College & Research Libraries

CRL

January 2022 • Volume 83 • Number 1

Association of College and Research Libraries

C&RL

COLLEGE & RESEARCH LIBRARIES

JANUARY 2022
VOLUME 83
NUMBER 1
ISSN 0010-0870

Editorial

Academic Freedom and (Anti) Social Media?

In this the first issue of the 2022 year, it seems timely to address a topic that is uppermost in the rhetoric around high education—and at the center of my commitment to higher education: academic freedom.

My introduction to the concept of academic freedom was as a newbie librarian—and I did not realize at the time how privileged I was to attain a position that was a tenure-track faculty position at an institution with enough funding to support research and service. My focus then was on developing research skills and identifying a focus that was compelling to me and to others (although I must admit that my initial intention was to stay 3 years and then go back to the West Coast once I had some experience—25 years later, I am still in Texas).

My concept of academic freedom was formed from this experience—where I have the latitude (and responsibility) to choose my own direction for my research.

That said, academic freedom also has a place in the work we do—for teaching faculty, in the classroom: for librarians, how we interact with our patrons and engage with services and projects. There is some (LOTS!) difference of opinion on what academic freedom looks like in this setting—and I have heard faculty interpret it as "you can't tell me what to do." The fact that it has different meaning for different people (depending on their experience, priorities and roles) is an inevitable truth and a benefit—but the flexibility also allows for ambiguity and arbitrariness because of these completing interests. For my own understanding, I believe that an organization can tell faculty what to do—and, in fact, it needs to so that the priorities and mission of the university are being met. Academic freedom comes in as faculty may determine HOW to do their job—the approach, the methods, the engagement.

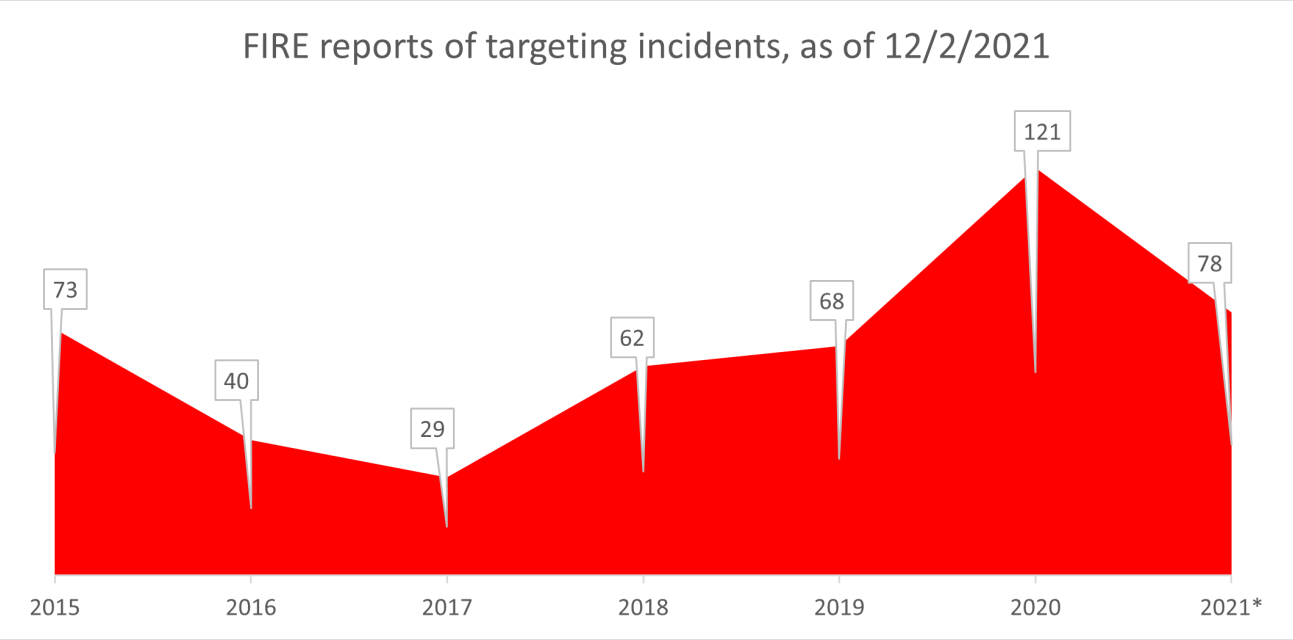
Academic freedom can be informed by a number of other factors—for example, if there is an institution or a state where labor is strong, collective bargaining has an impact on the reach of academic freedom and its protections.

One of the other interesting elements is academic freedom's intersection with intellectual freedom, a fundamental value for which libraries and librarians advocate. It is no doubt that both are under attack—and there is irony in that it is vehicles for free speech that are undermining it and the attacks are coming from both (or all?) sides.

The first inkling that the attacks on academic freedom went beyond the usual tensions was a situation that hit close to home, literally. Tommy Curry, a Philosophy Professor at Texas A&M University, was encouraged to engage in the classroom and his research on race, to challenge the status quo and to promote critical thinking and dialogue.[1] Whether one agrees with his methods or not, it is clear to me that he was exercising his academic freedom and that the response was neither academic nor thoughtful, but reactionary—on the part of the public and the university administration. It sent a strong message to the faculty at the institution that the University did not have the faculty's backs and that media (and social media) would determine how they were supported (or not).

This is not to say that social media is bad—like any other mode, it is the author that determines the message (although, to quote McLuhan "the Medium is the Message"). Having worked with faculty in government and international affairs, social media can be a great equalizer as well as a tool for accountability—Arab Spring is one prime example of how social media promoted citizens to become activists and generated change (the *Guardian*[2] created a compelling visualization on how social media spread the message across borders). The #metoo movement is another such example, empowering those who had been victimized and shining light on a widespread societal problem, ultimately changing norms.

Tommy Curry's situation was not the first—and it was certainly not the last. The Foundation for Individual Rights in Education[3] looks at policies regulating student expression and academic freedoms. Incidents of attacks via social media (including threats!) on faculty have steadily increased.



We have seen attacks from all sides (because, while politics are polarized, there are so many more viewpoints). The irony is that in one group's desire to protect their freedoms, many times they infringe on the freedoms of others who are not in their community or of likeminded perspectives. To be fair, 2021 is not ended yet—however, there has been a disturbing upward trend.

Most recently, there are the glaring examples of Florida[4], North Carolina[5] and Georgia[6] where the governance boards and state legislatures have actively inserted themselves into not just what is taught but HOW faculty are engaging in the classroom, offering their expertise and contributing to public scholarship. There are policies[7] and laws[8] that seek to constrain how faculty exercise their academic freedoms.

For all the alarming circumstances that get reported, there are, periodically, times when an institution gets it right—and this brings hope. Syracuse University offered unequivocal support and condemned threats made against a professor who had made comments about September 11.[9]

Again, institutions with collective bargaining agreements or private institutions are under other constraints and policies—and are likely no better or worse but public institutions invite

additional scrutiny, taxpayers, legislators and parents are all heavily invested in what public universities do. This is not too dissimilar from the scrutiny that public libraries face, in just the way that a taxpayer may feel the right to question the acquisition of materials in a public library (which they are in ever increasing numbers[10]). That defense of intellectual freedom is critical—"A truly great library contains something in it to offend everyone" (Jo Goodwin).

Public institutions do have a responsibility to their publics—and transparency is a best practice. That said, shared governance is also a best practice—and a foundational value of higher education. While shared governance varies a lot—in some cases, it is built into the institutional rules and policies (or collective bargaining) and in other cases, it is just a check box without any real meaning or consideration—the standard practice is that of an administrator giving a "preliminary" report, getting faculty feedback, and then doing what they were going to do anyway (my current institution is looking at sweeping changes that seem to just take cursory feedback from faculty which will be unlikely to change the outcomes). However, sometimes there is a higher power that gets involved to address certain standards and uphold shared governance—just as legislators seem to be pushing to minimize, accreditors are pushing back to uphold it.[11]

There is a purpose for academic freedom—knowledge can only move forward if it questions the status quo and pushes boundaries. This is true not just in our research and publication but in our practice and teaching—and, to be honest, these are qualities that I would hope we also want to instill in our students. Institutions of higher education should provide a space for learning, modelling best practice about scholarly dialogue, and dealing with controversial issues in a way that is open, respectful, and productive. Institutions can also promote student-led activism[12] by working with student associations and learning communities centered on social/procedural justice and using design thinking to provide a framework.

"How do you budget your integrity?"

When I heard this, I thought it must be a philosopher or leader who said it—but I could not find this exact quote. It was actually a line from a recent episode of *Blue Bloods*—but it struck me as a critical (and somewhat disillusioning) question.

Academic freedom is for the benefit of the community—even when the community does not recognize or stand up for it. It is for the benefit of those currently in academia and for future scholars and students. It is not just for academics—it is for the public and the community, both local and global. Like many freedoms, it must be won not just once but over and over. It is something that advocates and practitioners (everyday librarians and teaching faculty) must stand up for and practice—it means asking the hard questions (in a professional way) and being prepared to take a stand. It is something that we have a responsibility to do—and it can be hard and it can take a lot of energy—but it is essential for advocates of academic, and intellectual freedom.

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Toward a Critical Turn in Library UX

Maura Seale, Alison Hicks, and Karen P. Nicholson

In the past decade, cataloguing and classification and information literacy have experienced a critical turn, acknowledging the political, economic, and social forces that shape complex information environments. Library user experience (UX) has yet to undergo such a transformation, however; instead, it continues to be seen as a toolkit of value-neutral approaches for evaluating and improving library services and spaces to enhance user satisfaction and engagement. Library UX draws upon ethnography but is also informed by the principles and values of usability and design. Little attention has been paid to the origins or epistemological underpinnings of UX as a construct, the ways these inform UX practice, and, ultimately, how they impact what academic libraries are and what they do. With the exception of a 2016 article by Lanclos and Asher, the relationship among corporatism, UX, and the mission and values of academic libraries has yet to be acknowledged or examined. This paper seeks to address this gap by drawing upon literature from LIS, anthropology and human computer interaction to interrogate library UX. While a handful of library UX practitioners have started to promote a more thoughtful study of individuals' activities and needs, in the main, library UX remains a theoretically weak practice, one that sets out to solve complex problems with practical "solutions." The failure to interrogate UX as a construct and a practice necessarily forecloses the user-centered problems we address, the tools and strategies we use, and the solutions we propose. We contend that UX would benefit from a deeper engagement with user-centered theories emerging from Library and Information Science (LIS) and critical and feminist perspectives on practice, embodiment, and power or risk perpetuating oppressive, hegemonic ideas about the academic library as a white space and its users as able-bodied.

Introduction

In the past decade, cataloguing and classification and information literacy have experienced a critical turn, acknowledging the political, economic, and social forces that shape complex information environments. Library user experience (UX) has yet to undergo such a transfor-

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mation, however; instead, it continues to be seen as a toolkit of value-neutral approaches for evaluating and improving library services and spaces. As a profession, we appear reluctant to probe or question the origins or epistemological underpinnings of UX as a construct, the ways that these inform UX research and practice and, ultimately, their impact on the mission and values of academic libraries. In the main, library UX remains distanced from critical considerations, including broader questions of power and representation. This lack of critical engagement means we risk designing user systems, spaces, and services that perpetuate oppressive, hegemonic ideas about the library as a white space and its users as able-bodied.[1] These shortcomings, coupled with our belief that critical insight enhances our ability to build meaningful library systems, provides an important rationale for the following interrogation of library UX work.

Drawing upon the work of those few library UX practitioners who have begun to question the assumptions and values of library UX,[2] as well as literature from anthropology, human-computer interaction (HCI), and Library and Information Science (LIS), in this article, we uncover and interrogate the origins and values of UX with the goal of drawing out the implications for library workers and their communities. We begin by considering the ways in which the concept of UX, with origins in HCI, industrial design, and applied anthropology, has been adapted within library discourse and practice and then focus our attention on UX's two foundational concepts, *user* and *experience*. Concluding that both concepts reproduce the library as a space where "belonging is constructed around whiteness"[3] and being able-bodied, we advocate for a critical turn in library UX, one that would result from a deeper engagement with user-centered theories that emerge from LIS as well as critical and feminist perspectives on practice, embodiment, and power.

What Is UX?

UX forms an elusive concept; while it has been widely accepted by a range of researcher and practitioner communities, its various origins and influences mean that it resists a neat or cohesive definition.[4] This "denotational indeterminacy," which allows discourses to be strategically deployed in a variety of contexts to serve a variety of needs,[5] is no doubt part of UX's broad appeal. Complicated through its derivation from both science and social science disciplines, including cognitive science, engineering, HCI, anthropology, psychology, and sociology, UX has further been confused by its close relationship with the concept of usability. These issues have led to the emergence of numerous, occasionally conflicting ideas about UX.

One of the most prominent definitions of UX is put forth by the Nielsen Norman Group. Establishing that "exemplary user experience" occurs through the fulfillment of a customer's "exact needs" and through "products that are a joy to own, a joy to use,"[6] the Nielsen Norman Group definition equates UX with satisfaction, the degree to which a user's expectations of a product, service, or system are met. UX is thereby distinguished from usability through a focus on holistic interactions rather than interactions uniquely mediated by interfaces. User gratification also features in research put forth by the Association for Computing Machinery (ACM) that differentiates UX from usability through an emphasis on "user affect and sensation"; UX is seen to have emerged from a growing awareness "of the limitations of the traditional usability framework, which focuses primarily on user cognition and user performance in human-technology interactions."[7] These ideas position UX as an individual phenomenon rather than a shared experience as "only an individual can have feelings and experiences."[8]

In contrast, the International Organization for Standardization (ISO) brings a more pragmatic focus to understandings of UX by emphasizing the "brand image, presentation, functionality, system performance, interactive behaviour, and assistive capabilities of a system, product or service" as well as the user's "internal and physical state."[9] Merging principles of marketing and industrial practice with nonutilitarian aspects of a user's experience, these definitions provide a first indication of some of the tensions and contradictions that structure the UX narrative.

The history of UX reinforces many of the inconsistencies highlighted in the definitions above. According to corporate ethnographer and scholar Shaheen Amirebrahimi, UX was first developed as applied anthropology in the 1980s when the increasing integration of technologies into everyday work and life events captured the attention of researchers at Xerox PARC, who began to study user interactions with machines.[10] Engineer and cognitive scientist Donald Norman, who later co-founded the Nielsen Norman Group and authored the well-known book, *The Design of Everyday Things*, played an important role in bringing both usability and user-centered design to bear on product development through his work at Apple during this time.[11] Eventually, efforts by these and other tech companies, and influences from adjacent fields, including participatory design, led to the establishment of ethnography and ethnographic methods as integral to corporate innovation and product design. Mirroring cycles of economic growth and recession, the popularity of UX waxed and waned in the 1990s. In the decade that followed, however, UX became formalized as a "kind of everyday anthropology" used to empower consumers "with choices via products designed for people."[12] Nonetheless, it was not until 2007 that UX entered the mainstream: during the launch of the iPhone, Apple CEO Steve Jobs identified the "user" and their "experience" "as the pivotal focus for the next era of technology production."[13] With this statement, Jobs introduced the idea of selling "experiences" rather than just products into the UX narrative, reinscribing consumerism as performative identity. From this moment, UX became perceived by Silicon Valley as a "breakthrough innovation,"[14] effectively sweeping up and absorbing ethnography into the cornerstones of product design and development. As ethnographic methods became central to product development, the history and theory embedded within them became erased.[15]

This narrative is complicated, however, by accounts that link the emergence of UX to the development of the commercial web between 1990 and 2005 and, more particularly, to the dot-com crash of 2001. From this understanding, the collapse of internet startups in the early 2000s and the shift from "read-only" to "read-write" websites, seen to herald a new participatory internet era, generated "a newfound interest in the user."[16] Correspondingly, the association of existing design principles with past excess gave way to "a new discourse of usability, which featured the user instead of the designer."[17] The recognition that the incorporation of participatory design principles into website design would offer newly out-of-work tech consultants an opportunity to resurrect their careers and the internet's commercial potential did not go unnoticed.[18] Between 2001 and 2005, web design consequently became framed in terms of the user and their experience or UX, which was understood to encompass the feel or aesthetics of an interactive environment as well as its function and efficiency.[19] UX became codified through the development of practices based on many of the hallmarks of Web 2.0, including the promotion of "ordinary users over star designers, participation over publishing, and sharing over surfing."[20] An emphasis on creating and maintaining enduring relationships between customer and brand, bringing a new focus on return on investment (ROI) and business value to the UX narrative, established UX as integral to "product man-

agement and customer service."[21] These various influences highlight the important role that social and economic pressures have played, and continue to play, in shaping understanding of user-centered design.[22]

Beyond web design, UX has also been linked to early user-centered research from LIS. LIS has an established history of user studies; Bawden dates the earliest research to 1948.[23] Herner locates it even earlier, in 1927, although he also decries such work as "academic exercises" and suggests that most LIS information systems are "based on only vague notions of the real needs, habits, and preferences of their presumed users."[24] In contrast, by 1976, Martin confidently claims "studies of use and users are becoming fairly standard in library planning, and attest to a changing concept of what constitutes effective service," suggesting a growing interest in incorporating a user focus into everyday library practice.[25] The influence of LIS is also noted outside the field; writing from a communication studies perspective, Ankerson states that UX integrates "insights of user-centered design methodologies from library and information sciences."[26] Likewise, in a 2017 book on the evolution of human-computer interaction, Grudin underscores the connections between HCI, LIS, information systems, ergonomics, and human factors engineering, all of which share an interest in the relationship between users and information systems, and their respective influences on the development of UX.[27] However, while LIS research is identified within early UX narratives, its influence, rarely acknowledged within contemporary library UX studies, appears to be subsequently forgotten, once again highlighting the erasure of disciplinary epistemology as an outcome of the institutionalization of UX.

In summary, these parallel narratives suggest that, while UX emerged from usability (HCI) in the 1970s and was shaped through the influence of applied ethnography in the 1980s, it became established as a routine process in industrial innovation in the 1990s. The development of the commercial web and the dot-com crash subsequently paved the way for its institutionalization within Silicon Valley firms; today, UX is engrained within a broad range of domains, including higher education. In addition to demonstrating that claiming authority over a domain of professional knowledge and practice is central to the emergence and proliferation of UX, these somewhat contradictory accounts of early influences within UX also belie a focus on commercial success beyond broader questions related to form and function.

What Is Library UX?

Many, if not all, of these entangled threads are seen within current conceptions of library UX, which aims to understand and improve the ways in which communities engage with libraries and library workers and encompasses a wide range of activities, "including but not limited to assessment, user engagement, library design, outreach, and marketing."[28] As a result, library UX can be seen as similarly shaped by competing values and ideas rather than forming a simple and unambiguous concept.

The origins of library UX are murky, like those of UX more broadly, but they are most frequently traced to Foster and Gibbons's groundbreaking ethnographic work at the University of Rochester in the United States.[29] In this study of undergraduate research habits, Foster and Gibbons drew from applied anthropological traditions to examine how "papers happen" and the various ways in which libraries could support research-related needs.[30] Focusing attention on campus buildings as well as services and digital presences, this work stood out from the library community needs analyses that had been carried out since the nineteenth century[31] for

emphasizing the full context of student academic work rather than just the library's role within it.[32] Foster and Gibbons's use of participatory and qualitative research methods introduced a new engagement with design into user-centered research and extended the scope of library assessment practices beyond the prevailing reliance on quantitative satisfaction measures, such as LibQUAL. Emerging at a time when libraries were grappling with the installation of learning commons[33] as well as increasingly "self-service" campus cultures,[34] Foster and Gibbons's work introduced a promising and invigorating focus on student learning within academic libraries that aligned with broader campus priorities. It consequently inspired several related projects, including the multisite, multiyear ERIAL project as well as more widespread interest in studying information-related human activity.[35]

By 2012, however, time and budget constraints meant that "results-oriented libraries and library directors" were starting to look for simpler ways to understand and build responsive library spaces.[36] While interest in ethnography remained high, the "messiness" of qualitative data[37] meant that long-term, exploratory fieldwork approaches were beginning to lose their shine. At the same time, interest in integrating web 2.0 features and design principles[38] into library websites was also on the rise. The concept of user experience, which weaves together "ethnography, usability, and space and service design techniques under one umbrella,"[39] offered a pragmatic, flexible solution, and the first library UX studies emerged soon after. Centering the creation of "useful, usable and desirable" information systems,[40] library UX introduced a more explicit focus on digital spaces and strategic design processes to user-centered studies.[41] In further drawing attention to the creation of "holistic and positive" library touchpoints,[42] library UX also elevated the concept of user satisfaction and the fulfillment of task-oriented goals.[43] The positioning of library UX as offering a useful "low-investment, high-yield"[44] means of revitalizing engagement with and use of libraries illustrates how these new areas of interest emerged from and tapped into ongoing fears of library irrelevancy within "rapidly changing,"[45] "sensorily overloaded,"[46] and millennial[47] information environments.

The explicit inclusion of library websites and digital interfaces within these new forms of user research means that library UX owes a considerable debt to the concept of usability. Usability has a long history within libraries. Initially positioned as helping to free librarian time,[48] usability was later understood to benefit the library patron by increasing their productivity, allowing them to keep up in a fast-paced world.[49] Sharing the same user-centered focus and participatory research approach that characterizes ethnography, albeit in digital rather than physical environments, usability has been similarly characterized as helping libraries to remain relevant at a time when commercial websites were seen to disadvantage them.[50] However, with origins in the fields of market research, ergonomics, and engineering,[51] usability also subtly diverges from early ethnographic studies by introducing an emphasis on testing, rather than observation, to user-centered library research. More specifically, the use of quantitative assessment methods in usability studies, including error rates and completion time, brings a renewed interest in benchmarking and performance metrics to the enhancement of library websites, services, and spaces.[52] The frequent equivalence of user-centered design with ease of use means that usability studies, which draw attention to an individual's emotional responses to a product or platform rather than to a group's shared patterns of activity, can also be seen to be responsible for the emphasis on effect within library UX.[53]

The important role that innovation plays within library UX stems from design thinking, a third influence within changing user research methods. Originally championed by

the design consultancy IDEO, design thinking was first explored in the context of academic libraries through Bell and Shank's 2007 book, *Academic Librarianship by Design: A Blended Librarian's Guide to the Tools and Techniques*.[54] Design thinking introduced a lean, iterative, and collaborative approach to library UX and the development of services, spaces, and tools.[55] An emphasis on desirability[56] (alongside technological feasibility and financial viability) embedded concrete and recognizable customer service ideals within user-centered library research, as illustrated by the push to create memorable Facebook-type "moments" and Amazon-like "experiences."[57] The emphasis on the creative generation of solutions to identified problems meant that design thinking also brought a more process-driven and pragmatic approach to the study of user activity. These ideas drew attention to an individual's immediate needs rather than broader future-oriented goals or environmental and social concerns within library user studies.[58] Nonetheless, design thinking's supportive structure and fast, proactive, problem-solving approach meant that it appealed to librarians pressured to respond to evolving research demands and changing campus demographics.[59] The push for evidence-based solutions also mirrored a growing desire for more "rigorous" approaches to the design of library services and spaces, an idea that recalls Ankerson's observation of a push for rationality within usability testing in commercial web design.[60]

By 2014, library UX, which had rarely been seen within user-centered library literature before 2012,[61] had become established as "the next big thing"[62] within Anglo-American academic librarianship. These developments had important implications: the more applied, solution-oriented approach to research, which differs from ethnography's focus on the production of social understanding over time, meant that library UX began to be employed within an increasing number of short-term projects, including the design of electronic resources management, new employee onboarding, and collection development,[63] as well as the more typical engagement with library spaces and web resources. Growing interest also led to the establishment of *Weave: Journal of Library User Experience* in 2014 and the *UXLibs* conference in 2015, and the continued creation of UX-focused library positions. Most recently, library UX has started to develop in new directions, including becoming more closely associated with quality assurance processes and the measurement of library value.[64] This trend reflects a growing interest in "student experience," part of the push toward more accountable systems of higher education. It remains to be seen whether user-centered library research will return, full circle, to a predominantly quantitative and assessment-focused model of practice; in the meantime, however, the complexity of multivendor information environments and changing user demographics means that UX continues to play a central role in libraries.

