been a member or led, shows that she is well-informed of AI issues. Li discusses ethical and privacy concerns related to surveillance and the biases that are materializing from using AI—issues that have shaped her own understanding of the technology's potential impact, as well as its limitations.

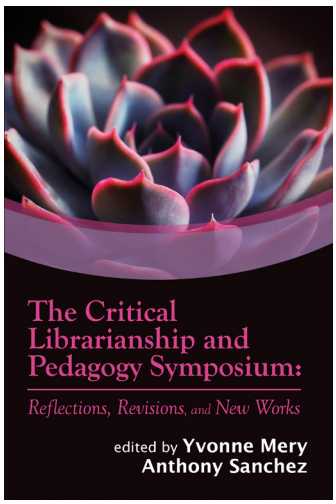
Li also describes the problems of labels generated automatically by Yahoo's Flickr and Google Photo Services due to the lack of diverse data sets, which, in turn, creates biased algorithms. Li wrote, "ImageNet included, exacerbated poorly tested algorithms and questionable decision making. When the internet presents a predominately white, Western, and often male picture of everyday life, we're left with the technology that struggles to make sense of everyone else" (p. 275). Li questions, for example, a surveillance system that tracks when people washed their hands, or how AI has been shown to discriminate against loan applications, parole requests, or job applications due to biases inherent in the programming. Li writes: "Everything this new generation of AI was able to do—whether good or bad, expected or otherwise—was complicated by the lack of transparency intrinsic to its design" (p. 284).

Of particular interest to library and information professionals, is Li's mention of arXiv, the online repository of academic pre-print articles for physics and engineering, as well as the importance of open access in providing timely materials over those that may become outdated after a lengthy peer-reviewed process. These topics—open access and collaboration—are present throughout the book and provide a subtle foundation for her discussion.

Readers interested in how AI is shaping society in an accelerated manner may find Li's book a fascinating insight into one computer science professor's vision of the AI world. With the potential to impact librarianship, AI's role in academics remains to be seen. Li acknowledges that the future of AI is uncertain; however, she points out that the field continues to become "more diverse, more inclusive, and more open to expertise from other disciplines," which may help us ensure that the system continues to reflect these changes for a better society. — *Raymond Pun, Alder Graduate School of Education*

The Critical Librarianship and Pedagogy Symposium: Reflections, Revisions, and New Works, Yvonne Mery and Anthony Sanchez (eds.), ACRL, 2023. 220p. Softcover, $65.00. 9780838939529

Since 2016, the University of Arizona Libraries has hosted the Critical Librarianship and Pedagogy Symposium (CLAPS), a free, biennial event focused on critical pedagogy in librarianship. Edited by University of Arizona librarians Yvonne Mery and Anthony Sanchez, this volume—*The Critical Librarianship and Pedagogy Symposium: Reflections, Revisions, and*



New Works—builds on past CLAPS presentations with the goal of increasing participation in future conferences. Originally developed by Paulo Freire, "critical pedagogy recognizes that our education system is shaped by hegemonic political and economic forces, often to the detriment of politically and culturally marginalized students" (Mery and Sanchez, 2023, p. vi). In this case, critical pedagogy and critical information literacy are applied to the library classroom. Simultaneously theoretical and practical, this edited volume emphasizes praxis, and transforms theory into practice to bring about meaningful changes within the classroom. Each chapter provides critical interventions within academia for "those it has historically and systemically excluded" (Hallerduff and Carlton, 2023, p. 76).

Divided into five sections, nine substantive chapters explore a wide range of issues centered on library learning, with the final tenth chapter addressing community-based archives and marginalized populations. The first section, "Critical Pedagogies in the Classroom," presents three chapters that contain practical advice for teaching in the classroom. In Chapter 1, Gilgan emphasizes the value of facilitation skills—in particular, intergroup dialogue pedagogy and multipartial mediation by not "privilege[ing] one story over another" (4). In Chapter 2, Crowl and Novosel explore ableism, invisible disabilities, neurodivergence, and disability justice and how they affect students and scholarship. Authors are critical of the one-shot model of library instruction but recognize its ubiquity, with most of the advice tailored to this teaching method. They propose that students might be better served if engaged in dialogue and self-advocacy. Gregory and Higgins, however, step outside of the one-shot paradigm in Chapter 3 to discuss a for-credit course they developed that combines critical information literacy with rhetorical analysis of social justice movement practices.

The second section, "Feminist Library Practices," consists of two chapters that apply feminist analysis to pedagogical and data curation issues. Chapter 4 transitions seamlessly from the previous section by continuing to center on the classroom while incorporating a feminist analysis through the lens of ACRL's "Authority is Constructed and Contextual" (*Framework for Information Literacy for Higher Education*, https://www.ala.org/acrl/standards/ilframework#authority). Hallerduff and Carlton encourage teaching librarians to integrate students' personal experiences as a source of knowledge for research. Chapter 5 offers a more theoretical, philosophical discussion of library practices that continues through the volume's later chapters. Calvert applies feminist epistemology to data curation practices and promotes a new framework of "situated data" which borrows from feminist standpoint theory, as well as Donna Haraway's concept of "situated knowledges" wherein separation of researcher and subject is not practical.

The third section, "The Labor of Librarianship," contains two theory-driven chapters exploring librarianship from the employee angle. In Chapter 6, Mirza, Nicholson, and Seale assess how critical library pedagogy has been institutionalized within the neoliberal university and stripped of its radical potential. The authors argue that critical library pedagogy should be reframed as collaborative care work that does not ignore negative social constructs or prejudices that occur outside the safety of the classroom. In Chapter 7, Douglas, Deal, and Hernandez critique the cooptation of self-care by capitalism and criticize standardization as a

strategy for building sustainability within library instruction programs. Instead, they advocate for community care and a critical examination of the ways that information literacy education is structured, even within a critical library pedagogical framework.

The fourth section, "Practices of Care," continues the previous section's focus on care work and community care. In Chapter 8, Evans and Meeks apply a disability justice lens to care work in academic librarianship. Chiu, Douglas, Gadsby, Kumbier, and Nataraj in Chapter 9 present a multivocal story that applies lessons from connection-focused relational-cultural theory to librarianship. Collectively, sections three and four emphasize the relational nature of care work and seek to revalue such practices in libraries where colleagues "regularly check on each other's well-being" (132).

The fifth section, "Community Archives," contains a single entry by Chapter 10's authors, Lee, Suagee-Beauduy (Cherokee Nation), and Montes, who share their preliminary research on community-based archives' (CBA) use of naming practices, highlighting the multiplicities present in CBAs. They invite those who use archives to engage in the decolonial reading practice of "fingerweaving," the building of relationships and sources in communities originally excluded from archives and collections (190).

Skillfully organized, this text covers a wide breadth of topics that seamlessly blend into and build upon each other. This "toolkit for critical library pedagogy" (Mery & Sanchez, 2023, p. vi) would be a welcome addition to any academic library invested in critical information literacy and pedagogy. While the book's intended audience may already be familiar with critical pedagogy, the content and its writing are such that academic librarians who are new to this topic could still benefit. Additional information about the Critical Librarianship and Pedagogy Symposium (CLAPS) can be found at the CLAPS website (https://clps.arizona.edu/), with videos of select keynotes and presentations available on the CLAPS YouTube channel (https://www.youtube.com/@clapsconference/). The next CLAPS event is expected to take place in fall 2024. — *Dr. Julie Setele, SUNY Buffalo State University*

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