Somewhat surprisingly, critical engagement with the precepts and practices of UX has emerged only recently in the LIS literature. Lanclos and Asher's characterization of library UX as "ethnographish" rather than as focused "on the larger perspective on insight and meaning that is inherent in particular to anthropological approaches to ethnography," published in 2016, remains one of the most cogent criticisms to date.[65] More recently, greater attention has been paid to the assumptions that lie behind many UX projects; as Andrews points out, a failure to interrogate UX methods runs the risk of designing services for majority groups and treating "other groups such as disabled users, part-time students, older users, non-native English speakers and so on as add-ons."[66] Young and Brownotter and Cooper have taken a similarly deliberate approach in their respective work with indigenous students and scholars, noting that building libraries that both listen and respond to indigenous researchers requires

the modification of UX and participatory design processes.[67] For the most part, however, library UX remains distanced from critical considerations, including broader questions about issues of power and representation. The recognition that library user-centered research draws, somewhat indiscriminately, from the various entangled threads that constitute the broader UX narrative provides a further illustration of the need to critically interrogate the values and assumptions that lie behind this work.

Interrogating User Experience

In the next section, we turn our examination of UX's two foundational concepts, *user* and *experience*, to argue that both concepts elide a number of problematic issues, including considerations of labor and value as well as the reproduction of the academic library as a heterotopia[68] or "fantasy space"[69] designed for majority user groups.

The User

The concept of the user is central to definitions and understandings of UX to date. Differentiating the second generation of web design from the first, an emphasis on the user and their sensations distinguishes UX from usability.[70] It also mirrors the user-centered turn, informed by interpretive and qualitative understandings of human activity, that swept across LIS in the 1990s.[71] However, on closer inspection, UX can also be seen as holding a curious, problematic relationship with the term user. This is to say that, while UX moves away from cognitive models of HCI toward an emphasis on affect, user discourse remains at odds with broader questions of identity and corporeality. These issues will be explored in relation to user terminology itself, the use of persona methods, and broader questions of labor.

A focus on the user, which is perceived to bring a more useful person-centered perspective to information research, emerged from the turn away from the systems-centered cognitive model of human computer interaction.[72] Moving attention from the categorization of users according to "systems features and variables,"[73] the user-centered shift ushered in greater emphasis on the users themselves: their context, their viewpoints, and their needs. Nonetheless, the term has proved to be problematic. Tuominen's analysis of Kuhlthau's information-seeking model, for example, which demonstrates how the user is often portrayed as ignorant or as dependent upon the beneficence of the expert librarian, illustrates the assumptions that are embedded in the term.[74] Within UX research, where the needs of the organization determine who is a user and whose experiences are valued, therefore, user is similarly coded; the positioning of the UX practitioner as the only person who can reveal and remedy the user's "pain points" not only substantiates the self-legitimizing discourse of UX but also neglects to interrogate the power relations that lie behind this positioning. Moreover, as Cohen points out, when "we identify a thing that we want to study, then look for 'users' of that thing,"[75] we position people as appendages to a system with little autonomy of their own. In establishing a series of binary relationships—user/used user/nonuser user/designer—UX design flattens the human condition by "occlud[ing] most of the ways in which people interact with things, and with each other."[76] It further risks naturalizing consumerism as the dominant relationship between people and their environment.[77] Similar problems have been noted within library UX, where Reidsma notes that librarians and library vendors frequently test "existing software to see if it is usable… rather than doing ethnographic research to determine the actual needs of a user community."[78] Demonstrating that the user is still frequently defined

in technological terms alone or in relation to the system rather than as a cocreator of artifacts and processes, these ideas also hint at the limitations of library UX projects when they rely on narrow interpretations and understandings of the people behind the user label and the ways they can foreclose "the radical unpredictability of the relationship between a product and the people who encounter it."[79] Science and technology studies scholars have long argued that affordances are inscribed with and reproductive of social and cultural values; "design (affordances, objects, systems, processes) simultaneously distributes both penalty and privileges" according to identity and positionality.[80] In this way, the purported rationality of the design process mitigates responsibility for design failure while further subordinating the user to the system. And yet, within the LIS literature at least, design has largely been portrayed as a creative, value-neutral process rather than a political one.[81]

Personas

The use of personas as a "conceptual stand-in" for groups of potential users[82] represents a related site of tension within the user framework. First used by Cooper in 1999 and emerging from market segmentation analysis,[83] personas were developed to replace "the fairly one-dimensional, de-personalised truncated user" with more fulsome characters developed through ethnographic research.[84]

Intended to be memorable—personas are "fleshed out" using "a portrait, background information, and other fictional details … to help make them feel like a real person"[85]—, these archetypal characters are employed to ensure that user needs and goals are kept at the forefront of the design process. However, in facilitating empathy with and understanding of users among designers, the use of personas arguably serves the designer more than the user. The creation of a "shared vision" and "a common, consistent vocabulary," for example, consolidates users' complex needs to allow the UX team to prioritize and streamline its work.[86] As boundary objects that facilitate collaboration between teams, personas also form political tools that serve "to reduce conflict or win certain political disputes within the design team"[87] rather than to uniquely or accurately represent user needs and desires. Ultimately, personas reinforce the system-centered focus within the user framework highlighted above by recasting the behaviors, motivations, frustrations, and end goals of target users for a product or service as anthropomorphized lists of product requirements.

Personas are frequently constructed without reference to user research, an issue that has led Saffer to refer to them as a "designer's imaginary friends."[88] These issues are particularly problematic within "ethnographish" library UX projects that are "primarily concerned with short-term data collection," and the use of "'off-the-shelf' methods" that are neither fully engaged with nor trusted.[89] Even when personas are based on real data, this data is often derived from "learning management or enrollment systems" or surveys such as LibQUAL, "quantifications [that] tell us very little about the lived experience of being a student, or a researcher, or an instructor, who participates in the academic processes of a university."[90] The creation of user profiles based on such quantifications also flattens differences by positioning otherwise diverse groups and communities as simulacra or "deceivingly interchangeable" representations of "people who do not, ultimately, exist."[91] Forming a "cognitive economy"[92] or "shorthand"[93] that further serves to save the designer time, these oversimplifications and generalizations occlude "the very detail we are trying to capture or include."[94] They may also lead to stereotyping; as Hudson points out, shared conceptual frameworks that rely on

"existing ways of knowing, on received languages" function as unmarked sites of power.[95] Within library UX, Andrews and Larose and Barron chronicle the ways that library UX is designed for white, college-age, English-speaking, able-bodied students.[96] However, there has been little sustained examination of the ways in which a reliance on personas or archetypes reinforces stereotyping, including whiteness, ageism, and ableism, and facilitates oppressive, hegemonic ideas about the library as a white space.

Laboring Bodies

The complex relationship that UX has with the body is also manifest in the simultaneous exploitation and erasure of physical and emotional labor within library UX. Personas, which constitute disembodied and two-dimensional stand-ins, offer one example of this process; the assessment of library services provides another. Service design, which is a method for evaluating how users interact with library systems and processes, is a form of UX that aims to encourage the provision of holistic, cocreated services.[97] Positioning everything in the library as a service, service design emerges from the premise that a focus on the user's experience rather than that of the service provider will facilitate more streamlined and efficient modes of engagement.[98] However, in emphasizing the intangibility of services, which are defined as "unseen exchanges that happen everywhere,"[99] service design approaches can erase the physical and emotional labor of service delivery as well as the physical, corporeal aspect of "co-creating" and receiving such labor.[100] The labeling of the entire library as a service, including collections and physical spaces, exacerbates the issue, flattening and subsuming the pink-collar emotional labor of library workers until it becomes immaterial, made manifest and considered only in the moment of exchange, of consumption.[101] Perhaps in an attempt to validate the user's experience as different from but equally worthy of the expertise of the service provider, this framework also invalidates expertise; expert knowledge can only be gauged through the user's experience of it. These ideas are further illustrated through the compression of complex processes "into single touchpoints and interactions," which, again, are only seen to have value through the creation of "service moments" for the user. At the same time, and somewhat paradoxically, however, library UX exploits bodies by using them in the library's ongoing enterprise to demonstrate value. To understand the user's experience and to assess service quality, we need to make the immaterial material, to get inside our users' heads. We do this by observing students or getting them to "think aloud," to verbalize, to card sort, to do. The same is true in outcomes-based education, which requires students to demonstrate evidence of "understanding" through the production of artifacts. We also transform the traces of human activity—touchpoints, "pain points," interactions, and maps—into the external expressions of desire, satisfaction, happiness, frustration, or curiosity. In this light, library UX renders the body hyper(in)visible,[102] dissected publicly while simultaneously being shunned and typecast as the library seeks to demonstrate its ongoing value. Through the use of "neutral," objective artifacts, such as maps, logs, and diaries to represent experience, bodies and labor are erased, underscoring the fact that representation is always partial and political.

A similar erasure of physical and emotional labor is seen in UX understandings of what library interactions should look like: "seamless," "frictionless," and pain-free[103] experiences that evoke white, heteronormative, able-bodied male subjects engaging effortlessly and productively with library staff, services, spaces, and collections. Such understandings invalidate work that draws attention to the often traumatic experiences of BIPOC and people with dis-

abilities in academic libraries.[104] Easing "friction" removes the "messiness" of human interactions.[105] Personal histories and complex, intersectional identities are flattened and distilled into "personas, user case studies, scenarios, and day-in-the-life timelines."[106]

Experience

Experience, the second major concept within UX, refers to an individual's apprehension or impressions while interacting with objects and services. Incorporating physical, mental, and sensory responses, experience is produced through "the various ways in which people create and are formed within their relationships with stuff, with other people, with groups of people and with networks of technologies."[107] The concept of experience is also starting to be employed beyond UX, most prominently within higher education in terms of "the student experience." Emerging from growing focus on "student choice," the student experience has been critiqued for homogenizing, commodifying, and diminishing both students and the concept of experience.[108] Similar issues can be seen within UX.

Much like user terminology, the concept of experience forms an umbrella term for a number of contentious ideas. John Dewey originally linked experience to education; learning was understood to be shaped by personal experience or interaction as well as the relating of new information to prior knowledge and understanding.[109] In this view, experience was positioned as both continuous and interactive or as connected to the learner's social context and environment. However, within the context of UX, experience is understood as something individual, emerging uniquely in the moment of a person's interaction with a "product, system, service or object"[110]; it is disconnected from context, community, and culture. From this perspective, the user's experience is consigned to a vacuum, seen as both isolated and insulated from the broader environment in which it takes place.[111] These ideas are problematic because they fail to account for the affordances of a setting or the structural and contextual issues that impact a person's opportunities to engage with a library object or service. They also work to homogenize users by downplaying or simplifying differences; experience is always understood in the singular. Experience is further decontextualized and dehumanized through the focus on users, which removes service providers from the interaction. The silencing of alternative understandings of experience, which discounts professional labor, also eliminates the power relations that shape the operationalization of the tool or system in question. A focus on experience, which is typically understood as giving users a voice, consequently constrains human agency by isolating people "from other voices around [them], and from the complex environment that enables us meaningfully to interpret those voices."[112]

Experience, Innovation, and Time

The concept of experience is further complicated when it is explored through the lens of time. The basic premise of UX is that users must be put at the heart of the system; the user of the service or tool in question is seen to be best placed to make a judgment about the structure and design of resources. These assertions are, as Sabri points out, often accompanied by a sense of righteousness, as if the inclusion of other perspectives would fail users in some way.[113] However, when UX is explored through the lens of time, which forms "an invisible and unremarked"[114] site of power, it is clear that the concept of experience is shaped by pressures that go far beyond user needs and wants. Early UX, for example, was seen as a way to keep step with the future of the commercial web as well as to provide organizations with

valuable insights into trends and "insights that can appear predictive of the future."[115] Similar influences are noted by Amirebrahimi, who contends that industrial ethnographers function within "a set of institutional relationships which demand a continual and fast paced churning out of 'newness' in data and insights for decision making."[116] In this light, experience cannot uniquely be understood as related to and representative of users' aesthetic engagement with a product or service. Instead, experience becomes entwined with attempts to read the future, to create value, and to make strategic decisions and generate profits; research is a "political necessity" that aims to ensure that corporations feel secure in their existing identity, products, and services, thereby justifying their own stasis.[117]

In many ways, the emphasis on future-facing innovation directs academic libraries and library UX as well. Academic libraries have always been bureaucratic and risk averse.[118] Today, they have even become "McDonaldized": focused on efficiency, calculability, predictability, and control.[119] Nonetheless, mainstream professional discourse exhorts academic libraries to demonstrate their capacity for innovation, collaboration, and their support for the university's mission or risk their future survival.[120] Glassman describes an "innovation fetish" within academic libraries, one situated within "a deeply corporatized" higher education sector that resembles Silicon Valley.[121] The library UX literature also makes a direct link between the survival of the library and UX:[122] "the future state of academic libraries …is connected to better understanding the user and their needs."[123] These ideas demonstrate that the concept of experience is also understood in terms of social control and entrepreneurism. Paradoxically, library UX may also be invoked to create the *appearance* of change to demonstrate the resilience and continued relevance of the profession.[124] For example, one disillusioned UX librarian interviewed by MacDonald opines "having a UX librarian on staff makes it at least seem more like the library is hip and moving forward in a faster way than may be true."[125] In some cases, earlier ethnographic research projects within libraries are replicated and repurposed as library UX, which further calls attention to UX as a performative practice.[126]

A temporal lens demonstrates that the employment of typical library UX methods further strips experience of its user focus. One of the main problems identified with library UX—and acknowledged by those who engage in this work themselves—is that it is "crude": drawing heavily upon the principles of design, it uses fast capitalist lean production methods based on rapid prototyping and iterative improvement, as demonstrated by the emphasis on "low barrier," "guerrilla-type" "DIY solutions for the busy librarian" within the library UX literature.[127] In the current environment of austerity, more long-term, open-ended ethnographic research may appear "too risky" to "cash-strapped" library directors seeking the "quick payoffs" of "low investment high yield projects."[128] The concept of experience is consequently further diminished through the superficiality of the methods that are used to explore user interaction, leading Lanclos and Asher to advocate for the use of "more widespread and deeply practiced… ethnographic methods" that would instead allow for a "transformative moment…[in which] libraries can actually be thought about and experienced differently, not just rearranged."[129]

Conclusion: Toward a Critical Turn in Library UX

As we were writing this paper, librarian Andrew Preater tweeted about the need for a critical turn within UX,[130] joining the handful of practitioners and researchers calling for a closer look at library UX methods and outcomes. This paper is our attempt to contribute to the creation of such a critical library UX practice. However, ours is but one possible approach; we note

that there is still a great deal of work that needs to be done in this sphere.

Research that has explored design through an antiracist lens may provide a model for one key way in which critical library UX could be approached.[131] As various commentators have pointed out, and particularly in the light of the Black Lives Matter demonstrations and protests of 2020, "from policy to programming to people, libraries, information organizations, and companies that build information systems are uniquely positioned to inflict structural violence on BIPOC."[132] Built environments, both physical and virtual, cannot be seen as neutral. Instead, they produce both intentional and unintentional effects that "reflect and signal racism."[133] Along these lines, designing against anti-Black racism in our built structures as well as in our policies, services, and collections must be seen as a key imperative for library UX researchers and practitioners as well as for the architects and planners with whom we work. The recognition that direct action such as sit-ins form a design tactic means that an antiracist UX lens must also honor a "legacy of protest as design and world-building,"[134] an idea that rebodies our understanding of UX while further testing commitment to participatory and student-centered design tactics. At the same time, the Critical Design Lab advocates against projects that "capitalize upon or behave entrepreneurially toward our present crisis," warning that design-a-thons and grant-funded projects often work to depoliticize rather than to foster systemic change.[135] In this sense, antiracist design pushes back against the quick fixes and the performative gestures that have come to characterize much Library UX work to center mutual aid and social support as well as care in the wider community.

Critical UX could also be approached through intersectional feminist or disability lenses, both of which aim to center people who "are normally marginalised by design."[136] Recognizing that design processes typically reproduce the matrix of domination, which includes white supremacy, heteropatriarchy, capitalism, and settler colonialism, a feminist design framework builds on Design Justice Network Principles to emphasize how we want design to work as well as how it currently functions.[137] From a library UX perspective, these principles center an examination of the values that are embedded within choices of design beneficiaries as well as objects and systems. These ideas are picked up on in "crip technoscience," which is a form of politicized design activism that emerged from a recognition that technologies and infrastructures are often "designed and implemented without committing to disability as a difference that matters."[138] Positioning disabled people as active participants rather than consumers of or objects for design processes, crip technoscience also recognizes that problematic structures mean that many disabled people are already "tinkering with existing material arrangements."[139] For library UX, this framework calls for the need to acknowledge the "lived experiences and material design practices of disabled people"[140] in design projects while further encouraging the problematization of access and accessibility, which is often seen to promote integration rather than politicized resistance.[141] These approaches recenter history, context, materiality, and lived experience in the library rather than reaffirming neutrality, disembodiment, and uninterrogated whiteness.

Another approach that could be employed to extend critical understandings of UX is to re-examine LIS research to pay attention to what is missed when we rely too heavily on theoretical approaches developed from different disciplinary traditions. Suominen's 2007 exploration of userism, which critiques the privileged position that users are accorded in LIS, provides one example.[142] Noting that a user orientation that excludes any other perspectives forms a problematic and individualistic ideology, Suominen points out that when the

user is "the only intelligibly possible actor whose interests could legitimate the existence of a library," other considerations will remain "marginal."[143] Along the same lines, LIS research that has explored how a focus on individuals rather than their broader social practices has led to the construction of "ignorant,"[144] "needy,"[145] and "worthy"[146] users form another way in which library UX could be reimagined. This research, which underscores the ways in which user discourse risks positioning users as problematic or troublesome, mirrors recent work that explores deficit discourse in information literacy.[147] An attention to LIS literature further raises a number of questions about our reliance on values and assumptions from outside our field, while acknowledging and returning full circle to the early LIS research that played such an important role in original conceptions of user experience work.

In this paper, we explored the origins and values of UX through a critical lens. Drawing on research from a variety of disciplines, we traced the historical antecedents of UX as well as its manifestations within academic libraries, drawing attention to various sites of tension between UX and library values. In so doing, our goal was to lay the groundwork for a library UX practice more closely aligned with the critical turn in LIS that acknowledges critical and feminist perspectives on practice, embodiment, and power.

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Evaluating the Impact of Personal Librarians on Academic and Affective Outcomes

Catherine Meals

Many academic libraries have implemented personal librarian programs, seeking to improve relationships with students and reduce library anxiety. This pilot study, in which a personal librarian was assigned to sections of a general education course, aimed to expand upon the personal librarianship literature by assessing whether a personal librarian influences student academic outcomes and information literacy confidence. Results from the pilot suggest that the presence of and engagement with the personal librarian had minimal and not statistically significant effect on academic outcomes, but engagement with the personal librarian somewhat correlated with growth in information literacy confidence.

Introduction

Personal librarian programs are a proactive form of academic librarianship that exemplify the growth of library services beyond the physical library. In such programs, librarians reach out to and act as primary contacts for the library for a specific population of students, generally with the aim of improving students' familiarity and comfort with academic libraries, academic and research skills, and relationships with librarians. In this pilot study, a personal librarian was assigned to certain sections of a research-intensive general education class at the University of the District of Columbia (UDC), a public, urban, land-grant, historically Black institution. The study sought to evaluate whether, and to what extent, the presence and student utilization of personal librarians affect information literacy–related academic outcomes and student confidence with information literacy skills.

Specifically, the study aimed to answer the following research questions:

- Does the presence of a personal librarian in a class affect information literacy–related academic outcomes?
- Does the level of engagement with a personal librarian affect information literacy–related academic outcomes?
- Does the presence of a personal librarian in a class affect student confidence in applying information literacy skills to coursework?

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- Does the level of engagement with a personal librarian affect student confidence in applying information literacy skills to coursework?

UDC librarians learned of the personal librarianship concept and became interested in evaluating it as a potential avenue for establishing a greater presence in the institution's academic life, building stronger relationships with students, promoting the library's role in student success, and improving students' information literacy skills. While librarians have long taught information literacy classes for UDC's general education classes, the university does not currently require library instruction for any classes. Anecdotal feedback from professors has suggested that library instruction, incorporating creative, active learning activities, correlates to increased student use of library resources and stronger research practices, but librarians had not yet conducted a formal assessment of either the impact of library instruction or interaction with librarians on information literacy–related academic outcomes and student confidence.

The researchers designed the personal librarianship intervention to support the university's Equity Imperative strategic plan, one of whose aims is increasing the quality of general education classes.[1] Further, this pilot represented an opportunity for cross-department academic assessment. The study used a recently developed rubric, designed by general education department faculty for use in evaluating student final papers, as a mechanism for assessing student academic outcomes.

Literature Review

Personal librarian (PL) programs, in which librarians regularly reach out to an assigned group of students to serve as a one-on-one contact for library information and research support, have existed in academic libraries at least since 1984, when Sam Houston State University in Texas launched its program.[2] In the decades since, dozens of academic libraries have piloted or implemented such programs. Each program is unique, reflecting an institution's specific needs and capacity, but they share an overarching goal of creating meaningful librarian-student relationships "that allow students to have the confidence and resources to be successful in the skill sets that librarians particularly seek to instill in them."[3] That is, PL programs are meant to meet students' intertwined affective and academic needs.[4]

In the affective realm, PL programs have articulated goals of putting a "friendly face" on university libraries,[5] "mak[ing] complex library systems seem less intimidating and more accessible,"[6] making library staff seem more approachable,[7] and reducing library anxiety and strengthening student confidence in using the library and its resources.[8] Further, in establishing personal relationships with students, such programs may encourage "librarians [to] become part of a student's support network," which can directly influence academic performance.[9] By mitigating emotional barriers to library use, librarians can better help students access and effectively use high-quality resources and information[10] and develop their research skills.[11]

In its proactive nature, personal librarianship represents academic librarians' evolution into providers of services beyond the physical space of the library, as well as their heightened visibility on campus through partnerships with faculty.[12] They amplify present library offerings and support through proactive outreach to students[13] and provide an important variety of opportunities and means through which students can engage with library services and staff.[14] Indeed, Joe Eshleman argues that "aspects of a personal librarian program could be considered a more direct, singular, and purposeful flavor of library instruction."[15]

PL programs have targeted specific student populations, including freshman students,[16] transfer students,[17] adult learners,[18] and distance, online, or limited residency students.[19] Some programs target more specific populations, such as the University of Alberta's program focusing on freshmen who identify as Aboriginal/Native, specifically supporting them by working to "decolonize the university by attempting to remove the barriers present as a result of settler colonialism.[20] The program described by Erica England and Leo S. Lo worked specifically with a cohort of students in a low-residency doctoral program.[21]

PL programs share many characteristics and goals with embedded librarian programs; like personal librarians, embedded librarians typically aim to reduce library anxiety and improve students' information literacy skills,[22] while amplifying the role of the library in academic success.[23] Since each personal or embedded librarian program is unique in order to meet specific institutional and academic imperatives, and there appears to be no standard definition of personal or embedded librarianship, the choice of terminology is relatively flexible. However, what distinction there is between personal and embedded librarianship often exists in branding and the populations targeted by such programs. While PL programs often target specific populations of students, embedded librarianship often connotes a librarian's unbranded involvement in a specific class, where the instructor may function as an intermediary between students and the librarian. Embedded librarians may be prominently listed on syllabi,[24] act as co-instructors,[25] or have influence in assignment design and assessment.[26] Owing to that intensive level of involvement, embedded librarianship may be more time-consuming.[27]

A common element of PL programs is regular outreach to students with information about library services, research advice, and invitations for personal consultations. Many programs regularly send emails, at a variety of time intervals, to students during the semester.[28] Other programs reaching out to freshmen have mailed materials to students before the beginning of the semester.[29] Lizah Ismail reached out to students through the university's course management system.[30] Some programs have included in-person events to encourage contact between students and librarians.[31]

Initial outreach to students often introduces personal librarians to students, sometimes including information on librarians' hobbies and interests to make the librarians seem more accessible or approachable to students.[32] Alfred University's PL program approached introductions creatively, creating Magic the Gathering cards for each PL.[33]

Outreach during the semester has included content on using the library, beginning a research process, finding sources, and sharing research tips.[34] Reflecting the affective intentions of many PL programs, Jérôme Melançon and Nancy Goebel's program outreach sought to mirror the emotional and academic rhythm of a semester, including emotional supports the library offered during stressful times, such as pet therapy.[35] Programs frequently also strongly encourage individual research consultations with the personal librarian.[36] An approach in which personal librarians teach library instruction for their assigned students provides librarians an opportunity to have in-person contact with students and explain how they can facilitate students' connection to the library and academic support.[37]

Institutions assessing the impact of their PL programs have primarily evaluated the amount of interaction with PLs and student, faculty, and personal librarian perceptions of the programs. Libraries have measured quantity of interactions through metrics including click rates on emails, student replies to emails, and number of one-on-one research appointments

made by students via emails.[38] In some cases, the assessment has occurred on a more subjective level: At the University of North Carolina, "the success of the program and the decision to continue it have relied heavily on anecdotal evidence from the participating students, librarians and campus partners, rather than on systematic assessment data."[39] Such anecdotal evidence included stories about the type and quality of student interactions. [40]

Many program coordinators have conducted surveys of students and faculty to determine awareness of and familiarity with the program,[41] feelings of connection and comfort with the library and likelihood of recommending library services to other students,[42] their use of the personal librarian,[43] satisfaction with the program,[44] and perceptions of whether the program affected their current and future use of library services.[45] Survey responses were positive, with students reporting that they appreciated the availability of the PL[46] and felt more comfortable with the library and its staff.[47]

The study aimed to expand the personal librarian literature in two ways. UDC has a distinct status as a public, urban, land-grant, historically Black institution with a substantial "nontraditional" student population, and researchers hoped to contribute insights from a type of institution that is less frequently represented in the LIS literature. In addition, there appears to be no literature on the academic impact of PL programs. To date, published literature on personal librarian programs has focused on program implementation, and program assessment described in the literature has largely focused on program utilization and student and faculty satisfaction. The study intended to expand on the existing literature by assessing the relationship between personal librarian programs and student academic and affective outcomes. What literature appears to exist on the academic impact of proactive librarian outreach is on embedded librarian programs, where librarians have worked with a specific class. In Amanda Shannon and Vaughn Shannon's embedded librarian program, the librarian taught in-class information literacy sessions, collaborated with the course's professor on assignment design and instructional materials, and provided consultations and several informal classroom visits.[48] The authors, noting that prior evaluation of similar programs had largely relied on surveys and student self-evaluations, undertook a quantitative analysis of source use in student writing, ultimately finding that, when compared to a course in the previous semester without an embedded librarian, "repeated visits stressing information literacy may significantly affect the number of sources used, the quality of sources used, and the overall quality of the papers students write and professors read."[49] By contrast, Alexis Teagarden and Michael Carlozzi found no significant difference in information literacy outcomes between students in a class where a librarian taught a one-shot information literacy session and another class with an embedded librarian, as measured by pre- and post-tests. In this experimental study, the embedded librarian taught three additional information literacy sessions.[50]

Methods

In fall 2019, professors in 9 of the 10 in-person sections of the general education class, known as Discovery Writing, agreed to allow their students to be invited to participate in the study. The researchers selected Discovery Writing for the pilot for three reasons: first, all students, including the many transfer students at UDC, are required to take it; second, many of its learning outcomes directly relate to information literacy (see appendix A); and third, it is one of the courses in which librarians have regularly taught information literacy instruction. Four

of the 10 sections were randomly assigned the personal librarian. The instructors of these four sections were each teaching a second section of the class that was not assigned a personal librarian. Student rosters were collected after the conclusion of the university's add/drop period to identify eligible students. Of the 222 students enrolled in Discovery Writing at the conclusion of add/drop, 83 (37%) consented to participate in the study. The UDC Institutional Review Board reviewed and approved the study.

Personal Librarian Intervention

UDC librarians designed a personal librarian intervention that drew on features of PL programs described in the literature. In the class sections assigned a personal librarian, the PL 1) taught two information literacy sessions to deliver information literacy skills; 2) sent monthly emails containing research tips to students in their class sections to reinforce skills, serve as a support that all students could refer to as needed, and offer information to students who did not attend the in-person information literacy sessions; and 3) encouraged and was available for one-on-one student research support appointments, to provide a supplemental, optional, in-person resource that could provide both academic and affective support. In cases of walk-in, unscheduled, or spontaneous student-initiated reference consultations, UDC librarians attempted to ensure that the personal librarian responded to students enrolled in personal librarian sections. The researchers anticipated that the information literacy instruction, emails addressed to students by name, and appointments would act as the "personal" nature of the intervention.

Importantly, researchers envisioned the outreach and support of the personal librarian as a supplemental intervention on top of current library services. Students and faculty in class sections that were not assigned a personal librarian had access to all services offered and marketed by the library, including information literacy instruction at the discretion of faculty and engagement with librarians at the discretion of individual students.

Data Collected and Studied

Participating students completed beginning- and end-of-semester 5-point Likert-type scale surveys (see appendix B) on their confidence with information literacy skills to evaluate growth in students' self-described levels of their information literacy confidence during the semester. Researchers chose to examine student confidence, as it is a critical component of information literacy: learners with low self-efficacy may be less likely to attempt to apply information literacy skills in their academic work or do so successfully.[51] The researchers developed a survey with questions about confidence with the specific information literacy skills that the personal librarian taught in information literacy sessions and discussed in monthly emails to students. An independent samples t-test was used to determine whether mean net growth in information literacy confidence among students in course sections assigned a personal librarian was higher to a statistically significant extent than that of students in sections without a personal librarian. A point-biserial correlation was calculated to determine any relationship between being in a class section assigned a personal librarian and net information literacy confidence gain.

Academic outcomes were measured by student scores on information literacy–related sections of a rubric (see appendix C), developed by the general education faculty and reflecting aspects of the Association of American Colleges & Universities Written Commu-

nication VALUE rubric,[52] that has been used since fall 2018 to grade all final papers in the general education class. These sections—Use of Sources, Format and Structure, and Reading Ability and Synthesis—aligned with the personal librarian's instruction and materials on locating, evaluating, integrating, and citing sources. In Discovery Writing, instructors of different sections of the course in which the student is enrolled blindly grade student work products; that is, no instructor evaluated their own students' work. An independent samples t-test was used to determine whether mean rubric scores among students in course sections assigned a personal librarian were higher to a statistically significant extent than those of students in sections without a personal librarian. A point-biserial correlation was calculated to determine whether there was a correlation between having been assigned a personal librarian and rubric scores.

For students in class sections assigned a personal librarian, engagement with the personal librarian was measured by attendance at information literacy sessions taught by the personal librarian (collected on normal class sign-in sheets), whether a student individually met with the personal librarian, and self-reported engagement with resources shared through emails from the personal librarian. Researchers selected these measurements with consideration for student privacy. Attendance at information literacy sessions and meetings with the personal librarian are relatively public activities: class attendance takes place in a public setting, and an appointment requires meeting in a public space with a librarian. Measurement of engagement with personal librarian emails relied on student self-reported engagement, as other options for measuring engagement (such as tracking email clicks) rely on tracking behavior that does not take place in the public sphere and for which students would have a reasonable expectation of privacy. Pearson correlation coefficients were calculated to determine any relationships among rubric scores, net gain in information literacy confidence, and the measures of engagement with the personal librarian.

Results

Academic Outcomes: PL vs. Non-PL Class Sections

Discovery Writing instructors scored student final papers in the class using a 0–25 scale rubric. Rubric scores (n = 72; 41 for students in personal librarian class sections and 31 for students not in personal librarian class sections) were analyzed for the three of four sections on the rubric that related to information literacy skills: Use of Sources, Format/Structure, and Reading Ability/Synthesis.

Mean rubric scores for students in personal librarian sections were higher for each of the three sections, but the differences were not statistically significant, according to an independent samples t-test ($p > 0.05$):

TABLE 1
Mean Rubric Scores and Independent Samples t-test Results, Personal Librarian vs. Nonpersonal Librarian Course Sections

	Average Rubric Score: Personal Librarian	*n*	Average Rubric Score: No Personal Librarian	*n*	*p*
Use of Sources	20.01	41	18.77	31	0.256
Format/Structure	21.00	41	20.39	31	0.392
Reading Ability/Synthesis	21.28	41	20.19	31	0.229

A point-biserial correlation was also calculated for each section of the rubric to identify whether student rubric scores correlated to the presence of the personal librarian in a course section. Weak positive correlations were found between the presence of the personal librarian and rubric scores:

TABLE 2
Mean Rubric Scores and Point-Biserial Correlation Results, Personal Librarian vs. Nonpersonal Librarian Course Sections

	Average Rubric Score: Personal Librarian	*n*	Average Rubric Score: No Personal Librarian	*n*	r_{pb}
Use of Sources	20.01	41	18.77	31	0.136
Format/Structure	21.00	41	20.39	31	0.102
Reading Ability/Synthesis	21.28	41	20.19	31	0.143

Information Literacy Confidence: PL vs. Non-PL Class Sections

Beginning- and end-of-semester 5-point Likert-type scale surveys on information literacy confidence were scored by summing survey answers (maximum score = 25). Students' net gain in confidence during the semester was calculated. Mean confidence gain was higher for students in personal librarian class sections than for students not in personal librarian sections, but the differences were not statistically significant according to an independent samples t-test ($p > 0.05$):

TABLE 3
Mean Net Gain in Information Literacy Confidence and Independent Samples t-test Results, Personal Librarian vs. Nonpersonal Librarian Course Sections

Average Net Confidence Gain: Personal Librarian	*n*	Average Net Confidence Gain: No Personal Librarian	*n*	*p*
2.25	32	1.15	26	0.535

A point-biserial correlation was also calculated for each section of the rubric to identify any relationship between being in a class section assigned a personal librarian and net confidence gain. Negligible positive correlations were found between the presence of the personal librarian and rubric scores:

TABLE 4
Mean Net Gain in Information Literacy Confidence and Point-Biserial Correlation Results, Personal Librarian vs. Nonpersonal Librarian Course Sections

Average Net Confidence Gain: Personal Librarian	*n*	Average Net Confidence Gain: No Personal Librarian	*n*	r_{pb}
2.25	32	1.15	26	0.083

Academic Outcomes: Engagement with Personal Librarian

For students in class sections assigned a personal librarian, Pearson correlation coefficients were calculated to identify any relationships between rubric scores on final papers and three

measurements of engagement with the personal librarian: 1) the number of information literacy sessions attended; 2) self-reported engagement with personal librarian emails; and 3) whether a student engaged in a consultation with the personal librarian.

Negligible to weak positive correlations were found between the number of information literacy sessions attended and rubric scores. Each section assigned a personal librarian had two information literacy sessions. Thirty students attended both sessions, 10 students attended one session, and one student attended neither session.

TABLE 5
Pearson Correlation Coefficients: Attendance at Information Literacy Sessions and Rubric Scores

	n	Pearson's *r*	*p*
Attendance + Use of Sources	41	0.26	0.10
Attendance + Format/Structure	41	0.06	0.71
Attendance + Reading Ability/Synthesis	41	0.12	0.46

Negligible correlations were found between self-reported engagement with personal librarian emails and rubric scores. Self-reported engagement with personal librarian materials was measured by the 5-point Likert-type scale sum of student responses to two questions on the end-of-semester survey (see appendix B; maximum score = 10) regarding how often the student read emails from the personal librarian and how often the student used the tips and resources provided in the emails.

TABLE 6
Pearson Correlation Coefficients: Self-Reported Engagement with Personal Librarian Emails and Rubric Scores

	n	Pearson's *r*	*p*
Self-Reported Engagement + Use of Sources	29	0.01	0.96
Self-Reported Engagement + Format/Structure	29	–0.12	0.53
Self-Reported Engagement + Reading Ability/Synthesis	29	–0.06	0.76

Negligible to weak correlations were found between having had at least one consultation with the personal librarian and rubric scores.

TABLE 7
Pearson Correlation Coefficients: Consultation with the Personal Librarian and Rubric Scores

	n	Pearson's *r*	*p*
Consultation + Use of Sources	41	0.012	0.942
Consultation + Format/Structure	41	0.060	0.710
Consultation + Reading Ability/Synthesis	41	0.024	0.880

Information Literacy Confidence: Engagement with the Personal Librarian

For students in class sections assigned a personal librarian, Pearson correlation coefficients were calculated to identify any relationships between net gain in information literacy con-

fidence, as measured by scores on beginning- and end-of-semester 5-point Likert-type scale surveys on information literacy confidence, and 1) the number of information literacy sessions attended; 2) self-reported engagement with personal librarian emails; and 3) whether a student engaged in a consultation with the personal librarian.

A weak negative correlation was found between the number of information literacy sessions attended and net gain in information literacy confidence.

TABLE 8
Pearson Correlation Coefficient: Attendance at Information Literacy Sessions and Mean Net Gain in Information Literacy Confidence

	n	Pearson's *r*	*p*
Attendance + net confidence gain	29	–0.283	0.137

A weak positive correlation was found between the self-reported engagement with personal librarian emails and net gain in information literacy confidence, and the correlation was not statistically significant ($p > 0.05$). Self-reported engagement with personal librarian materials was measured by the 5-point Likert-type scale sum of student responses to two questions on the end-of-semester survey (see appendix B; maximum score = 10) regarding how often the student read emails from the personal librarian and how often the student used the tips and resources provided in the emails.

TABLE 9
Pearson Correlation Coefficient: Self-Reported Engagement with Personal Librarian Emails and Mean Net Gain in Information Literacy Confidence

	n	Pearson's *r*	*p*
Self-Reported Engagement + Net Confidence Gain	31	0.235	0.202

A weak positive correlation was found between having had at least one consultation with the personal librarian and net gain in information literacy confidence, and the correlation was not statistically significant ($p > 0.05$).

TABLE 10
Pearson Correlation Coefficient: Consultation with the Personal Librarian and Mean Net Gain in Information Literacy Confidence

	n	Pearson's *r*	*p*
Consultation + Net Confidence Gain	32	0.290	0.107

Discussion

Challenges and Limitations

A variety of challenges in study implementation may help contextualize the results from the first semester of the PL program at UDC. The most salient limitation was sample size: Just 37 percent (n = 83) of students enrolled in Discovery Writing at the beginning of the semester agreed to participate in the study through an electronic consent form. While a majority of participating students completed the final paper required for the class and the end-of-semester survey, not all did so, reducing the number of work products and surveys available for

analysis. In the following semester, researchers administered the consent form in person and on paper, which dramatically increased the participation rate; 68 percent of eligible students agreed to participate.

Most significantly beyond the sample size, all sections of the class that participated in the study scheduled at least one information literacy instruction session. (A librarian other than the personal librarian taught sessions for sections that were not assigned a personal librarian.) This is understandable, as faculty members sought to make student support comparable across class sections, and is undoubtedly a positive development, as UDC librarians seek to reach as many students as possible and expand the library's information literacy program. But for the purposes of the study, this development meant that information literacy instruction was ultimately not a distinguishing feature of the personal librarian intervention. As a result, the primary distinguishing feature of the personal librarian intervention was the branding of the "personal librarian" and provision of resources through monthly emails to students with research tips. However, given that aggregate click rates for emails ranged from 29 to 52 percent, and 47 percent of students in sections assigned a personal librarian reported they read the emails "never," "rarely," or "occasionally," email alone may not be a significant enough intervention.

Data collection limitations may have impacted the results. First, an unknown number of students enrolled in the class at the beginning of the semester either dropped out or were dropped from the class by the university after midterms due to tuition payment arrears. Second, attendance data for information literacy sessions were collected on sign-in sheets, which sometimes included students who were late to class or left early; any students listed as having attended the IL session who did not attend the full session may not have reaped the full benefits of instruction. Third, while librarians made all efforts to record consultations for students enrolled in the study, it is certainly possible that some were missed. Fourth, students' self-reporting of their engagement with personal librarian emails may not accurately reflect their actual use of these resources. Fifth, data collection did not include information on any additional information literacy or writing support that students may have received through other campus services, such as peer tutoring, appointments with the campus Writing Center, or information literacy instruction in other courses.

In addition, the rubric used to grade final papers is relatively new, having first been used in fall 2018. As a result, the rubric may not yet be fully normed and the interrater reliability of the rubric scores may be constrained. Further, some instructors who graded student papers had not yet participated in rubric calibration meetings at the time of grading, and one grader submitted overall scores for students but did not specify scores for individual sections of the rubric, reducing the number of individual rubric scores available for analysis. Differences in student academic and confidence outcomes could also reflect previous information literacy instruction or variations in teaching approaches among course instructors.

Finally, this pilot did not incorporate an examination of how student and librarian social identities may affect outcomes in such programs, particularly how overlaps or differences in identities impact on student interactions with the personal librarian. This is an avenue of investigation the researchers hope to pursue in the future. While students and librarians have multiple interconnected identities that shape how they perceive and operate within institutions and society more broadly, differences in racial identities may be most relevant for study due to the pervasive whiteness in librarianship and is likely to be highly relevant at

historically Black institutions, where racial identity is foundational to institutional identity, and especially relevant at UDC, where public services librarians are all white but only 5 percent of the student body is white.[53]

Study Insights and Interpretation

Despite the limitations described above, the pilot study resulted in some benefits to students and the library, and the implementation of the personal librarian intervention was a positive experience for the library, such that librarians plan to continue to offer the program in later semesters, with modifications informed by the results of the pilot.

Encouragingly, the study appeared to result in a noteworthy—though anecdotal, as there was no baseline data against which to make comparisons—increase in one-on-one student appointments with a librarian. Of the 83 Discovery Writing students participating in the study, at least 17 (20%) participated in one or more consultations with a librarian. That total included 18 percent (n = 7) of students not enrolled in personal librarian class sections and 22 percent (n = 10) of students enrolled in personal librarian sections, indicating that the appointments may be linked to having had information literacy instruction rather than the presence of the personal librarian. These one-on-one appointments afforded librarians a better understanding of the general education class, the assignments given to students, and student life more broadly. Though these appointments could occasionally be time-consuming, the total time commitment in large part reflected the personal librarian's individual tendency to have lengthy meetings of up to 90 minutes with students. Other UDC librarians report that their typical research consultations last 20–30 minutes. The personal librarian also reported more recognition by students on campus. As an example, hours after the personal librarian sent her first monthly email to students, one of the students who received the email saw the personal librarian at the reference desk, said, "Hi, personal librarian!" and introduced himself. The pilot study also provided opportunities to build relationships with faculty teaching general education classes. Of the five faculty members whose course sections participated in the study, three had never previously scheduled library instruction with UDC librarians. Further, since participating faculty members scheduled instruction for all sections of the courses they taught, whether they were assigned a personal librarian or not, librarians were involved in at least some capacity in 9 of the 10 in-person sections of the course taught during the pilot semester, potentially opening the door to librarians and formal information literacy instruction becoming more systematically integrated into general education courses in the coming years. Finally, in conducting the study, librarians also demonstrated their interest in, support for, and possible contributions to Scholarship of Teaching and Learning that the university encourages.

This study was a pilot with only one semester of data, but reflections from the experience will inform the future of personal librarians at UDC and may be instructive for additional research and the development of PL programs at other institutions. At UDC, academic performance, as measured by mean rubric scores on the final paper, was higher for students with a personal librarian than for those without, but the difference was not statistically significant. Nonetheless, given that fall 2019 was the first semester of the program, the fact that average scores in personal librarian sections were slightly higher is encouraging. Further research on the academic impact of PL programs, either at UDC or other institutions, will help clarify whether there is an impact and, if so, the extent of the impact. In future iterations of the

personal librarian program, librarians may seek to assess student work products themselves to provide an additional perspective on performance with information literacy skills. While the use of the general education department's rubric represented a worthwhile experiment in cross-department collaboration, easier data collection for the researchers, and a means of assessing academic performance from the perspective of teaching faculty, the researchers considered that instruction librarians, whose professional training and expertise is in information literacy, might assess information literacy–related aspects of student work products differently from general education faculty, who, while conversant in information literacy, have primary expertise in writing instruction and their own subject areas.

In addition, the appropriate timing and setting for a personal librarian intervention is ripe for additional investigation, and UDC librarians plan to consider these factors in the development of future versions of the personal librarian intervention. Rather than in a general education class such as the one where this intervention was piloted, where there may be less need for intensive academic support, perhaps the most meaningful academic impact of a personal librarian could occur in an upper-level class with increased research demands. While providing a personal librarian later in a student's academic career may miss an opportunity to expose students to library resources and research skills that they can draw on early in their education, support from a PL during a longer-term or more complex project may result in deeper librarian-student collaboration and repeated opportunities for students to reinforce or refine information literacy skills. However, if further research suggests that there is little or no meaningful academic impact in the class where a personal librarian is assigned, it is possible that the primary academic benefit of the PL program lies in raising awareness of the library and its resources so that students know where to seek support for their academic success when research needs do arise. In that case, personal librarians may be most appropriate in introductory classes, and additional research may examine whether there are longer-term impacts of having had a personal librarian in introductory courses, such as success in higher-level courses or persistence or retention.

As with the rubric scores, the differences in net gain in information literacy confidence between course sections with and without a personal librarian were not statistically significant, but the fact that the average confidence gain was slightly higher is encouraging for the first semester of the program. Additional data from future semesters may help identify any relationship between information literacy confidence and the presence of a personal librarian. Interestingly, there was a weak negative correlation between attendance at information literacy sessions taught by the personal librarian and net gain in information literacy confidence. The rapid introduction of myriad skills and concepts that may be new to students may result in a decrease in confidence if, as a result of the instruction, students learn what they do not know and identify skills they do not yet have. This correlation may, then, reflect the known limitations of one- or two-shot information literacy instruction[54] and suggest a need for either additional teaching opportunities to reinforce the content of the instruction sessions or adjusted pedagogical approaches if librarians can teach only one or two sessions. Among students in course sections assigned a personal librarian, no notable correlation was found between average rubric scores and self-reported engagement with emails from the personal librarian, or between rubric scores and having had at least one consultation with the personal librarian, but there was a weak positive correlation between attendance at information literacy sessions and average scores on the Use of Sources portion of the rubric, which assesses use and proper

citation of sources. In UDC librarians' experience, students often report significant difficulty in appropriately summarizing, paraphrasing, and quoting sources in academic writing. The information literacy instruction taught by the personal librarian featured an active learning activity on using sources that, in past sessions, both students and faculty have anecdotally reported as very helpful; it is possible that this activity was the most impactful of those in the instruction sessions and that redesigned active learning activities or different pedagogical approaches on other information literacy topics could support growth in other areas.

The strongest correlations in the study—between weak and moderate—were found between gains in information literacy confidence and either self-reported engagement with personal librarian emails or having had at least one consultation with the personal librarian. These correlations suggest that supplemental interactions with the personal librarian, either through email or in person, have more of an impact on information literacy confidence than instruction alone, reinforcing discussions in existing literature about the role of PL programs in relationship-building between librarians and students.[55] If instruction alone does not improve confidence, further engagement with a librarian may serve as a natural follow-up on introductory instruction for boosting student confidence, helping students fill in the gap between what they do and do not know that they identified as a result of instruction. A personal librarian may be a particularly useful support for students who are struggling, as her or his presence is a clear, recurring encouragement to ask for help. To be sure, one-on-one librarian-student interaction is easier at smaller or well-staffed institutions, and this approach would be difficult to replicate at larger or less-resourced institutions. This challenge reflects the need to adapt personal librarian programs to an institution's specific context; larger institutions may need to narrow the scope of the population to be served or the intensity of the intervention.

Given the intention of personal librarianship to support both affective and academic needs, as well as indications from the pilot semester of the program that contact with the personal librarian correlates to improvements in information literacy confidence, additional methods of outreach beyond instruction and email may prove beneficial by amplifying the "personal" branding and nature of the intervention. Recognizing that interaction with monthly emails from the personal librarian, as measured by aggregate click rates and student self-reported use of the emails, was more limited than originally anticipated, UDC librarians adjusted student outreach when they continued the personal librarian study in spring 2020. While the monthly emails continued, the personal librarian added monthly in-person pop-in visits to sections assigned a personal librarian prior to the COVID-19 public health emergency and sent a recorded video pop-in via the university learning management system during remote instruction. As another means of "personalizing" the intervention, UDC librarians hope to time emails to students, instruction, and other outreach in accordance with major assignments or projects on the course syllabus and solicit feedback from students and faculty about their experiences with the personal librarian to make continuous improvements. While "personalizing" personal librarians appears important, it may look different on different campuses, depending on student population, patterns of student life, or preferred communication methods.

APPENDIX A

Information Literacy–Related Course Outcomes

- Demonstrate ability to read and evaluate scholarly research and criticism from a variety of academic disciplines in the arts and humanities, social sciences, natural sciences, mathematics, and other disciplines.
- Analyze textual material to evaluate expertise of authorship, validity of support, and implications of claims.
- Use texts to compare, synthesize, and analyze information.
- Demonstrate writing strategies (prewrite, outline, draft, revise, and cite) in a scholarly argument that is logically valid, rhetorically persuasive, and appropriate to the subject and the audience addressed; summarizing, paraphrasing, and quoting from academic sources.
- Demonstrate research skills, integrate their ideas with those of others, and apply the conventions of attribution and citation correctly.

APPENDIX B

Information Literacy Confidence Survey

This survey will take only one minute! It is meant to measure your confidence with research skills at the end of the semester. Please answer all questions.

1. How confident are you in using library resources?
   - □ Very Unconfident
   - □ Somewhat Unconfident
   - □ Neutral
   - □ Somewhat Confident
   - □ Very Confident
2. How confident are you in finding sources to use in a research paper?
   - □ Very Unconfident
   - □ Somewhat Unconfident
   - □ Neutral
   - □ Somewhat Confident
   - □ Very Confident
3. How confident are you in integrating sources into your research paper writing?
   - □ Very Unconfident
   - □ Somewhat Unconfident
   - □ Neutral
   - □ Somewhat Confident
   - □ Very Confident
4. How confident are you in evaluating possible sources to use in a research paper to select the best ones to use?
   - □ Very Unconfident
   - □ Somewhat Unconfident
   - □ Neutral
   - □ Somewhat Confident
   - □ Very Confident
5. How confident are you in writing citations for the sources you use in a research paper?
   - □ Very Unconfident
   - □ Somewhat Unconfident
   - □ Neutral
   - □ Somewhat Confident
   - □ Very Confident

Survey questions included on the end-of-semester survey for students enrolled in sections assigned a personal librarian:

6. This semester, your personal librarian sent you monthly emails about library resources and research. How often did you read the emails?
   - □ Never
   - □ Rarely
   - □ Occasionally
   - □ Often
   - □ Always

7. If you read the emails from your personal librarian, how often did you use the tips or resources provided in the emails?
   - □ Never
   - □ Rarely
   - □ Occasionally
   - □ Often
   - □ Always

APPENDIX C
Rubric for Scoring Student Papers

	Highly Proficient	Competent	Novice	No Evidence
Use of Sources	*20–25 points* The artifact shows high proficiency in the use of primary and secondary sources; demonstrating summaries, paraphrases, and/ or quotes with appropriate in-text citations.	*15–19 points* The artifact shows adequate proficiency in the use of primary and secondary sources; demonstrating summaries, paraphrases, and/ or quotes with appropriate in-text citations.	*10–14 points* The artifact shows low proficiency in the use of primary and secondary sources; demonstrating summaries, paraphrases, and/ or quotes with appropriate in-text citations.	*0–9 points* There is little-to-no proficiency in the use of primary and secondary sources; demonstrating summaries, paraphrases, and/ or quotes with appropriate in-text citations.
Format/Structure	*20–25 points* The artifact shows high proficiency in format (such as title, introduction, body/ paragraphing, and conclusion, and Works Cited/ Reference List).	*15–19 points* The artifact shows adequate proficiency in format (such as title, introduction, body/ paragraphing, and conclusion, and Works Cited/ Reference List).	*10–14 points* The artifact shows low proficiency in format (such as title, introduction, body/ paragraphing, and conclusion, and Works Cited/ Reference List).	*0–9 points* There is little-to-no proficiency in format (such as title, introduction, body/ paragraphing, and conclusion, and Works Cited/ Reference List).
Usage (Grammar)	*20–25 points* The artifact shows high proficiency in the use of Standard Written English (SWE) with 0–4 errors in usage (such as subject/ verb agreement, fragments, and the like) and mechanics (such as spelling, punctuation, and other mechanics).	*15–19 points* The artifact shows adequate proficiency in the use of Standard Written English (SWE) with 5–9 errors in usage (such as subject/ verb agreement, fragments, and the like) and mechanics (such as spelling, punctuation, and other mechanics).	*10–14 points* The artifact shows low proficiency in the use of Standard Written English (SWE) with 10–15 errors in usage (such as subject/ verb agreement, fragments, and the like) and mechanics (such as spelling, punctuation, and other mechanics).	*0–9 points* The artifact shows little-to-no proficiency in the use of Standard Written English (SWE) with more than 15 errors in usage (such as subject/ verb agreement, fragments, and the like) and mechanics (such as spelling, punctuation, and other mechanics).

	Highly Proficient	Competent	Novice	No Evidence
Reading Ability/ Synthesis	*20–25 points* The artifact shows high proficiency in having selected, verified, and synthesized sources from a variety of disciplines; with analysis and interpretation of sources in a clear and sustained argument.	*15–19 points* The artifact shows adequate proficiency in having selected, verified, and synthesized sources from a variety of disciplines; with analysis and interpretation of sources in a clear and sustained argument.	*10–14 points* The artifact shows low proficiency in having selected, verified, and synthesized sources from a variety of disciplines; with analysis and interpretation of sources in a clear and sustained argument.	*0–9 points* The artifact shows little-to-no proficiency in having selected, verified, and synthesized sources from a variety of disciplines; with analysis and interpretation of sources in a clear and sustained argument.

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Standing Out or Blending In: Academic Libraries in the Crowded Informal Learning Space Ecosystem

Erica Lynn DeFrain, Jennifer Thoegersen, and Miyoung Hong

As more campus locations establish intentional informal learning spaces, what, if anything, is the unique value of these spaces within the physical academic library? Using mixed methods, this study examines the relationship between students' use, satisfaction, and productivity needs at five discrete locations at a large public university. Findings from unobtrusive observations, student surveys, and semistructured focus groups reveal an interconnected ecosystem of campus informal learning spaces in which the academic library is prominently situated, providing guidance for those making decisions around the availability and design of library learning spaces.

Introduction

Academic libraries, long heralded as sacred spaces for deep reflection and quiet study, witnessed a dramatic shift away from the communal toward the sociocollaborative when the learning commons model became commonplace. Tied to the digital revolution, which greatly reduced the need for close proximity to physical collections, librarians and administrators replaced spaces once filled with books with student-centered social spaces, replete with comfortable furnishings and coffee shop environments.[1] The success of these spaces, measured by the drastic increase in gate counts of the libraries in which they were built, resulted in a devaluing of quiet spaces that was fueled by assumptions regarding students' learning needs in the twenty-first century. At the same time, the success of these new library spaces likely contributed to the more intentional development of commons spaces in campus locations well outside the library.[2] These new informal learning spaces (ILSs) are overtly derivative of the modern socialness at the root of the learning commons model, thus raising questions of how students navigate this increasingly homogenous learning space ecosystem, and how libraries can best support students' learning space needs.

At the University of Nebraska-Lincoln, a public land-grant research university with more than 25,000 students, recent renovation and construction projects have focused extensively

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on creating ILSs that typify this trend. In 2016, the main academic library opened a learning commons, which was created by renovating approximately 30,000 square feet of space that once housed more than 300,000 books. Instantly popular, the bustling nature of the learning commons stands in direct contrast to the more secluded environs of the adjoining library. Soon after the opening of the learning commons, the university vastly expanded the number of similar nonclassroom study spaces. The student union underwent a large-scale renovation, which supplanted some of its more traditional recreational areas with spaces for learning and group work. The university also unveiled two brand-new buildings, the College of Business and the College of Nursing. Both buildings were envisioned as fully contained academic spaces for their students, with classrooms, cafes, faculty offices, academic support services, and numerous ILSs spread across multiple floors throughout the buildings.

While other ILSs are on the campus, the introduction of these highly visible projects nearly quadrupled the ILS seating capacity and ultimately gifted the students with choice. Where previously students' study locations were largely limited to home, the library, or an off-campus locale, they suddenly had numerous, very similar, options all within close proximity to one another.

With the abrupt influx of these new ILSs, understanding their use is important not only to a university seeking to best meet the learning needs of its students, but also to an academic library looking to establish or maintain a singular identity. Therefore, the guiding question for this study is: As more campus locations develop intentional informal learning spaces, what, if anything, is the unique value of these spaces within the physical academic library? To address this question, this study used observations, surveys, and focus groups to examine students' use, satisfaction, and self-perceived productivity at five distinct ILSs.

Literature Review

There is not one standardized definition for what constitutes an informal learning space.[3] Most descriptions identify them broadly within both physical and virtual realms,[4] with some applying more limiting operationalizations. Many have adopted the descriptor of ILSs being "nondiscipline specific,"[5] though others have noted their appearance within departmental or college buildings.[6] Academic libraries are frequently placed at the center of ILS research,[7] although there is disagreement over whether the learning activities occurring within academic library spaces should be considered *in*formal.[8] Bennett omitted the term *informal* from his study on campus learning spaces, but he did include a wide range of nonclassroom campus locations in his investigation into whether they supported various intentional learning behaviors.[9] Altimare and Sheridan used the descriptor *nonclassroom spaces* interchangeably with ILSs.[10] For the purpose of this study, ILSs are defined simply as nonclassroom commons locations in which self-directed learning is a primary purpose.

Informal learning spaces have been examined for decades, with informal and formal learning settings viewed as being complementary to one another.[11] Recognizing that students' learning and engagement with learning materials occurs at greater rates outside the formal classroom,[12] many researchers have been inspired to consider more closely the built environment's relationship to learning, especially with regard to effect, behavior, and cognition.[13] Academic libraries have figured prominently within the empirical ILS literature, particularly as more libraries have developed information and learning commons. The student-centered onus of the commons design strategically assisted libraries looking for ways to retain their

notable role within higher education. While it is still unclear how these new social spaces contribute to students' use of library resources and services,[14] the boost in gate counts and overflowing capacity have provided many institutions a rapid measure of success.[15]

Single case studies of libraries or learning commons feature heavily in the literature examining the relationship between ILSs and the students who use them. In Badia's review of 55 such studies published since 1990, she characterized them as largely employing mixed methods, with most adopting the ethnographic traits of survey, observation, and interview since the release of Foster and Gibbons's seminal study.[16] Satisfaction is a considerable if not primary metric for many of these studies,[17] with researchers only recently establishing a strong positive association between this psychological concept and behavioral learning outcomes.[18] Despite numerous guides, toolkits, and measures,[19] no one instrument or method has been accepted as appropriately reliable or valid, and most researchers continue to develop their own protocols.[20]

Many of the library ILS studies reveal a strong tension over their appropriate atmosphere between the researchers evaluating them and the students inhabiting them. The learning commons model heavily favors active collaboration to mirror the active and group learning activities occurring in the classrooms,[21] but the busyness of these spaces is often perceived as disruptive by the students.[22] A number of researchers have predicted an inevitable increase in the desirability of this environment,[23] but more have asserted an obligation to meet students' current needs.[24]

Primary critiques of the literature fall under methodological or conceptual categories. In Badia's review, she determined that the majority of findings were severely inhibited due to issues surrounding reproducibility, reliability, and validity.[25] She concluded that "a space assessment that incorporates multiple research methods is only as strong as the rigorousness of each individual method that contributed to the final set of results."[26] Berman asserted that these studies rely too heavily on quantitative methods that are incapable of revealing the complexity of students' learning needs.[27] She also challenged overly prescriptive environments—what she called "architectural determinism"—as perpetuating practices of "exclusion and marginalization."[28] Rather than focusing exclusively on the students in the spaces, she suggested that more work should be done to identify and remove barriers that might be keeping others out.

There are a small number of multisite studies juxtaposing library learning spaces within the broader campus context. Where Bennett's holistic evaluation of learning spaces detailed a "near mono-culture of learning and space"[29] that lacked the variance needed to support the full range of learning needs on his campus, the uniqueness of quiet library atmospheres is at the forefront of others.[30] May & Swabey examined students' behaviors and connections to space in five Canadian academic libraries and defined the library's unique contribution to ILSs according to four categories: resources; quiet spaces; behavior enforcement; and communal study atmosphere.[31] This unique feature of quiet atmosphere enforcement was also apparent in Walton and Cunningham's study, in which a small majority of respondents had come to the library for the quiet environment and appreciated staff enforcement of this element.[32] Hunter and Cox proposed a "model of zengagement" emphasizing students' high regard for background atmosphere and asserted that libraries should prioritize "warm, friendly, and homely spaces" above all others.[33] Finally, when contemplating whether a "coffee house environment" should eventually supplant the quieter study spaces within libraries, Deng et

al. concluded that students preferred studying in the libraries because they allowed them to "carry out their learning in solitude with silence."[34]

The review of the literature reveals an expansive portrait of ILS assessment techniques and findings, yet numerous questions and avenues for exploration remain. What these studies have not yet accomplished is a contextualized, comparative understanding of the social and quiet environments of the academic library within the broader ILS ecosystem, particularly one that considers students' needs and space choices in an abundant and increasingly homogenous learning space landscape.

Methodology

Informed by the participatory design approach and "multi-fold data collection model" proposed by Deed and Alterator,[35] this study's use of multiple-case study design reveals the unique and shared contributions of ILSs across five discrete campus locations. Following a sequential explanatory study design, quantitative data were first gathered via field observations and a survey of students in the spaces. After preliminary analyses, qualitative data were then gathered through focus groups to provide more robust insight into quantitative findings.[36] Using this method, the study underwent an iterative process of refinement and reflection for including the lived experience into the assessment.[37]

Nitecki and Simpson's theoretical framework for library spaces also guided this study, which posits that the higher education context and physical design of the built environment influences the individual student.[38] The built environment, by satisfying psychological needs and promoting productivity and focus, can influence individual behaviors and cognitive functioning.[39] Ultimately, for an informal learning space to be successful, it must satisfy the affective and emotional conditions in which learning can occur.

Site Selection

The five sites examined in this study were selected through criterion sampling,[40] to represent ubiquitous campus locations that are either viewed as a common good (Library South, Learning Commons, Union) or disciplinary-oriented (Colleges of Business and Nursing) (see table 1). Each of the sites is located on the main campus within walking distance from one another and contains ILSs with relatively large public seating capacities. All of the sites had been constructed or undergone extensive renovation within two years prior to data collection, except for the south building of the academic library. This location was included to contrast students' use of these more modern spaces with those of a traditional library environment (that is, spaces in which stacks dominate). Expanding vertically across six levels, the south building's stacks integrate more than 100 individual study carrels among a few hundred thousand books. The College of Business and College of Nursing sites were chosen to understand the relationship these disciplinary spaces have with the common good settings of the academic library and student union.

Data Collection and Analysis: Observation and Survey

Data for this study were collected beginning in January 2018 and concluding in April 2019. The Learning Commons was the first site studied,[41] and lessons learned resulted in minor changes to simplify and improve data collection at the remaining sites. An identical protocol was followed at each location, with data being gathered in three consecutive stages: field

observations, survey recruitment, and focus groups. Under close supervision by the project's principal investigators, observation and survey data were collected by a team of undergraduate student research assistants who received human subject certification and were trained in study procedures and design. All instruments and procedures for this study were reviewed and approved by the institution's Human Research Protection Program.

Field observations (see appendix A) were documented using hour-long visual traffic sweep techniques at a mix of low, medium, and high occupancy times.[42] Research assistants received training in how to perform unobtrusive observations, which strives to avoid disrupting the observed environment.[43] Using a paper-based template showing furnishing layouts, observers documented locations of individuals or groups, and uses of white boards, laptops or tablets, headphones, and books. Size of collaborations, defined as students observed actively discussing or sharing screens or devices, were also tracked. Interrater reliability testing was used to ensure consistency of both data recording and transfer into a spreadsheet for later analysis. A total of 301 observation sweeps were completed, capturing temporal behavioral profiles of 23,890 individuals.

TABLE 1
Overview of Informal Learning Space Sites

Site	Description	ILS Seating Capacity*
Learning Commons (LC)	Single floor located on first floor of main library. Majority collaborative, open spaces with group study rooms and quiet study section.	323
Library South Building (LS)	Multistory, houses main library's collections. Majority quiet study spaces for individuals and small groups.	341
College of Business (CoB)	Multistory, standalone building. Collaborative, open spaces with group and private study rooms.	441
College of Nursing (CoN)	Multistory, standalone building, shares space with university health services. Collaborative, open spaces with group study rooms.	200
Union	Multistory, standalone building; shares space with bookstore, restaurants, other retailers. Collaborative, open spaces.	367

**Note.* ILS seating capacity includes only nonclassroom, commons spaces and does not reflect total building seating capacity.

The survey instrument (see appendix B) was self-developed for this study according to Post-Occupancy Evaluation best practices[44] and Bennett's conceptual model of student learning needs.[45] It was primarily aimed at identifying the reasons or factors that could be attributed to overall satisfaction according to dimensions of successful learning environments: task completion, workspace, atmosphere, and needs fulfillment.[46] Thus, several indices of items reflecting each dimension were created. The final instrument included 14 Likert-type scale items and two open-response items. The survey also gathered demographic data for gender, age, major, class standing, race/ethnicity, and international status.

The instrument was first piloted with six students and a panel of faculty and staff to confirm clarity, accuracy, and comprehension and establish content validity. Cross-sectional web survey data were gathered from students at each site (N = 993), using random probability sampling. Research assistants provided tablets to students to complete the web-based survey immediately upon successful recruitment.

Several analyses of observation and survey data were run using SPSS v. 25 to identify and quantify the factors relating to tasks and satisfaction. Frequency scores were analyzed to describe the sample and make statistical comparisons. Likert-type items were treated as interval for the purposes of analysis and interpretation, and one-way analysis of variance was calculated to identify potential differences among participants and across the five sites, where *p*-values less than 0.05 were considered as significant. Chi-square and Kruskal-Wallis nonparametric test for independent samples was used to measure the strength of association between categorical and ordinal variables (see appendix C). Not all participants answered all questions, and nonresponse items were coded as missing.

Qualitative Data Collection and Analysis: Focus Groups

Following preliminary quantitative analyses of observation and survey data, focus groups were conducted with a small, voluntary sample of survey participants from each of the five sites (n = 23 of a possible 155 volunteers). Discussions followed a semistructured interview protocol, with five open-ended questions and a series of prompts aimed at enhancing and clarifying survey findings regarding their learning and space needs in the ILSs (see appendix D). Participants included 19 women and four men: 21 undergraduates and two graduate students, representing 18 different majors. Sessions were audiorecorded and transcribed verbatim by members of the research team. Focus group transcripts were analyzed thematically using the six-part process outlined by Braun and Clarke.[47]

Findings

Occupancy

Field observations were used to track occupancy and develop behavioral profiles within each of the five site locations (see table 2). Average occupancy across all sites was 23.8 percent, varying from 2.6 percent at the College of Nursing to 48.5 percent at the Learning Commons. The two library sites had the highest occupancies, both as a percentage of each site's total seating capacity and in number of persons. As cautioned by others,[48] the use of actual occupancy instead of perceived explains some of the wide variance between the locations; tables in the

TABLE 2
Observed Occupancies, Collaborations, and Equipment Use

Site (observations)	LC (n = 59)	LS (n = 60)	CoB (n = 61)	CoN (n = 60)	Union (n = 61)	Total (N = 301)
Seating capacity	323	341	441	200	367	1,672
Avg occupancy	156.8 (48.5)	100.8 (29.6)	65.7 (14.9)	5.3 (2.6)	70.0 (19.1)	398.6 (23.8)
1 person	7,036 (76.1)	5,202 (86.0)	2,198 (54.8)	139 (43.9)	2,627 (61.6)	17,202 (72.0)
2 group	1,308 (14.1)	690 (11.4)	982 (24.5)	82 (25.9)	976 (22.9)	4,038 (16.9)
3 group	513 (5.6)	123 (2.0)	492 (12.3)	66 (20.8)	339 (7.9)	1,533 (6.4)
4 + group	392 (4.2)	34 (0.6)	336 (8.4)	30 (9.5)	325 (7.6)	1,117 (4.7)
Headphone use	*	2,387 (39.5)	493 (12.3)	9 (2.8)	823 (19.3)	3,712 (25.4)
Books on table	*	3,199 (52.9)	332 (8.3)	22 (6.9)	979 (22.9)	4,532 (31.0)
Total individuals	9,249	6,049	4,008	317	4,267	23,890

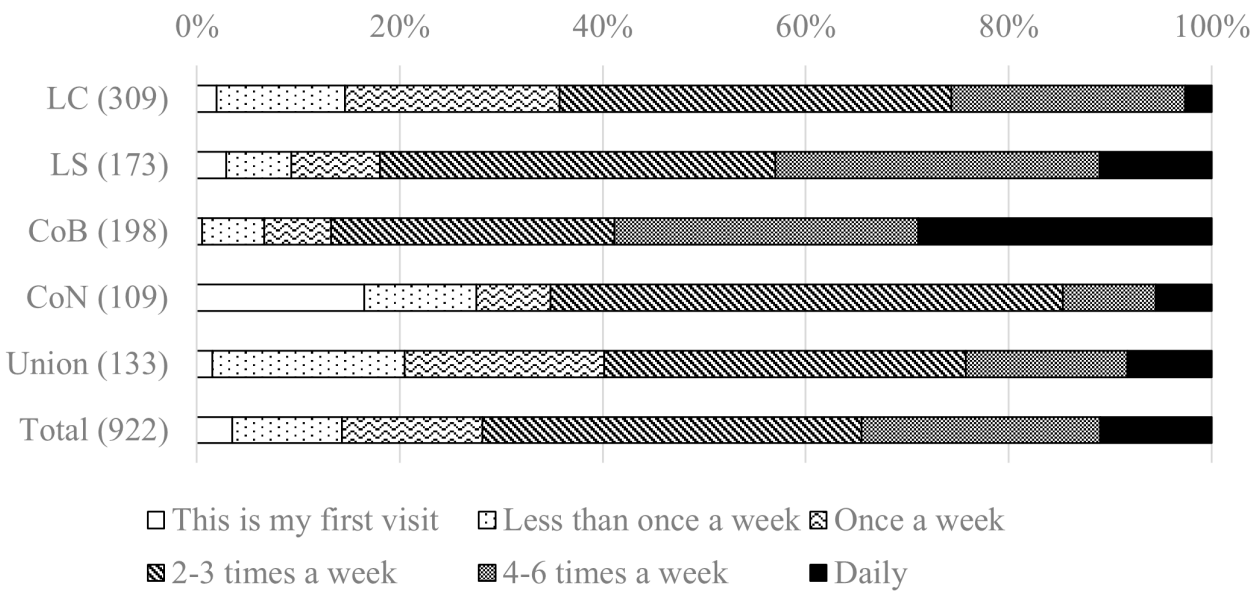
*Data not gathered from this site.

library spaces on average seat fewer students than at the other sites, and students in the focus groups expressed a reluctance to share a table with strangers. For example, when thinking about the underuse of tables seating eight at the College of Business, one student observed: "They're never full, but you never really want to go to one that already has a person at it," and another added, "I personally wouldn't go and just sit at some random person's desk or table, that would just make me feel uncomfortable and I'd feel like I'm invading their space. So I probably wouldn't join someone, I probably would just go somewhere else."

Profile of Users

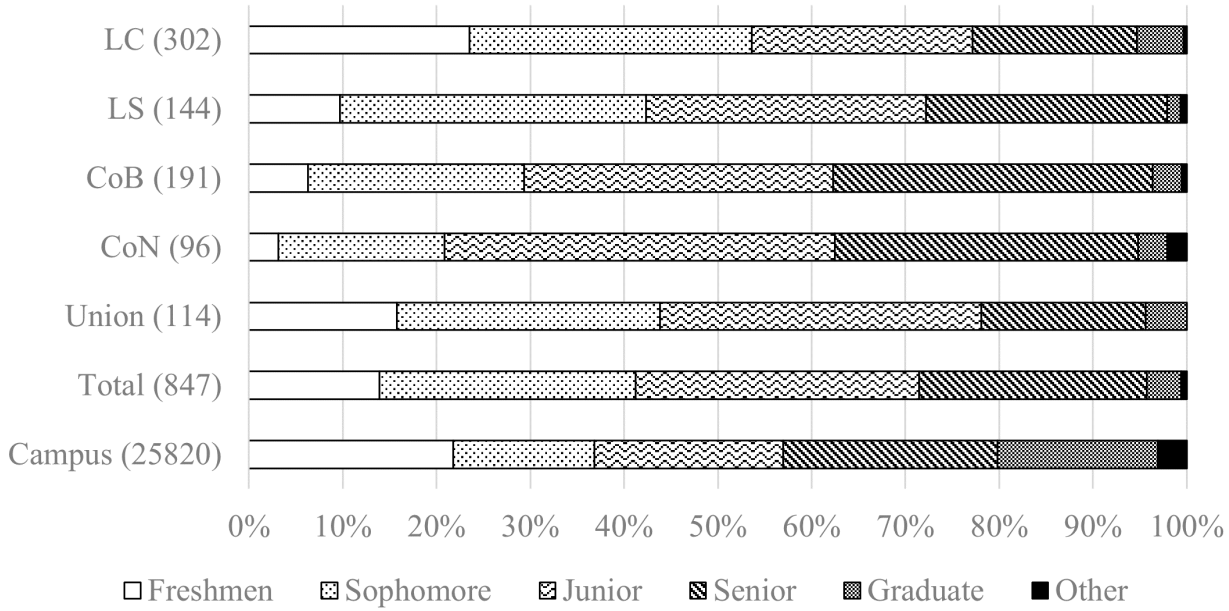
Survey data revealed broad portraits of the students at each of the ILSs, contextualizing the relationship of these users within the larger university population. Across the entire survey sample, a majority of students were white (78.9%), female (68.7%), domestic (89.5%), undergraduates (95.7%), between the ages of 19 and 22 (93.7%). Students were frequent visitors to the respective locations, with more than half of respondents reporting more than 2 to 3 visits each week (see figure 1). Students in LS and CoB had significantly higher frequencies of visits when compared to the other two sites.

FIGURE 1
During an average week, how often do you come to this building?



As shown in figure 2, graduate students, who account for 17.1 percent of the university population, were underrepresented in the spaces, representing only 3.7 percent of the total sample.[49] In addition, except for the learning commons, freshmen were underrepresented, though this can be attributed to a small number of participants being excluded from the study due to 19 being the state's legal age of consent. Minor variance was also detected in terms of college affiliation, which was expected due to those colleges being located at a different campus, and gender. This gender disparity was also captured in observation data, showing more women (53.3%) than men (46.7%) using the spaces overall, which was unexpected as there are slightly more males (50.9%) enrolled at the university than females (49.1%).

FIGURE 2
Class Level of Survey Respondents Compared to Campus



Most students surveyed in the CoB (72.3%) were indeed College of Business students, spurring a predictable conclusion that business majors are the primary users of this disciplinary-oriented space. However, business students, who comprise 17.0 percent of university enrollment and 30.5 percent of students surveyed, were hardly confined to this one site. Business majors represented 24.2 percent of students surveyed at the LC, 13.2 percent at the union, 13.9 percent at the LS, and 4.0 percent at the CoN. Conversely, at the CoN, nursing majors comprised 57.6 percent of all students surveyed at that site, and 85.1 percent of total nursing majors in the survey sample. That only a small majority of students surveyed at the CoN were from this college was likely due to its co-location with the university health center. Observation data (see table 2) revealed low average occupancy for ILSs within both CoB (14.9%) and CoN (2.6%), suggesting that use of other spaces by these buildings' intended student populations should not be attributed to capacity issues.

Focus group conversations about this disparate representation regarding business and nursing students revealed a widening gap of privilege favoring these particular students. All business and nursing students frequented ILSs outside of their college, but expressed appreciation for keycard access to their buildings after hours. They attributed this restricted access to an increased sense of safety when compared to other locations, with one CoB student stating, "I feel like there should be something at the library to scan to get in every time because there's so many random people all the time. Just, like, old people all the time, just randoms, and you're like, 'How'd they get in here?'"

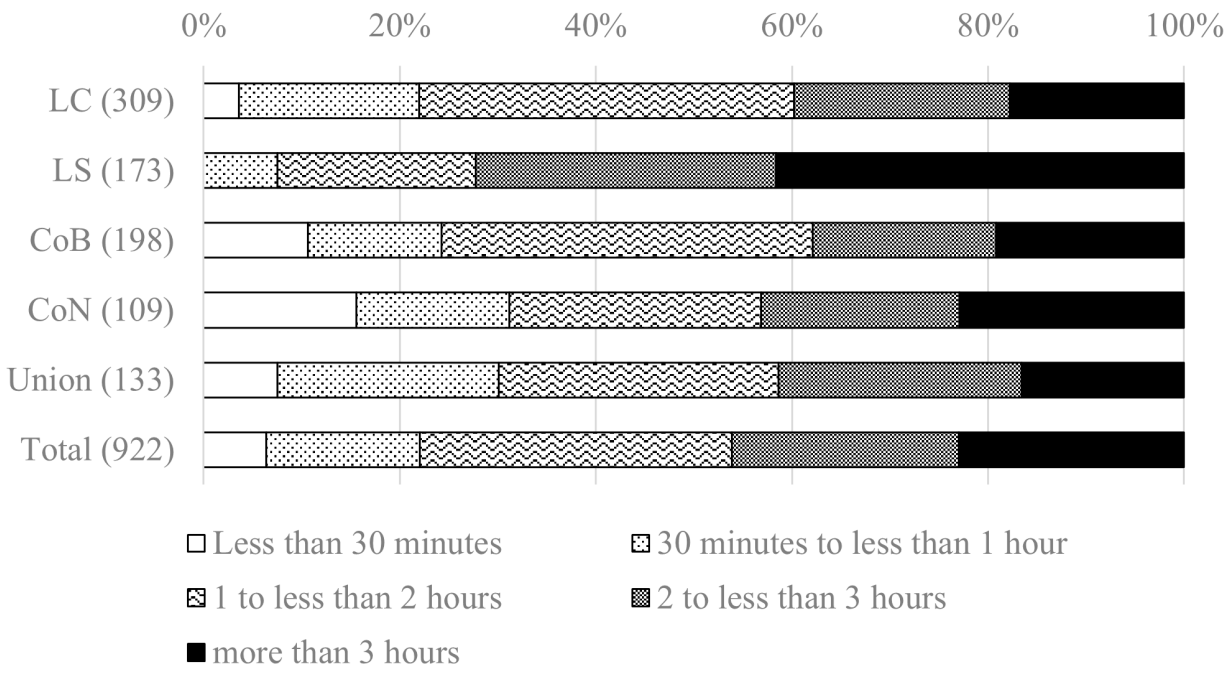
Just as majors at both colleges expressed frustration over nonmajors using the spaces, nonmajors perceived the colleges as off-limits. Multiple students remarked that they would not feel comfortable studying at the disciplinary colleges, fearing that they would be discovered and asked to leave. The one nonmajor in the CoB focus group acknowledged, "Sometimes I do feel kind of weird coming here," even when accompanied by business majors. The exclusivity of the disciplinary ILSs led students in the focus groups to contrast that with their perceptions of the common good locations. Students in the union, LC, and LS all remarked

on the locations' inclusivity, using adjectives such as "neutral," "accepting," "welcoming," and "for everyone."

Tasks, Needs, and Priorities

Regarding their current visit, survey respondents varied widely in terms of tasks, needs, and priorities. Most students (78.0%) anticipated staying at least one to two hours (see figure 3), though students in LS anticipated longer visits on average, with 41.6 percent selecting *3 or more hours*.

FIGURE 3
How long are you planning on staying during today's visit?

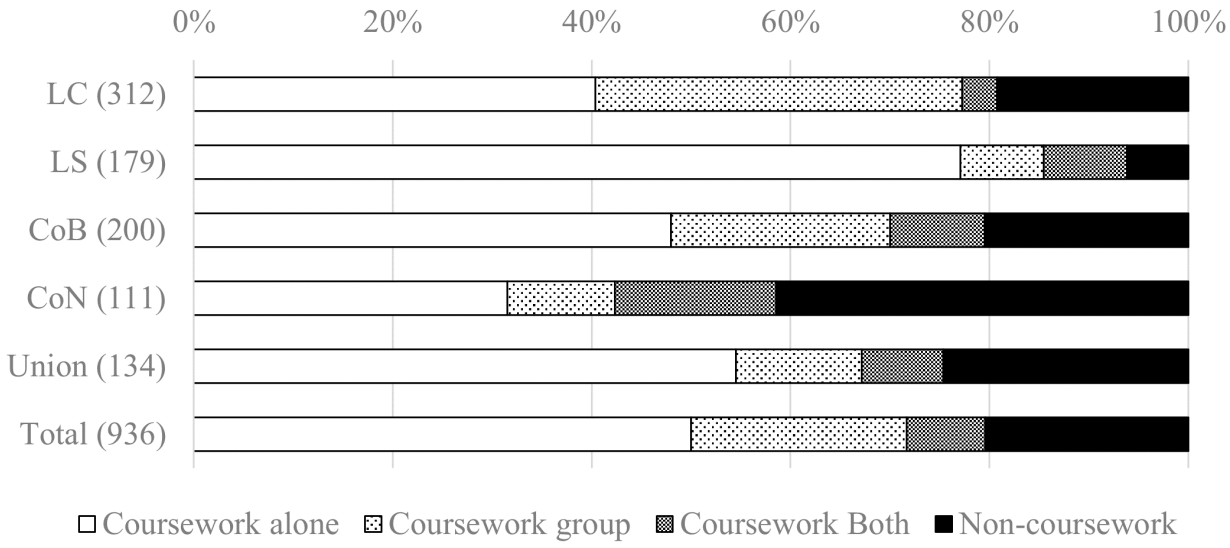


Academic coursework was the main task for students across all the sites (79.6%). Despite four of five sites being largely oriented toward collaborative work, independent work was the main activity for half of students (50.0%), followed by group coursework (21.7%), with a small number (7.9%) planning to do both during that day's visit (see figure 4). The highest percentage of students conducting independent coursework was located in LS (77.1%).

This independent work was also apparent from observation data (see table 2), where 71.4 percent of all users were observed working alone. The majority of users in the library spaces (80.0%) were recorded working independently, with more students at the LS (86.0%) observed working alone than at the LC (76.1%). Students at CoN exhibited more collaborative activity, with 56.1 percent of those observed working in groups of two or more. However, as this location had very low occupancy overall, the observation data are less reliable than the other locations.

When asked to identify the importance of fulfillment of various needs for completing their tasks (see table 3 in appendix C), students at all sites ranked *Accomplishment (ability to fully complete task)* as the most important (M = 1.7, SD = 1.0). When compared with the other

FIGURE 4
What did you primarily come here to do today?

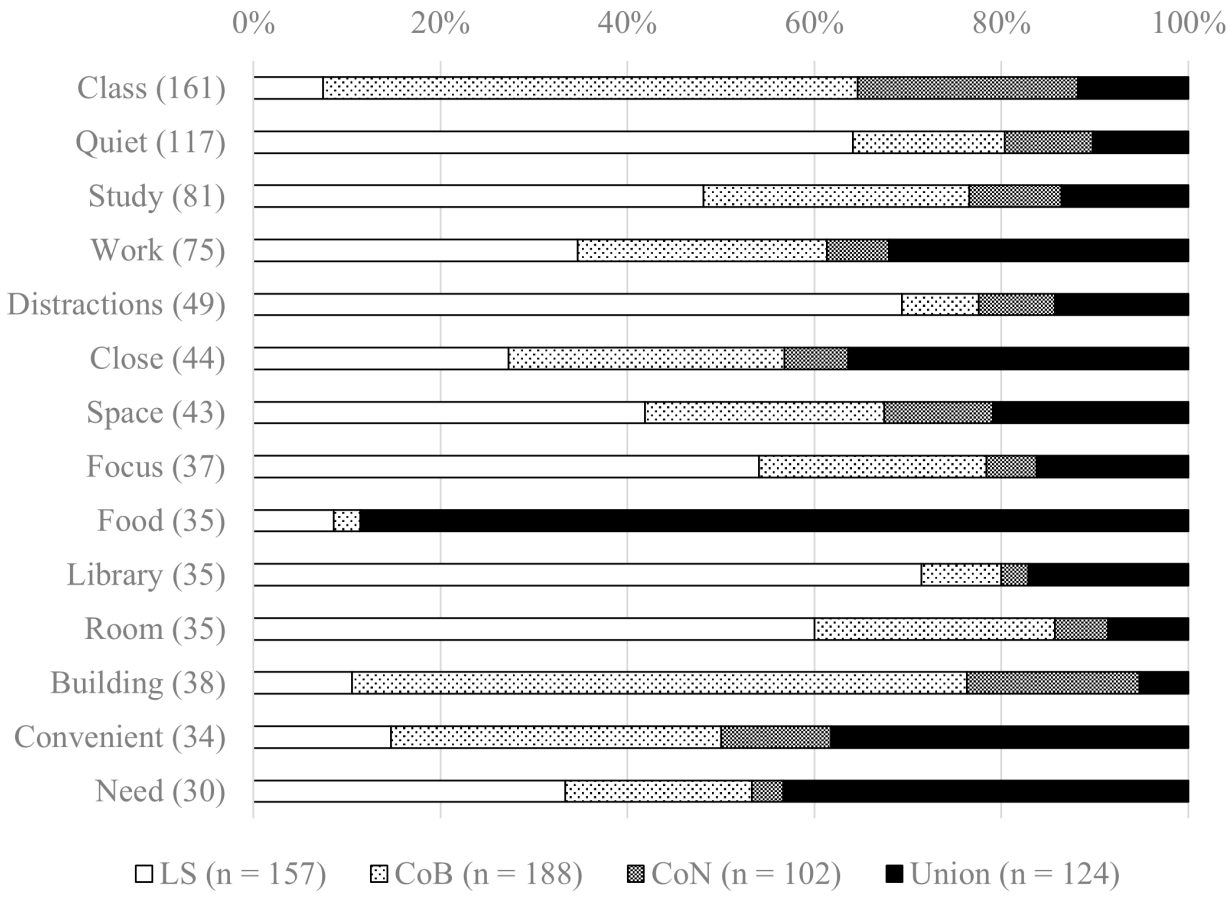


locations, students at LS regarded *Autonomy (freedom from visual and/or noise distractions)* as significantly more important (M = 2.35, SD = 1.17), and *Belonging (feeling welcome; being part of a social community of peers)* as significantly less important (M = 4.27, SD = .88). Students in the LS focus group agreed that belonging was likely less important to students in that space given their need to focus, with one stating, "[When] I want to study I really want to focus so I'm not really on the social connection side because we have a lot of opportunities to get social."

At all sites except for the LC, students were asked the open-ended question *Of all the places on or off campus you can go to accomplish today's task, why did you choose to come here? (Briefly)*. Figure 5 displays the top terms used by 571 students responding to this prompt. A variety of reasons were provided, with very few commonalities across the sites. The top term *Class* (example: "I have a lot of classes in this building") was referenced by more than one third of respondents (34.3%), a majority (80.7%) of whom were located at either the CoB or CoN. Of 35 respondents using terms relating to *Food*, 88.6 percent came from students located at the union. The term *Library* was used by 35 students, 71.4 percent of whom were located there. The 10 students using that term from other locations used it as a framing device in ways that acknowledged the library's central identity as a place to conduct academic work: the library was either too busy to find a seat or too quiet for their needs. *Quiet* was used by 117 (24.9%) students, 64.1 percent of whom were located at LS. Nearly half (47.8%) of LS respondents mentioned *Quiet*. *Study* and *Distractions* were also frequently used by respondents at that location (24.8% and 21.7%, respectively).

This synonymizing of quiet and library was acknowledged by the students in the focus group. "I think it's just an accepted notion in our society that library equals quiet, that I can come here and be productive," "I need silence, which is why I come to the library a lot," "When I think Library, I think the big red roof here was always just iconic, that's [the] Library, that's [the university's] major library and that's where I study if I need to get things done. It was a preconceived notion in my head that library, big red thing, study… It's just kinda known… [the] library is a good place to study." This association of the library as a place to study was

FIGURE 5
Of all the places on or off campus you can go to accomplish today's task, why did you choose to come here?



often established early in their academic careers, "I think when they take you on your tour, I remember coming to [the] library. And we walked through and they said, 'This is the Learning Commons,' and you just get engulfed in it right away. So I think that's kind of the go-to." "I know where everything is here, it is very familiar. We learned about it our freshman year."

There was little consensus among students regarding the importance of various workspace and ambience needs to their productivity. Access to wireless (M = 1.72, SD = 1.02) and power outlets (M = 1.99, SD = .96) stood out as essential for almost all students at all locations, but other features exhibited wide variance in ratings. There were no statistically significant differences between features such as *Noise privacy* (M = 3.08, SD = 2.1) and *Visual privacy* (M = 3.93, SD = 2.26); however, pairwise comparisons with adjusted p values did reveal that students in the LS ranked a need for *Individual study tables*, $\chi^2(3) = 22.1$, $p < .001$, and *Quiet atmosphere*, $\chi^2(4) = 22.82$, $p < .001$, significantly higher than the other locations. Surprisingly, average student rankings (M = 3.5, SD = 2.6) for *Being around others studying* placed it quite low when compared to the other ambience features, though the wide deviation suggests a lack of agreement on this issue. This disagreement was reflected in the focus groups, with some students agreeing with the statement, "I think [being around others studying] is extremely important…For me, it's really mental. Even if I'm not working with someone I can be like, 'Yeah, these people are also college students working hard,' and it just motivates me." However, other students

found the presence of others distracting: "For me, that's not really helpful. I try to get away from people as much as possible when I'm studying, at least by myself."

In focus group conversations, students at all sites acknowledged a desire for more quiet spaces across the campus. Nursing students in particular felt the campus's ILSs—including those within their own college—did not provide enough quiet spaces to support the deep level of concentration required to master their material. All six students acknowledged that the library would be the best environment for this level of focus but stated that the high volume of users presented an insurmountable distraction in itself: "I feel like I have to compete for a space. And if I find a nice open space, there's usually people talking, or unless you get a private room, which you have to reserve, then someone's always knocking on the hour and they're like, 'He reserved this,' and then you have to move. So I need to sit in one spot and just hammer it out for like three or four or five hours. That's how I study, in concentrated doses." With nowhere else to go, these students resorted to studying at home, which they agreed was an undesirable option due to the many distractions associated with roommates, chores, and leisure.

Notably absent from students' needs for productivity was the library's physical collections. Observation data (see table 2) revealed that a far greater percentage of students (52.9%) in LS had books on their table when compared with the other locations, but students indicated that these were most likely personal materials, such as textbooks. Students in the focus groups all carried books with them, with one student describing the extensive contents of her backpack as "Phone, my iPad, my computer, 3,000 books, huge notebook, other papers, things for whatever I'm working on, water bottle, coffee." Of 140 respondents, only 35 students identified the *Library's collections (books)* as being at all important for that day's productivity. None of the students in the LS focus group had ever checked out any library resources. They agreed that the books were important symbols of scholarly work, "It makes it feel like you're in a library," that provided desirable privacy protections and helped to limit distractions: "The books kind of are like a little blockade though. And then if all the books were gone then it's just a big open room."

Satisfaction

On average, students expressed high satisfaction regarding all workspace and ambience aspects of the locations. Out of a maximum of 5, the sites received an average rating of 4.4 (SD = .62). Small variance was detected between the sites, with students in LS reporting significantly higher satisfaction levels with regard to *Overall noise* (M = 4.22, SD = .90) and *Size of personal workspace* (M = 4.49, SD = .75). Students in LS reported less satisfaction (M = 4.03, SD = 1.01) with *Overall aesthetics* than the other locations, significantly so, $\chi^2(3) = 21.31$, $p < .001$, when compared with the brand-new environments of the CoB (M = 4.43, SD = .76) and the CoN (M = 4.46, SD = .79). Unlike the other locations, the library's stacks have not been appreciably updated or renovated since the 1970s, as evidenced by the expanse of utilitarian, metal desks.

While the aesthetics of LS are unremarkable, the stacks areas are unique due to having private study carrels with relatively large tables, separated by metal dividers. Conversely, there are very few tables designated for independent work in the other locations. Students in the focus groups expressed a preference for the updated aesthetics of the newer spaces, agreeing with one student's comment that, "It's more fun to have the variety and the different spaces and the style versus just desks with chairs." However, when the need to pursue

serious study arose, the need for a quiet atmosphere outweighed contemporary style. As one student explained, "If I'm in the mood to be super productive, then I would go to the quiet room, whereas if I was in the mood where I was like, 'I don't really feel like doing something, but I'm just going to get my busywork done really quick,' then I would go to [the library's busier spaces with more comfortable furniture]. I feel like there's a big difference between doing actual homework, like completing a task, compared to just studying, like opening up a book and just studying."

The students largely agreed that the sites provided adequate support for their psychological and well-being needs. The sites received an average rating of 4.2 out of 5 (M = 4.2, SD = .78) regarding how well they supported students' ability to complete their tasks. Again, the LS revealed statistically significant differences from the other locations, with students providing significantly lower ratings regarding *This space helps me connect with my peers* (M = 3.8, SD = 1.05), and significantly higher ratings for *This space helps me focus on my task* (M = 4.6, SD = .60). The differences detected for these particular measures were in alignment with differences detected from students' earlier rankings of their importance; students in LS were both less interested in interacting with peers and more vested in engaging with their work.

Discussion

The recent increase in the number of ILSs is certainly a desirable benefit to the students at the university. The spaces are popular locations for students to conduct their academic work, and students appreciated having multiple locations to go to, with strong evidence that they frequently migrated throughout two or more locations with task and mood as primary drivers. Students acknowledged the inherent benefits of studying on campus including safety, proximity, and communal study environments, and although not identified as critical to their needs, they valued the contemporary and comfortable aesthetics of the newer spaces.

The ILS pendulum has swung too far in the direction of collaborative learning spaces, where the success of the space is measured in decibels. The academic library has long been established as a place where students conduct academic work;[50] however, independent academic work was the main goal for students across all five of the ILSs in this study. The relative absence of graduate students throughout all of the spaces, and nursing students from their own building, suggests that the campus's ILS ecosystem is failing to support students carrying out the most intensive academic work, and this should be cause for concern. More protections such as ensuring visual and acoustic privacy, replacing the larger group tables with smaller furnishings that could be easily reconfigured, and deploying movable whiteboards throughout the spaces would help students assume greater control over their spaces while still maintaining flexibility when required.

The introduction of the full-service colleges manifests additional complications within the ILS ecosystem. Both the College of Business and the College of Nursing were constructed with the intent that students would be able to come to the building in the morning and fulfill all of their daily academic, personal, and productivity needs in a self-contained environment. Yet the students in these disciplines continue to frequent other ILSs across campus. The existence of these spaces is certainly a boon for students in the respective colleges, who express feelings of ownership over these spaces while still availing themselves of the plethora of choices of campus study spaces. It does, however, raise the question of what does it mean for students in other disciplines who feel apprehensive about using "someone else's" space? When explor-

ing the creation of discipline-specific ILSs, colleges should not assume that their students will choose these spaces over the library or other common good ILSs. Additionally, as building space becomes an increasingly precious commodity on college campuses, administrators should consider carefully how much space should be dedicated to ILSs that are perceived by students to be exclusive, thereby minimizing their utility.

In the ILS ecosystem, the library functions as the fulcrum for study. There are signs that students migrate among spaces—to where their mood and tasks take them—and it is the quiet spaces within the library that serve as their baseline for the level of studiousness needed. Even as students use and value sociocollaborative spaces, "the Library" plays a central role in their perception of informal learning. As May and Swabey's study of five different libraries found remarkable similarities in students' use, this study found a near universal conception of library as a space for intensive study.[51]

Finally, the neglect of the traditional, quiet library spaces ultimately signals their devaluing, which is felt by the entire campus. Rather than reserving funding for improvements unless a space is transformed into a collaborative study area, these spaces in which the most intensive independent work is undertaken should be afforded the same respect. In this study, students in the quieter spaces were deliberate in their choice of location, exhibiting the self-regulatory processes of self-initiation and self-monitoring attributed to successful informal learning.[52] This voluntary selection of place exhibits a positive metacognitive awareness in which students recognize the relationship between their learning environment and their ability to learn. The institutional barriers of neglect did not deter students from the spaces; even when the stacks areas were filled with book trucks, students were doggedly present (see figure 6). The affability of students, however, should not be taken for granted, and, at some point, the library's most ardent users will go where their needs are more comfortably supported.

FIGURE 6
Student Studying in Library South (Photo by Tara Grebe)

Limitations and Unresolved Issues

This study was impacted by certain limitations, and numerous future research questions remain. First, findings based on observations and survey responses relied on cross-sectional data, and future longitudinal models of research are needed to examine how students' uses and needs within ILSs develop over time. Second, the study relied upon data gathered exclusively from students actively inhabiting each of the five informal learning sites. These students' evaluations of a space they voluntarily selected to reside within likely resulted in a positive skew for various assessment metrics. Gathering data from a broader population of students and including those who do not necessarily use these spaces or find them supportive of their study needs would help resolve at least some of the problems of exclusion as outlined by Berman,[53] while creating a more generalizable dataset. Third, the explanatory, correlational nature of the study limits the ability to recognize causal effects. By using an experimental framework, future research could help identify causal effects of students' use of various ILSs and academic success. Finally, this study does not include perceptions of the faculty. A fundamental purpose of a campus is to bring together students and faculty for learning;[54] thus, an attempt needs to be made to identify where, in addition to the classroom, these interactions occur.

Conclusion

Informal learning spaces, despite the increased interest and prevalence beyond libraries, are not an abundant commodity. They have relatively small seating capacities, limited staff available for oversight, and, unless they are ostensibly, observably, and overtly occupied, face threat of being prescribed another use by universities facing myriad stressors. While simply filling a space with students is a tempting way to assert its value, this quick fix does little to support the learning needs of the campus community.

The perennial physical space issues faced by universities are increasingly compounded by the existential crises of a changing climate that demands more sustainable practices and a pandemic that has placed innumerable restrictions on their use. Where satisfying large swaths of the populace might once have been possible, administrators and librarians will now have to make challenging decisions regarding which needs and behaviors to prioritize.

Understanding core contributions of academic library spaces is more important than establishing its users' satisfaction; within higher education learning organizations, a task hierarchy is explicit, and fostering environments in which students can best engage with their coursework should be perceived as the main priority. Committing to supporting the learning needs of the academic community and then assessing students' satisfaction in that context is what validates these measures. Conducting in-depth explorations into campus ILSs, such as this, reveals strengths and weaknesses of the spaces per the individuals who inhabit them. By observing and surveying users, the holistic functioning of this system is illuminated in ways that would otherwise be missed. These data can equip libraries with evidence underscoring their unique value. Time and time again, space use studies like this have revealed the singular importance of the physical library as a place for quiet, reflective study. In addition to creating sociocollaborative spaces, libraries have a responsibility to invest in spaces supportive of independent learners; instead of disregarding these spaces as though they are an outdated relic of the past, libraries should acknowledge them as a defining value within the institution.

Acknowledgments

This study was funded by a grant from the Maude Hammond Fling Faculty Research Fellowship through the University of Nebraska-Lincoln's Research Council. The authors would like to thank the University Libraries, Nebraska Union, College of Business, and College of Nursing for welcoming us into their spaces, and the Undergraduate Creative Activities and Research Experience program for their support. The authors are indebted to the exceptional work and tenacious spirit of undergraduate student research assistants Ashlynn Engelhard, Annie Mimick, Mikinna McGerr, Tara Grebe, Tiffany Schweer, and Savannah Scoville.

APPENDIX A

Behavior Map and Key for One Complete Observation Sweep on Second Floor of Library South

APPENDIX B

Survey Instrument

1. What did you primarily come here to do today? (click ALL that apply)
   - □ I'm working on coursework alone
   - □ I'm working on coursework with a group
   - □ I'm working on noncoursework-related activities alone
   - □ I'm working on noncoursework-related activities with a group
   - □ I'm mostly socializing
   - □ I'm mostly relaxing
   - □ Something else: _____
2. How long are you planning on staying during today's visit?
   - □ Less than 30 minutes
   - □ 30 minutes to less than 1 hour
   - □ 1 to less than 2 hours
   - □ 2 to less than 3 hours
   - □ 3 hours or more
3. During an average week, how often do you come to this building?
   - □ This is my first visit
   - □ Less than once a week
   - □ Once a week
   - □ 2–3 times a week
   - □ 4–6 times a week
   - □ Daily
4. Rank the following needs in order of their importance for completing today's task in your current location (1 most important to 5 least important):
   - □ Accomplishment (ability to fully complete task)
   - □ Autonomy (freedom from visual and/or noise distractions)
   - □ Belonging (feeling welcome; being part of a social community of peers)
   - □ Engagement (ability to engage deeply with task)
   - □ Safety (freedom from harassment or unwanted attention)
5. Of all the places on or off campus you can go to accomplish today's task, why did you choose to come here? (Briefly)
6. Thinking about the space you are currently in, how satisfied are you regarding the layout of each of the following (1 extremely dissatisfied to 5 extremely satisfied):
   - □ Size of my personal workspace
   - □ How well the layout supports my task for today
   - □ Amount of space for my personal belongings
   - □ Ability to adjust the layout to meet my needs
7. Thinking about the space you are currently in, how satisfied are you regarding the following features of the interiors (1 extremely dissatisfied to 5 extremely satisfied):
   - □ Wall colors
   - □ Flooring materials
   - □ Workspace surface finishes (such as desktop, table)
   - □ Aesthetics (views, visuals, and other aspects)
8. Thinking about the space you are currently in, how satisfied are you regarding each aspect

of your surrounding environment (1 extremely dissatisfied to 5 extremely satisfied):
   - □ Temperature
   - □ Ability to control temperature to meet my needs
   - □ Air quality (like stuffy/stale air, cleanliness, odors)
   - □ Artificial lighting
   - □ Ability to control lighting to meet my needs
   - □ Views to the outside/windows
   - □ Overall cleanliness
9. Thinking about the space you are currently in, how satisfied are you regarding each aspect of noise and privacy (1 extremely dissatisfied to 5 extremely satisfied):
   - □ Sound privacy (for example, ability to hold private conversations)
   - □ Visual privacy (for instance: I am not overly visible to others; no looking over my shoulder or sneaking up)
   - □ Overall level of noise in the area
10. Please rank the following workspace features in order of importance to your productivity today (1 is most important; do not rank unimportant items)
   - □ Ability to adjust workspace
   - □ Comfort of furniture
   - □ Individual study table
   - □ Sufficient space to do work
   - □ Uncluttered workspace
   - □ Workspace colors and textures
11. Please rank the following ambience features in order of importance to your productivity today (1 is most important; do not rank unimportant items)
   - □ Being around others who are studying
   - □ Fresh air
   - □ Noise privacy (for example: my conversations or actions are not easily overheard)
   - □ Odorless environment
   - □ Quiet atmosphere
   - □ Thermal comfort
   - □ Visual comfort
12. Please rank the following services and amenities in order of importance to your productivity today (1 is most important; do not rank unimportant items)
   - □ Availability of food and drinks
   - □ Access to outlets/power
   - □ Site provided computers or technology
   - □ Library collections (books)
   - □ Whiteboards
   - □ Wireless connectivity (WiFi)
13. Rate your level of agreement with each of the following statements (1 extremely dissatisfied to 5 extremely satisfied):
   - □ I feel safe in this space
   - □ I feel connected to my peers in this space
   - □ This space helps me achieve my goals
   - □ This space helps me focus on my task

- □ I feel as though I am welcome in this space

14. How well does your choice of space support your ability to get your job done today?
    - □ Not well at all
    - □ Slightly well
    - □ Moderately well
    - □ Very well
    - □ Extremely well
15. Overall, how satisfied are you with this space?
    - □ Extremely dissatisfied
    - □ Somewhat dissatisfied
    - □ Neither satisfied nor dissatisfied
    - □ Somewhat satisfied
    - □ Extremely satisfied
16. Do you have any comments, suggestions, or feedback you would like to share with us about this space or the building in general?

Demographic portion

1. I identify my gender as:
    - □ Female
    - □ Male
    - □ Another gender identity: _____
    - □ I prefer not to answer
2. What age are you today?
    - □ 19–20
    - □ 21–22
    - □ 23–24
    - □ 25–29
    - □ 30–34
    - □ 35–39
    - □ 40 and older
3. What is your class level?
    - □ First year or freshman
    - □ Sophomore
    - □ Junior
    - □ Senior
    - □ Graduate
    - □ Other _____
4. Within what college/school is your current major/program of study? (click ALL that apply)
    - □ Agricultural Sciences & Natural Resources
    - □ Architecture
    - □ Arts & Sciences
    - □ Business
    - □ Education & Human Sciences
    - □ Engineering
    - □ Exploratory & Pre-Professional Advising Center (Undeclared)

- □ Fine & Performing Arts
- □ Journalism & Mass Communications
- □ Nursing
- □ Public Affairs & Community Services
- □ I'm not sure
- □ Other _____

5. What is your racial or ethnic identification? (click ALL that apply)
   - □ American Indian or Alaska Native
   - □ Asian or Asian American
   - □ Black or African American
   - □ Caucasian or White
   - □ Hispanic or Latino
   - □ Native Hawaiian or Other Pacific Islander
   - □ Another identity: _____
   - □ I prefer not to answer
6. Are you an international student?
   - □ Yes
   - □ No

APPENDIX C

TABLE 3
Needs Fulfillment for Task Completion

Site	Site	*N*	*M*	SD	Mean Rank	Test Statistics	
Accomplishment	CoB	145	1.67	1	243.15	Chi-Square	2.51
	CoN	91	1.7	0.96	251.53	*Df*	3
	LS	154	1.77	0.97	264.72	Asymp. Sig.	0.474
	Union	120	1.8	1.1	263.66		
	Total	510	1.7	1			
Autonomy	CoB	145	2.8	1.3	265.14	Chi-Square	24.47
	CoN	91	2.9	1.3	270.42	*Df*	3
	LS	**154**	**2.4**	**1.2**	209.9	Asymp. Sig.	.000 [a]
	Union	120	3.1	1.4	291.06		
	Total	510	2.8	1.3			
Belonging	CoB	145	3.7	1.2	239.53	Chi-Square	26.8
	CoN	91	3.7	1.2	237.63	*Df*	3
	LS	**154**	**4.3**	**0.88**	304.54	Asymp. Sig.	.000 [a]
	Union	120	3.5	1.4	227.13		
	Total	510	3.8	1.2			
Engagement	CoB	145	2.9	1.2	250.96	Chi-Square	8.75
	CoN	91	3.2	1.3	290.36	*Df*	3
	LS	154	2.8	1	235.83	Asymp. Sig.	.033 [b]
	Union	120	3	1	262.1		
	Total	510	2.9	1.1			
Safety	CoB	145	3.9	1.3	274.06	Chi-Square	6.83
	CoN	91	3.5	1.5	229.78	*Df*	3
	LS	154	3.8	1.2	262.73	Asymp. Sig.	0.078
	Union	120	3.6	1.4	243.3		
	Total	510	3.7	1.3			

Note. Likert-type scale 1 most important to 5 least important.
[a] Pairwise differences detected between LS-all sites, $p < .05$
[b] Pairwise differences detected between LS-CoN sites, $p = .038$

TABLE 4
Workspace and Ambience Needs for Productivity

Function	Site	*N*	*M*	SD	Mean Rank	Test Statistics	
Individual study table	LC	—	—	—	—	Chi-Square	22.1
	CoB	138	2.38	1.36	221.82	*Df*	3
	CoN	67	2.55	1.56	228.56	Asymp. Sig.	.000[a]
	LS	**125**	**1.78**	**1.11**	**168.4**		
	Union	86	2.57	1.55	229.79		
	Total	416	2.27	1.4			

Others studying	LC	—	—	—	—	Chi-Square	10.28
	CoB	109	3.34	2.64	136.23	*Df*	3
	CoN	**37**	**4.51**	**2.48**	**180.03**	Asymp. Sig.	.016[b]
	LS	76	3.55	2.64	145.52		
	Union	63	3.11	2.44	129.92		
	Total	285	3.5	2.6			
Noise privacy	LC	—	—	—	—	Chi-Square	1.72
	CoB	120	3.09	2.24	170.85	*Df*	3
	CoN	66	3.05	2.14	169.96	Asymp. Sig.	0.633
	LS	96	2.91	1.8	172.42		
	Union	66	3.36	2.2	188.7		
	Total	348	3.08	2.1			
Quiet atmosphere	LC	151	2.04	0.83	257.59	Chi-Square	22.82
	CoB	130	2.72	1.93	289.92	*Df*	4
	CoN	68	2.31	1.53	260.68	Asymp. Sig.	.000[c]
	LS	122	1.93	1.37	217.21		
	Union	52	3.1	2.14	311.81		
	Total	523	2.33	1.57			
Visual privacy	LC	—	—	—	—	Chi-Square	0.938
	CoB	97	4.13	2.41	150.37	*Df*	3
	CoN	50	3.78	2	141.28	Asymp. Sig.	0.816
	LS	86	3.72	2.01	139.41		
	Union	95	4.04	2.56			
	Total	287	3.93	2.26			
Onsite food	**LC**	**138**	**2.03**	**0.83**	**161.33**	Chi-Square	88.4
	CoB	110	2.95	1.75	257	*Df*	4
	CoN	50	3.08	0.97	300.25	Asymp. Sig.	.000
	LS	97	3.39	1.51	306.29		
	Union	**86**	**2.62**	**0.923**	**240.3**		
	Total	481	2.73	1.36			
Power outlets	LC	173	2.14	0.69	370.6		
	CoB	149	2.21	1.29	338.21	Chi-Square	40.01
	CoN	83	1.71	0.64	266.44	*Df*	4
	LS	132	1.87	1.01	285.85	Asymp. Sig.	.000
	Union	96	1.78	0.84	274.04		
	Total	633	1.99	0.96			
Library books	LC	72	1.79	0.8	39.86		
	CoB	—	—	—	—	Chi-Square	48.3
	CoN	—	—	—	—	*Df*	1
	LS	35	5.86	2.64	83.09	Asymp. Sig.	.000
	Union	—	—	—	—		
	Total	107	3.12	2.52			

WiFi	LC	239	1.81	0.79	386.14	Chi-Square	19.14
	CoB	149	1.91	1.58	344.23	*Df*	4
	CoN	86	1.51	0.7	319.16	Asymp. Sig.	0.001
	LS	129	1.49	0.75	306.74		
	Union	96	1.71	0.87	354.74		
	Total	699	1.72	1.02			

Note. Respondents were instructed to only rank important items, with 1 being highest. Not all respondents responded to all items.
— information not gathered at this site
[a] Pairwise differences detected between LS-all sites, $p < .005$
[b] Pairwise comparisons detected between CoN-Union/CoB, $p < .05$
[c] Pairwise comparisons detected between LS-CoB/Union, $p < .05$

TABLE 5
Workspace and Ambience Satisfaction Ratings

Feature	Site	*N*	*M*	SD	Mean Rank	Test Statistics	
Overall satisfaction	LC	304	4.4	0.54	359.99	Chi-Square	8.22
	CoB	191	4.4	0.66	391.54	*Df*	3
	CoN	96	4.35	0.858	408.84	Asymp. Sig.	.042[a]
	LS	145	4.5	0.72	360.82		
	Union	114	4.3	0.65			
	Total	754	4.4	0.62			
Size of personal workspace	LC	308	4.28	0.73	408.98	Chi-Square	15.82
	CoB	197	4.38	0.834	463.08	*Df*	4
	CoN	102	4.32	0.869	446.77	Asymp. Sig.	.003[b]
	LS	**159**	**4.49**	**0.745**	493.56		
	Union	123	4.33	0.83	441.98		
	Total	889	4.35	0.79			
Overall aesthetics	LC	—	—	—	—	Chi-Square	21.314
	CoB	197	4.43	0.76	313.24	*Df*	3
	CoN	101	4.46	0.79	319.76	Asymp. Sig.	.000[c]
	LS	157	**4.03**	**1.01**	250.48		
	Union	120	4.14	0.98	268.92		
	Total	575	4.27	0.91			
Noise privacy	LC	—	—	—	—	Chi-Square	15.66
	CoB	194	3.93	1.06	313.51	*Df*	3
	CoN	100	3.5	1.3	263.12	Asymp. Sig.	0.001
	LS	151	3.7	1.23	286.07		
	Union	120	3.49	1.03	246.38		
	Total	565	3.7	1.16			

Overall noise level	LC				427.47	Chi-Square	29.41
	CoB	194	4.05	0.94	454.99	*Df*	4
	CoN	100	3.72	1.3	408.99	Asymp. Sig.	0.001
	LS	**150**	**4.22**	**0.904**	**504.14**		
	Union	120	3.62	1.09	357.06		
	Total	869	3.95	0.998			
Visual privacy	LC	—	—	—	—	Chi-Square	5.2
	CoB	194	3.93	1.02	295.49	*Df*	3
	CoN	100	3.61	1.3	261.87	Asymp. Sig.	0.158
	LS	150	3.87	1.16	293.03		
	Union	120	3.71	1.1	265.52		
	Total	564	3.81	1.13			

— information not gathered at this site
[a] No significant pairwise differences detected between sites, $p > .05$
[b] Pairwise differences detected between LS-LC, $p = .002$
[c] Pairwise comparisons detected between LS-CoN/CoB, $p < .05$
[c] Pairwise comparisons detected between LS-CoB/Union, $p < .05$

TABLE 6
Students' Agreement with Needs Fulfillment

Agreement Statement	Site	*N*	*M*	SD	Mean Rank	Test Statistics	
This space helps me achieve my goals	CoB	189	4.52	0.7	226.27	Chi-Square	1.75
	CoN	96	4.44	0.89	231.14	*Df*	2
	LS	145	4.6	0.53	213.12	Asymp. Sig.	0.416
	Union	114	4.5	0.73			
	Total	448	4.53	0.66			
I feel connected to my peers in this space	CoB	190	4.24	0.96	249.7	Chi-Square	21.18
	CoN	96	4.24	1.09	188.34	*Df*	2
	LS	**145**	**3.8**	**1.05**	230.46	Asymp. Sig.	.000 [a]
	Union	114	4.2	0.76			
	Total	449	4.08	0.97			
I feel as though I am welcome in this space	CoB	190	4.59	0.76	235.33	Chi-Square	3.31
	CoN	95	4.5	0.95	214.12	*Df*	2
	LS	145	4.5	0.81	221.62	Asymp. Sig.	0.191
	Union	114	4.5	0.67			
	Total	449	4.5	0.76			
This space helps me focus on my task	CoB	189	4.48	0.76	226.94	Chi-Square	10.74
	CoN	95	4.31	1.05	242.98	*Df*	2
	LS	**145**	**4.6**	**0.6**	196.95	Asymp. Sig.	.005 [b]
	Union	114	4.3	0.93			
	Total	448	4.5	0.77			

I feel safe in this space	CoB	191	4.73	0.58	226.35	Chi-Square	3.41
	CoN	96	4.68	0.72	234.43	*Df*	2
	LS	145	4.8	0.52	212.71	Asymp. Sig.	0.182
	Union	114	4.7	0.65			
	Total	450	4.7	0.58			
This space supports my ability to complete task	LC	304	4.2	0.78	377.63	Chi-Square	3.19
	CoB	191	4.2	0.79	382.77	*Df*	3
	CoN	96	4.25	0.834	392.57	Asymp. Sig.	0.363
	LS	145	4.3	0.74	349.16		
	Union	114	4.09	0.79			
	Total	754	4.2	0.78			

Note. Likert-type scale 1 most important to 5 least important.
[a] Pairwise differences detected between LS-all sites, $p < .05$
[b] Pairwise differences detected between Union-LS, $p = .007$

APPENDIX D

Focus Group Semistructured Interview Script

Question 1. Introductions and learning needs.

Please introduce yourself.

- What is your major and class standing?
- How many classes are you taking?
- Do you live on or off campus?
- Do you work?

Tell us about your study habits.

- How much time do you spend studying?
- Where do you spend most of your time studying?
- Of everywhere you could go to study, why is this your "go-to learning place"?
- [if they mention multiple study spots, ask them to explain why; perhaps they use different spaces for different tasks]

Question 2. Overall satisfaction and space.

[if they don't mention current building as a main study space, shift them toward talking about it]

- What would you say are the best and worst aspects of this building?
- Is there anything you wish you could do or do better while you were here that you can't?
- When asked to rank their needs for completing that day's task, students ranked Accomplishment as the most important, and Safety (freedom from harassment or unwanted attention) as the least important. From the list in front of you, how important are these to you in regard to choosing your work/study space, and how well do the spaces in this building satisfy each of these?

Question 3. Independent vs. group study needs.

- When you are **studying by yourself**, what environmental and space needs do you have? Do you prefer being alone, or with people you know?
- How well does this building support your needs for independent study?
- How often do you work on **group projects**? Is it easy to collaborate with others when you work here? Is there anything that makes it challenging to conduct group work?

Question 4. Preliminary findings.

In our survey, we asked students to identify what they were working on that day. Most respondents stated they were working on coursework alone. Additionally, students ranked noise privacy and a quiet atmosphere as the most important ambiance features for their productivity, and many made comments desiring more quiet study spaces.

- This building seems very dedicated to collaborative learning spaces—are there ways the spaces could be improved to better support individual learning? Should those desiring quiet go somewhere else for this type of atmosphere?

Question 5.

Finally, are there any additional comments or observations you would like to make about the specific building?

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Why Objects Matter in Higher Education

Joanna Cobley

Integrating artifacts into the curriculum can increase students' confidence when working with historical fragments. This article provides insight into what happened when students engaged with authentic historical artifacts for the purposes of learning for the first time. It draws from a range of qualitative data collected during a two-year period while teaching an undergraduate New Zealand history course. Students described learning how to read such objects and gaining skills in how to synthesize information highlighting both the short- and long-term pedagogical benefits stemming from object-based learning (OBL). While OBL needs specialist collections staff to work alongside the teacher, the article closes with encouraging comments about how OBL caters for different age groups, interests, and learning contexts.

Introduction

Object-based learning involves incorporating objects into the teaching and learning setting. The method is popular in the museum and art gallery sector and frequently used in programs designed for the primary school level; this article, however, explains OBL's usefulness in higher education settings. In New Zealand, the United States, and the United Kingdom, the term *higher education* refers to institutions that teach degree-level qualifications such as universities, for example. For the purposes of this article, Rosalind Duhs, University College London, 4-Step OBL learning cycle provides a useful template for integrating OBL in higher education settings: step 1 involves a hands-on tutorial for students on how to handle and read objects. As part of step 2, students reflect on their OBL experience. For step 3, students study objects to form abstract concepts from these reflections by testing their ideas within their discipline-specific knowledge. The last step, step 4, requires students to transfer these ideas to new situations (such as in other courses).[1] Duhs believes that OBL helps university students leap lightly "over knowledge hurdles," and that touch strengthens the learning process.[2]

OBL has a long history in higher education contexts. In fact, teachers' use of OBL methods can be seen as far back as the Middle Ages.[3] As academic disciplines developed, so too did the diversity of teachers incorporating OBL into their practice.[4] The OBL method transfers easily across higher education disciplines, as described in Helen J. Chatterjee and Leonie Hannan's edited book, which demonstrates with OBL examples teaching zoology, art, and archaeology courses.[5] Furthermore, Jane Thogerson et al. revealed that even staff from disciplines not traditionally trained in OBL, such as business and law, expressed interest in using objects in their

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teaching after training in this method.[6] Thogerson's study went beyond the higher education sector, demonstrating that OBL is flexible enough to cater to different types of learners from different educational contexts.[7] Today the main barrier to wider use of OBL in higher education is a general lack of awareness by staff and students in institutions of their special collections.[8] This article addresses that gap by explaining the usefulness of university collections in supporting teaching and learning, as well as research.

Background

"Why Objects Matter in Higher Education" reflects on a two-year study into teaching New Zealand history to undergraduate students using OBL methods, and it builds on the author's previous experience as a museum and art gallery educator and museum development trainer. The study took place at the University of Canterbury (UC) when the author taught "HIST128: New Zealand History from Waka[9] to Weta[10]" during the first semester of 2014 and 2015. It was apparent that the UC's Macmillan Brown Library and Archive collections suited the course content. Therefore, the history teacher (the author), the university archivist, an art curator, and several subject specialist librarians based at UC's Macmillan Brown Library and Archive (the Macmillan Brown) decided to collaborate in a teaching and learning experiment. Its goal was to introduce HIST128 students to OBL and develop their historical research skills by working with primary sources.

The project was shaped by the desire to find out how the students perceived primary source documents and how they incorporated the source material into their coursework assessments to explore a major moment in New Zealand history. More generally, the project tested ideas about how libraries, including archives, museums, and other heritage-focused organizations, engage and connect people to knowledge and information. Considering the theory that novices learn the most in the shortest time span,[11] one motivation was to provide insight into what happened when undergraduate students participated in OBL for the first time. Another motivation was to investigate OBL's versatility. This was founded on the idea that students engage more through sensory, tactile, visual experiences if combined with an inquiry-driven activity.[12]

The methodology section outlines the decisions that shaped the framing and logistics of the study, including research ethics, how the different exhibits for the study were selected, notes about the class context such as student demographics, and the course content, mode of instruction, assessment and desirable learning outcomes. The results draw from a range of qualitative data collected during the two-year period curated into six "collective stories" about teaching and learning. Following Laurel Richardson's approach of creating collective stories allows explanations and understandings to take place—*the individual is still the central character, but most significant is that there are transformative possibilities in the collective story*.[13] Using student coursework (such as OBL assignments and exam responses) and class discussions, as well as informal conversations including emails with the history teacher as evidence, the first five stories feature the experiences of undergraduate students learning how to unravel the mystery behind the objects and primary source documents. Students described two distinct phases: stories 1 and 2 touch on the fieldwork phase, which involved immersion with the primary source material, and stories 3 and 4 describe the write-up phase, where students learned to synthesize their fieldwork immersion with the secondary literature. In story 5, students consider the value of the OBL experience when they understood they had developed lifelong

skills. Story 6, the last story, includes observations from the academic librarians, archivist, and history teacher involved in the project. Collectively, these stories highlight how sensory experiences facilitate understanding. Students gained skills such as how to read historical fragments, and they enjoyed the tactile learning context (for example, engaging senses such as sight, sound, and touch). They also valued learning how to work independently. These findings serve to enrich our understanding about the significance of OBL in higher education; however, some explanation about OBL is required before unpacking its usefulness in higher education contexts and beyond.

Literature Review

OBL in Higher Education Contexts: Forgotten and Underutilized?

While the practice of teaching with objects within higher education has a long history, Marta C. Lourenço argues that research into the historical contribution that university collections make to the teaching and learning experience is less studied. This invisibility within the literature places university collections and the OBL method at risk of remaining undervalued and university special collections not being used enough.[14] Even those trained in OBL can forget to use it in their teaching, as Christina Kreps, University of Denver, confessed when she started using university museum collections and exhibitions to provide students a multisensory and socially engaged learning experience.[15] Even though the OBL method transfers easily across higher education disciplines, a general lack of awareness by both faculty and students of such collections remains the biggest challenge for academic librarians today.[16] Fortunately, research also shows that university lecturers unfamiliar with OBL methods expressed interest in learning how to integrate objects into their teaching.[17] To address these challenges, and more, the Association of College and Research Libraries (ACRL) commissioned two separate reports: one published in 2010 addressed value and another in 2017 looked at impact. Both found that, when academic libraries enhanced the teaching and learning experience, teachers and students felt invested in it, and some may even become future library advocates.[18]

Some Important Notes about Academic Libraries and Their Specialist Staff That Support OBL

From a teaching point of view, OBL is a collaborative endeavor requiring input from experts (such as special collections librarians, curators, and archivists) to facilitate the students' hands-on engagement with items from the university collections.[19] From an academic library perspective, collaborating with faculty on OBL projects promotes the university special collections, fosters a community of future users, and provides professional development opportunities for staff. For example, Pablo Alvarez, as Rare Books and Special Collections Curator at the University of Rochester, NY, has infused his specialist knowledge into courses in history, English, library & information studies, as well as the history of science.[20] Importantly, Alvarez also talks of how enjoyable it was to collaborate with faculty and students on OBL projects. Furthermore, Alvarez believed learning more about his institution's collections was another added benefit of OBL collaborations.[21]

Research also shows the shorter- and longer-term pedagogical benefits of OBL. For example, a five-year study on undergraduate liberal arts students' early exposure to special collections in their courses reported they had more confidence to investigate other forms of material evidence in the future. Valerie A. Harris and Anne C. Weller, who based their study

on the University of Illinois at Chicago (UIC) Special Collection, argued that academic librarians and archivists play an important role nurturing those lifelong skills. Harris and Weller's study also links increased outreach activities by UIC Special Collections staff with an increased use in services over time. Other important factors cited by Harris and Weller include "good service," which helps form long-term connections with students and faculty wishing to use the collections.[22] In fact, success with one faculty member using OBL could spur another to consider incorporating the university special collections into their courses. These same themes appear in the results section of this article; first, however, the OBL method requires further explanation.

Unpacking OBL

Objects and their stories fascinate people of all ages.[23] Since the 1980s, a resurgence of interest in material culture has boosted the significance of university special collections for teaching, learning, and research,[24] and today there are as many variations of the OBL method as there are practitioners.[25] It is even possible to teach oneself the method simply by learning how to read objects and making careful, reflexive, and critical connections between the object and its broader historical context.[26] In addition, OBL is flexible enough to cater to different types of learners from different educational contexts.[27] For teachers new to OBL, Duhs' 4-step method is a useful template to follow.[28] Step 1 involves a practical, hands-on OBL tutorial where, working in small groups with the university special collections staff, students learn how to handle and read objects. Step 2 requires students to reflect on their OBL practice in preparation for step 3, where students test their ideas through some form of formal OBL course assessment. Step 4 involves OBL skill transfer; this last step occurs sometime afterward in a different teaching and learning context.

Duhs' 4-Step OBL method builds from David Kolb's theory that "learning is the process whereby knowledge is created through the transformation of experience."[29] In turn, Kolb was shaped by John Dewey's idea that the individual discovers by experience to construct their own understandings (that is to say, constructivism) and by Jean Piaget's theory that children take an active role in their learning.[30] Over the decades, museum and art gallery educators have adapted these ideas into hands-on learning programs, mostly aimed at school-aged children. Research highlights how the immersive nature of OBL activities arouses multiple senses (such as looking, listening, and touching), which in turn stimulates dialogue (for example, language and analysis).[31] These same educational concepts also apply to OBL in higher education contexts by replacing the traditional lecture-theatre model and simulating fieldwork instead.

Although not essential to the successful delivery of OBL, some higher education venues such as the University of Melbourne have purpose-built OBL laboratories. Andrew Jamieson, a senior lecturer in classics and archaeology who uses the lab, described OBL as an "active form of learning" and believed that it led to "better results for students."[32] As one University of Melbourne OBL student said: "I just cannot go past the immense aid the objects and practical exercises were toward learning."[33] In particular, the immersive process of OBL helped the student understand abstract concepts better. Objects stimulate the senses.[34] Susan Guinn-Chipman et al. use the term "*haptic* exploration" to explain how touch interacts with movement and vision to produce an enhanced learning experience for students.[35] Likewise, the OBL research featured in Chatterjee and Hannan's edited collection clearly demonstrates different ways that sensory learning leads to higher levels of student engagement. This is

because hands-on, inquiry-based activities not only deepen a student's understanding, using objects often injects an element of playfulness into the learning process for the students.[36]

Methodology

Research Objectives: Developing Undergraduate Students' OBL Skills for Now and the Future

This study exposed students to the first three of Rosalind Duhs' 4-Step OBL learning cycle (that is, concrete experience, then reflection, followed by doing). There was also the possibility of early evidence of the last step, skills transference. The teaching objectives focused on helping students to develop their history research skills by providing an opportunity to use primary sources.[37] The objective for the academic library team was to promote the Macmillan Brown collections and, more generally, to help prepare students to do advanced research as future archive and library users. These ideas follow from the tradition of librarians and archivists wanting to ensure access to the collections while meeting the preservation needs of such items so that they are available for future generations.[38] Most of the Macmillan Brown Library material is held in closed stacks in its basement, with its archive documents stored in another building nearby. This inaccessibility of material makes relationship building between students, teachers, and researchers very important in enabling the finding and accessing of appropriate reference material required. Therefore, the academic library team's research objectives link to a larger conversation about how to engage and connect people to the wealth of knowledge and information held in university heritage-focused collections.

Background to UC, the Course, and the Macmillan Brown Holdings

This study centers on "HIST128: New Zealand History from Waka to Weta" taught at UC during semester 1 in 2014 and 2015. The course introduces the essentials of New Zealand history, structured around themes of Māori and Pākehā[39] conflict and collaboration, the development and tensions of a "new world" colonial nation, and New Zealand's changing place on the world stage. New Zealand undergraduate history courses have always been small (that is to say, fewer than 50 students). However, this was magnified in 2010 and 2011 when a series of severe earthquakes hit the city of Christchurch and the greater Canterbury region of New Zealand's South Island, UC experienced a sudden drop in student numbers. Combined with the loss of teaching spaces, this created an opportunity to rethink the curriculum and mode of delivery. Small classes provided an opportunity to use the OBL method. The HIST128 course content also matched well with the collections housed at the Macmillan Brown. The Macmillan Brown holds documents and artifacts important to New Zealand, the Pacific, and Canterbury's history.[40] The cultural heritage collection includes architectural drawings, photographs, rare books, audio recordings, and ephemera as well as UC's art collection and a range of unpublished material. The archive holds trade unions' papers and documents related to voluntary organizations, professional associations, and other local groups and individuals active in social change and politics, as well as writers and artists' papers, personal and family papers, and documents connected to UC's history.[41]

Taking an Action Research Methods Approach

During the two-year period, the teacher and specialist Macmillan Brown staff collaborated as a "community of practitioners" by adopting an action research methods approach: a cyclic

process involving planning, action, observation, and reflection to improve program delivery.[42] Action research methods work well in educational settings, as critical reflection happens on a number of levels. Students reflect with fellow students on their experiences; students reflect in their coursework about how well they used their OBL training; the teacher reflects with the Macmillan Brown staff on the effects of the OBL program and on the effectiveness of action research for staff development and curriculum change.[43]

The Nature of the Collaboration: Hands-On OBL Tutorials Using Items from the University Special Collections

The collaboration involved holding two practical hands-on OBL tutorials at the Macmillan Brown (for example, step 1 of Duhs' 4-Step OBL learning cycle). The tutorials prepared students for their OBL assessments based around rupture points in New Zealand history. Nineteenth-century New Zealand earned its reputation as an innovative social laboratory, and 1890s Christchurch in particular was a hotbed of radicalism. For example, Kate Sheppard, President of the Women's Christian Temperance Union, spearheaded the campaign for universal women's enfranchisement, introduced in 1893, and William Pember-Reeves championed the Industrial Conciliation and Arbitration Act of 1894, which encouraged the formation of trade unions and regulated wages and work conditions.[44] The Macmillan Brown Archive holds documents related to these events and more. These topics exposed students to diverse viewpoints that still have relevance today. To tempt the students to engage, the Macmillan Brown staff selected visually interesting sources such as diaries, journals, paintings, and posters. With students grounded by the assigned tutorial readings,[45] small-group discussions took place around a table with a range of documents and objects laid out for students to see—and touch, if possible. The specialist library staff introduced students to important concepts such as how to handle historical documents and the different ways of working with primary sources,[46] as well as providing insights into the gallery, library, archive, and museum (GLAM) sector as a future work option. Reflecting beliefs similar to those outlined in Harris and Weller's study, the Macmillan Brown staff placed value on good customer relations, believing this would facilitate ongoing use of their services. Highlighting the New Zealand context of this study, Macmillan Brown staff describe this using the important Māori concept *whakawhanaungatanga*, which is the process of connecting and relating to people in culturally appropriate ways.

Integrating OBL into Student Learning and Course Assessments

The HIST128 course work component required students to complete two primary source assignments and an end-of-course examination (for example, steps 2 and 3 of Duhs' 4-Step OBL learning cycle). Through conducting their own investigations, students had the opportunity to learn how to read and handle historical evidence, then synthesize their readings of the primary source material with their critical understanding of the secondary literature. Students were asked to describe the item (what is it? who produced it? when was it written or produced?), evaluate the broader context of the source (how did it come about?), and consider whether the ideas embedded in the artifact were still relevant today. Students were free to choose whatever issues and angles they wished to explore on a significant moment in New Zealand history based on the themes explored in lectures (such as migration, war, social reform, trade unionism, feminism, race relations, and homosexual law reform). In addition, the end-of-course examination included a section that required students to demonstrate their

understanding of doing history. Questions related to how students perceived primary source documents and how they incorporated the source material into their course work assessments.

Notes on Research Ethics, the Student Population, and Data Collection

With research ethics approval from the university, the history teacher collated data drawn from the students' primary source assignments and examination responses. The research ethics consent process required that the history teacher brief the students about the project in lectures and during tutorials. Thirty-eight students enrolled in 2014 and 28 in 2015, of those 46 students (in other words, 70 percent), agreed to participate in the project. Students opted in by signing a consent form and leaving it with their exam answer book.[47] Most HIST128 students had an interest in New Zealand history. The majority were first-year liberal arts students, with the addition of some from other disciplines such as business and law. A small number of these first-year enrollments were mature students. A number of the students enrolled in HIST128 planned to pursue a teaching career, and some were interested in working in the heritage sector. All students were novice archive users. What made the student cohort so dynamic was that nearly one third were Americans on various study-abroad schemes. These young Americans sought to combine cultural activities with their studies and the HIST128 course content and assessment format accommodated that interest. Being outsiders to New Zealand, the Americans asked questions that made New Zealand history appear strange and unfamiliar.

Results Retold as Teaching and Learning Stories

A narrative research approach suited the type of data gathered. Qualitative data included the primary source assignments and direct quotes selected from student exam responses. The exam questions related to steps 1, 2, and 3 of Duh's OBL method (for example, step 1 was the practical hands-on OBL tutorial, and steps 2 and 3 involved students doing OBL assessments that included reading secondary texts as well as critical reflection). Class discussions, as well as informal conversations and emails between students and the history teacher, provided important insights and served as background information only. Although the history teacher was the author of these stories, the intention was to capture the collective experiences of a student cohort, several academic librarians, an archivist and art curator as well as the teacher and in this way provide a vehicle to inspire others to try OBL. The first five stories feature undergraduate student OBL experiences. The requirement to preserve student confidentiality influenced the decision not to include images of students engaged in OBL and to use pseudonyms. The academic librarians', archivist's, and teacher's observations about the OBL experiment shaped the last story. The Macmillan Brown staff emailed their collective reflections to the history teacher in 2014 and again in 2015.

Story 1: Teena and Crystal Explain How They Learned to Read Material Culture and Make Visitor Observations at Canterbury Museum

HIST128 students with an interest in archaeology based their primary source assignment at Canterbury Museum. They focused on *Iwi Tawhito—Whenua Hou: Ancient Peoples—New Lands* and *Ngā Taonga Tuku Iho o Nga Tupuna: Treasures Left to Us by the Ancestors.* Both exhibitions document the everyday life of ancient Māori prior to European contact, c. 1500 until 1800. *Iwi Tawhito—Whenua Hou* is the first display that museum visitors encounter. It is three di-

FIGURE 1
Canterbury Museum Diorama

oramas.[48] Adjacent is *Ngā Taonga,* an extensive display featuring body adornment, tools, rock art and waka ama, an outrigger canoe.[49] Teena and Crystal, both American students, said they immersed themselves "for hours" in the dark space. They described how they studied the dioramas (see figure 1) and then opened the drawers containing neat rows of flints, fishhooks, and adzes.[50] They also observed museum visitor behavior. Teena and Crystal noted that their fieldwork phase involved more than one museum visit, often during the weekend. They were somewhat surprised at how much they enjoyed their self-directed museum experience. Teena and Crystal were most excited about how they acquired a new set of lifelong skills related to the ability to read material culture; they also gained some insight into how visitors experience the museum as a social activity. Crystal, a teacher trainee, felt inspired to ask about a museum practicum when she returned to the United States. She also envisioned museum visits in her lesson plans. Crystal's comments reflect both immediate and long-term benefit from her object-based experience and reinforce Harris and Weller's argument that early exposure to primary source documents gives students confidence to explore other forms of material culture.[51]

FIGURE 2
Watercolor Painting

Story 2: How Hinemoa Used a Watercolor Painting and Her Grandmother's Story to Explore New Zealand Women's WWII Experiences Working on the Land

New Zealand's experience of WWII was another topic that students explored. When WWII broke out, there was much pressure on New Zealand to increase food production to nourish their troops, supplement Britain's pantries, and feed the 100,000 American forces based in New Zealand.[52] In addition, New Zealand wool was used to keep the allied troops warm and dry. The Women's Land Service, aka "Land Girls," were New Zealand's solution to the labor shortage problem. Despite opposition from farmers who wanted experienced men and from farmers' wives who had the expectation of the Lands Girls' support in domestic chores rather than on the farm, when:

> "23,000 men left the farming industry to serve overseas; 4,500 women stepped into their shoes. And production in every area of agriculture increased. This wasn't because of better machinery—the government had commandeered all farm trucks, spare horses and weapons."[53]

> After the war, some Land Girls returned to the city but many stayed on, and some became farm managers. The Land Girls service was not officially recognized; and government military histories barely mention them.

Hinemoa, a mature student, combined visual culture and oral history methods for her investigation into Land Girls who worked on New Zealand farms as part of the war effort. Hinemoa gained access to *Woolshed Interior* (1944), a large watercolor by Juliet Peter (see figure 2), which is part of UC's art collection.[54] The artwork captures Peter's Land Girl experience on a Canterbury high country sheep station. Hinemoa said she scheduled multiple appointments to look at the painting "without rush."[55] Hinemoa also interviewed her grandmother who had worked on the family farm during WWII but not as an official Land Girl. Hinemoa then compared her grandmother's experience with her interpretation of Peter's painting.[56] Hinemoa said that looking at *Woolshed Interior*—depicting three women dressed in hardwearing work gear sorting wool, which is such hot, physical, dirty work—combined with her grandmother's personal story, helped her "emotionally connect" to her chosen topic. However, Hinemoa also noted that "in order to understand the importance of the primary sources one must supplement it with contextual background knowledge."[57] Hinemoa's story demonstrates three of the four steps of Rosalind Duhs' 4-Step OBL learning cycle discussed earlier: step 1 involves students learning how to handle and read objects; step 2 requires students to reflect on their OBL practice so that (step 3) they can test their ideas through some form of formal OBL course assessment. Ultimately, Hinemoa successfully synthesized her fieldwork insights with the secondary literature to produce a deeply insightful piece of writing.

Story 3: Mark and Allan Describe the Wonder of Working with Archival Documents

Allan and Mark, both non–liberal arts students, highlight the tactile experience that stems from working with archive documents. Allan, a business student, worked with trade union papers related to the 1951 Watersider strike, New Zealand's longest labor dispute.[58] This took place during the Cold War era when New Zealand was a small, conservative society of just 2 million and the post-WWII economy was booming yet the cost of living kept increasing, and wharf workers demanded better pay. The strike, or lockout, lasted 151 days and involved more than 22,000 workers. Those who opposed the strikers branded them "Commies, traitors and terrorists."[59] In his exam response, Allan described how: "Reading these newsletters that were each printed on different colored paper, typing on a slant with an obvious homemade feel to them was fascinating." Even though he also drew from insider accounts for his assignment,[60] Allan felt physical objects made the past feel more tangible.[61] He thought that he gained "a much better feeling for what was happening in this era for the striking workers."

Mark, a law student whose topic related to nuclear disarmament, looked at "The Harold Evans Papers."[62] Harold Evans, a retired Christchurch district court judge, along with peace activist Dr. Kate Dewes, initiated The World Court Project in the 1980s; their objective was to progress nuclear disarmament through international law.[63] A recurrent theme across the study related to how the physical artifact served as a portal into the past; for example, Mark said his archive immersion allowed "me to go back in time to when they

were first made." Based on Allan's and Mark's comments, the tactile experience of working with archive documents drew these students into a more active form of learning compared to their regular coursework.

Story 4: Emily, Maria, and Eleanor Describe How Frustration Turned into a "Learning Moment" When Learning How to Interpret Archival Documents Such as Political Newsletters, Pamphlets, and Ephemera

Self-directed learning in unfamiliar learning environments such as the archive challenged some of the students. When met with boxes stuffed full of documents, first-time archive users often feel overwhelmed, especially if students feel time-poor. For example, Emily's first thought was that "Archives were hard to access and it was also hard to find anything specific." Maria echoed Emily's sentiments: "It was difficult to find relevant and helpful information, I had to skim the entire thing [newsletters], which could become dull and frustrating… the sources had no global context and so were sometimes difficult to integrate and interpret." Students, motivated by coursework deadlines, found solutions. Maria and Emily, who often studied together, developed some ways of managing the wealth of archival material. For example, Maria explained how, "Ultimately I just picked a random issue…"

Eleanor, another student, recounted how she managed to break through her experience of archive overload:

> Perhaps even more helpful was just skimming the magazine itself, reading the headlines and other articles or letters, as they put the Vietnam [War] Protests into context. … Seeing headlines about developments into women's activism and Maori rights provided me a first-hand representation of the other issues at the time.

Eleanor read the Progressive Youth Movement (PYM) papers,[64] a radical counterculture movement active in anti-Vietnam War protests in the 1960s–1970s, and then combined it with an insider account, *Bullshit & Jellybeans*, by political activist Tim Shadbolt. Shadbolt was a key PYM key member and leader of the Auckland University Society for the Active Prevention of Cruelty to Politically Apathetic Humans (AUSAPOCHPAH); imprisoned for bad language in public, unpaid fines, and other antisocial behavior associated with his political activism.[65] Students found room to express ironic humor; for example, Eleanor labeled *Bullshit & Jellybeans* as "uncut," as Shadbolt's opening pages recount a sexual fantasy while in prison.[66] For most students, frustration turned into opportunity to critically reflect on the processes of doing history, as Eleanor commented:

> "The primary source assignments challenged me to consider new types of sources, draw on my own conclusions based on original pieces of evidence, and learn how to connect diverse materials together in one, organized context."

Eleanor also said, "Through these assignments I learnt how to think, question bias, and draw connections independently." Like Hinemoa in story 2, Eleanor had learned how to reflect and test her ideas with discipline-based knowledge. Even students who had less time to linger in the archives such as Emily found a way—sifting "through a pile of trivial matters to find

something worth of your particular argument," she noted how "This can be time consuming but when you do find something, then it's very rewarding."

Story 5: Allan and William Consider the Impact of the OBL Exercises on Their Learning

An interesting aspect of the study findings related to the high level of student engagement. Students who invested large amounts of time in the archive said they felt enriched from the experience. The immersive nature of the OBL experience had an affective impact, helping students explore their own attitudes toward their own learning. For example, Allan, the business student featured in story 3, said, "I really enjoyed my many hours in the MB library exploring NZ history." He slowed down and thought of different ways to look at the Waterfront Strikers archive documents, such as wondering, "if these newsletters were leaked to the police or government officials who were opposed to the strike," and what their response might be toward the content and tone of the strikers' literature. William, another student who reflected on his learning process, demonstrated he understood OBL as an historical method, writing in his exam paper: "In order to produce a good piece of historical writing you need to use a wide range of sources" before concluding "although historical research takes a lot of time […] the best way to learn is to do it." Allan and Williams' reflections confirm the OBL literature—that the greatest learning happens for first-time users over a very concentrated period.[67] Students certainly recognized immediate benefits from OBL, the focus of this study.

Story 6: The Academic Library Staff and History Teacher Reflect on the Project's Shortcomings and Successes

The process of observation and reflection was useful to the academic library staff who felt vulnerable when they sensed some students using the Macmillan Brown collections were overwhelmed or confused by the primary source material. Behind the scenes, they debated whether to "solve all of these [student] frustrations."[68] Their conversation helped them understand that: "not all the limitations students found in the primary sources were intrinsically problematic—they learnt much dealing to these limitations—skimming, seeking counter views, using secondary sources for wider context, identifying the producer of material." By means of Duhs' terminology, students managed to leap over most learning hurdles, as Maria (featured in story 4) summarized: "My main limitations were … deciding what information to use…. The primary sources were interesting and the staff very helpful." Other successes include sparking student interest in the idea of a museum internship or practicum placement (Crystal is example of this).

While this study focused on the short-term benefits of OBL and exposed students to the first three of Rosalind Duhs' 4-Step OBL learning cycle (for example: concrete experience, then reflection, followed by doing), longer-term benefits such as transference, the last step, were also evident. For example, over the two-year study period, some students continued developing OBL skills and some became frequent Macmillan Brown users.[69] One HIST128 student, Catherine, applied her newly acquired OBL skills in another history course with the same teacher in the following semester. In this instance, Catherine combined oral history methods with cookery books from the Macmillan Brown collection for an essay about New Zealand food traditions. As the archivist observed: "We believe our project helped people feel confident about researching in the library and archive." Like Alvarez, the archivist in-

vested in the project because of its pedagogical value: "Working with motivated students, seeing 'history' become real for students. Witnessing their engagement and excitement was very rewarding." The way the academic library staff worked together also contributed to a great sense of satisfaction, as the archivist said: "What we really enjoyed was collaborating as a team; the sum total is greater than the individual parts." The OBL project also fostered future library advocates, as one librarian recounted: "We also saw student interest grow and some started to think about museum, library or archive work as a future occupation." Such students were identified in the "ACRL Value of Academic Libraries" (2017) report as an important sector advocate group.[70]

Conclusions: Gaining a Deeper Appreciation of OBL's Significance

This article describes undergraduate students' first-time OBL experiences. The stories show how students enjoyed the practical exercise of doing history; they gained confidence working with historical fragments, became more independent in their study habits, and learned how to think critically. The action research model established a strong and fun culture of teamwork between the academic library staff who supported the OBL project and the history teacher. Sharing reflections as a team, lessons included ideas about how to streamline processes. The project aligned with the academic library's focus on fostering students' object-based skills early in their academic career. The teacher valued the opportunity to incorporate archival documents into the New Zealand history curriculum to help students develop historical research skills. The course assessments developed students' understanding of OBL as well as discipline-based knowledge. The OBL tutorials gave basic lessons about how to handle objects and how to read historical documents (step 1 of Duhs' 4-Step OBL learning cycle). Students then applied this new knowledge to their own object-based inquiry, and their exam responses reflected on the overall OBL experience (steps 2 and 3). Some students, like Catherine, transferred their skills to other history courses (step 4). A fascinating result was that a sizable minority of learners had a transformative experience that helped them to "get" the temporality and physicality of history as a discipline. Getting students to develop a bit of true passion for their discipline is worth celebrating!

How then could the scope of this OBL project broaden? One idea involves collaboration with other collection-based organizations and the inclusion of teachers from other learning organizations in the region using OBL methods (such as supervision of student internships, practicums, or research projects). Another way is expanding the number of practitioners and scope of institutions involved at a national level, similar to the study by Thogerson et al., to help OBL practitioners better understand student learning as well as find ways to improve OBL methods. OBL is suited to small groups on topics related to the collection strengths. The model can adapt to the short-course format of summer or winter school timetables, with classes held onsite where the university special collections are housed. Beyond the university, galleries, libraries, archives, and museums can roll out a short object-based course for different communities of learners as part of their outreach program. Ultimately, educators from most disciplines could run a similar objects-based program. If teaching large classes, simply liaise with your academic library staff to discuss how to access the collections while meeting the preservation needs of such items. Integrating artifacts into the curriculum is well worth the effort. As the participant William, the New Zealand history enthusiast, said, "Objects bring history to life."

Acknowledgments

So many people helped this article come to life. Katherine Pawely, Archivist, Auckland University, supplied her list of top 10 reads, which got the literature review started. Professor Mike Grimshaw, UC, read an early, rough draft; the *C&RL* reviewers provided insightful comments that helped on so many levels; and Brian McElwaine, UC Subject Librarian, and Dr Esther McNaughton, Education Team Leader, the Suter Art Gallery, served as critical friendly readers of the final version. Special thanks to the Macmillan Brown team and HIST128 students of 2014 and 2015, whose enthusiasm and commitment made this OBL project a memorable experience. Lastly, I wish to thank Professor Katie Pickles for the opportunity to teach this course and the encouragement to transfer my museum praxis into the university context. Nga mihi nui.

Notes

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2. Duhs, "Learning from University Museums and Collections in Higher Education."

3. Marta C. Lourenço, "Contributions to the History of University Museums and Collections in Europe," *Museologia* 3 (2003): 17–26.

4. Lourenço, "Contributions to the History of University Museums and Collections in Europe."

5. Helen J. Chatterjee, Leonie Hannan, and Linda Thomson, "An Introduction to Object-Based Learning and Multisensory Engagement," in *Engaging the Senses: Object-Based Learning in Higher Education*, eds. Helen J. Chatterjee and Leonie Hannan (Farnham, Surrey: Ashgate, 2015), 1–18.

6. Jane Thorgersen et al., "Creating Curriculum Connections: A University Museum Object-Based Learning Project," *Education for Information* 34 (2018): 113–20.

7. Thorgersen et al., "Creating Curriculum Connections."

8. Thogersen et al., "Creating Curriculum Connections," 116–19; see also Chatterjee et al., "An Introduction to Object-Based Learning and Multisensory Engagement."

9. Waka is a traditional Māori wooden canoe with East Polynesian origins; they range in size from small fishing canoes to larger, decorated war canoes up to 130 feet long. See Hoturoa Barclay-Kerr, "Waka—canoes," *Te Ara: the Encyclopedia of New Zealand* (12 June 2006), www.TeAra.govt.nz/en/waka-canoes.

10. Weta or wētā is the common name for about 100 different giant flightless crickets endemic to New Zealand; see "Wētā," Department of Conservation Te Papa Atawhai, https://www.doc.govt.nz/nature/native-animals/invertebrates/weta/ [accessed 12 January 2021]. However, it also refers to the name of Wellington-based Weta Workshop whose designs shaped the rich visual fantasy of the *Lord of the Rings* film trilogy (2001–03), produced by Peter Jackson. Each year New Zealand history courses attracted American students; a number said watching *Lord of the Rings* was a factor inspiring them to visit.

11. For further discussion on novice learners from a museum and art gallery education perspective, see Esther Helen McNaughton, "The Language of Living: Developing Intelligent Novices at The Suter Art Gallery" (Master's thesis, Massey University, 2010); see also Chatterjee et al., "An Introduction to Object-Based Learning and Multisensory Engagement," 13.

12. Chatterjee and Hannan, *Engaging the Senses*; Duhs, "Learning from University Museums and Collections in Higher Education"; Thorgersen et al., "Creating Curriculum Connections."

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16. Thogersen et al., "Creating Curriculum Connections"; Chatterjee et al., "An Introduction to Object-Based Learning and Multisensory Engagement."

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24. Kreps, "University Museums as Laboratories for Experiential Learning and Engaged Practice."

25. Chatterjee and Hannan, *Engaging the Senses*; Duhs, "Learning from University Museums and Collections in Higher Education," 184; Thorgersen et al., "Creating Curriculum Connections."

26. Shuh, "Teaching Yourself to Teach with Objects."

27. Shuh, "Teaching Yourself to Teach with Objects"; Thorgersen et al., "Creating Curriculum Connections."

28. Duhs, "Learning from University Museums and Collections in Higher Education."

29. Duhs' diagram of Kolb's experiential learning cycle is referenced in Jenny Marie, "The Role of Object-Based Learning in Transferable Skills Development," *University Museums and Collections Journal* 3 (2010): 188. Kolb's model also appears in Chatterjee and Hannan, *Engaging the Senses*, 2.

30. David A. Kolb, *Experiential Learning: Experience as the Source of Learning and Development* (Englewood Cliffs, NJ: Prentice-Hall, 1984), 1–19, 38, 42. For detailed analysis of the constructivist museum, see Kodi R. Jeffery-Clay, "Constructivism in Museums: How Museums Create Meaningful Learning Environments," *The Journal of Museum Education* 23, no. 1 (1998): 3–7, and George E. Hein, "The Constructivist Museum" (1995), http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.461.3236&rep=rep1&type=pdf [accessed 14 March 2019].

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47. The teacher advised the examination invigilators about this additional process.

48. *Iwi Tawhito—Whenua Hou: Ancient Peoples—New Lands*, Canterbury Museum, https://www.canterburymuseum.com/whats-on/iwi-tawhito-whenua-hou/ [accessed 13 January 2021].

49. *Ngā Taonga Tuku Iho o Ngā Tūpuna: Treasures Left to Us by the Ancestors,* Canterbury Museum, https://www.canterburymuseum.com/whats-on/nga-taonga-tuku-iho-o-nga-tupuna/ [accessed 13 January 2021].

50. In 2020, in response to the Black Lives Matter movement, local iwi and members of the public called for the removal of the dioramas. The Canterbury Museum responded by partially screening the displays and issued an apology. The new label explains that the dioramas were built in the 1980s and represented a "colonial mind-set." The director said the diorama were due an upgrade but the Canterbury quakes set this plan back, Cate Broughton, "Complaints About Māori Exhibit not Addressed for Four Years," *Stuff* (15 June 2020), https://www.stuff.co.nz/the-press/news/300035413/complaints-about-mori-exhibit-not-addressed-for-four-years.

51. Harris and Weller, "Use of Special Collections as an Opportunity for Outreach in the Academic Library."

52. Deborah Montgomerie, "GI Joe Down Under: American Infantrymen in New Zealand During World War II," *New Zealand Journal of History* 34, no. 2 (2000): 262–76; Jock Phillips with Ellen Ellis, *Brief Encounter: American Forces and the New Zealand People 1942–1945: An Illustrated Essay* (Wellington, NZ: Historical Branch, Department of Internal Affairs, 1992).

53. Katie Milne, Federated Farmers President, "The Land Girls of World War Two: an Anzac Day Tribute," www.fedfarm.org.nz/FFPublic/News_and_Media/News/2018/The_Land_Girls_of_WWII_-_an_Anzac_Day_tribute.aspx [accessed 13 January 2021].

54. Juliet Peter, *Woolshed Interior* (1944), watercolor, 645 x 835 mm, UC/SFA/072, University of Canterbury Art Collection.

55. This idea of slowing down for time-taking purposeful interactions resonates with similar trends such as slow thinking.

56. Hinemoa's grandmother passed away just some months after the interview.

57. Hinemoa read Dianne Bardsley, *The Land Girls: In a Man's World, 1936–1946* (Dunedin, NZ: Otago University Press, 2000), which also included oral histories.

58. Ministry for Culture and Heritage, "The 1951 Waterfront Dispute," https://nzhistory.govt.nz/politics/the-1951-waterfront-dispute [accessed 13 January 2021].

59. Ministry for Culture and Heritage, "The 1951 Waterfront Dispute."

60. John Bates, *1951* (Auckland, NZ: Bates Productions Limited, 2001).

61. "1951 Watersider Strike Papers," Wellington Waterside Workers Union archive documents, Macmillan Brown Archives, University of Canterbury, 30/3/51.

62. "Harold Evans Papers," Macmillan Brown Archives, University of Canterbury.

63. "The World Court Project," Aotearoa/New Zealand 30 Years Nuclear Free, https://rune.une.edu.au/web/bitstream/1959.11/16790/5/open/SOURCE03.pdf.

64. "Progressive Youth Movement Papers," Vietnam War protest, Macmillan Brown Archive.

65. Tim Shadboldt, *Bullshit & Jellybeans* (Wellington, NZ: W.A. Taylor, 1971), 97–104. Shadbolt was later elected Mayor of Waitemata in 1983 and 1986 then Mayor of Invercargill from 1993–95, voted in his second term in 1998, and re-elected since.

66. Shadboldt, *Bullshit & Jellybeans*, 12–13.

67. Chatterjee et al., "An Introduction to Object-Based Learning and Multisensory Engagement."

68. Email correspondence with Macmillan Brown staff in 2014 and 2015.

69. Three to four years postproject informal conversations between the history teacher and some student research participants revealed how they felt *manaakitanga*, a strong sense of belonging, at the Macmillan Brown.

70. ACRL, "Value of Academic Libraries."

Fostering Critical Thinking in First-Year Students through Information Literacy Instruction

Mandi Goodsett and Hanna Schmillen

As students encounter high volumes of misinformation in online environments, cultivating critical thinking is an important goal of information literacy instruction, especially for first-year college students, who are just beginning to develop cognitive habits in their early years of postsecondary schooling. However, this study demonstrates that the relationship between critical thinking and information literacy is not obvious, and relatively little has been recently studied regarding how academic librarians incorporate critical thinking into their library instruction. Through a series of in-depth interviews, the researchers sought to understand how academic librarians who primarily instruct first-year college students conceive of, teach, and assess critical thinking skills in relation to information literacy.

Introduction

Critical thinking, while often used as a buzzword, is clearly relevant to the mission and expertise of librarians who teach, as well as the ACRL Framework for Information Literacy.[1] Especially now, as students encounter misinformation, as well as radically conflicting viewpoints in the media and among politicians and leaders, librarians are in a prime position to develop the skills necessary to empower students to navigate this confusing information environment. First-year college students are a particularly important population to target for developing critical thinking skills, as they are spending their first years of postsecondary schooling building foundational skills and cognitive habits.[2] However, it is not clear from the literature how comfortable academic librarians are with teaching critical thinking or what their attitude toward the concept may be. This study seeks to explore how academic librarians who primarily teach first-year students conceive of, teach, and assess critical thinking skills in relation to information literacy instruction.

Objectives

- To explore the attitudes of librarians who teach first-year students toward teaching critical thinking
- To define critical thinking and its relationship to information literacy as understood by librarians who teach first-year students

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- To determine how much, and in what ways, academic librarians incorporate critical thinking instruction and assessment methods into their information literacy first-year student instruction

To achieve the study objectives, the researchers conducted 21 interviews with librarians who teach first-year students on a regular basis, analyzed their responses, and used a qualitative framework to identify themes related to the study objectives.

Literature Review

While critical thinking theory and instruction have been a subject of study for decades, the relationship between critical thinking and information literacy has not been extensively explored in the library literature. With the development and increasing use of the ACRL Framework for Information Literacy, which emphasizes higher-order thinking concepts, it is clear that academic librarians may have a significant role to play in helping to reinforce and/or develop the critical thinking skills of college students. This is especially true of information literacy instruction for first-year students, who are still developing cognitively and building a foundation upon which to cultivate their research skills.

There are a great many definitions of critical thinking in the literature.[3] For the purposes of this study, critical thinking is defined as "reason- and evidence-based skepticism that habitually challenges both internally- and externally-generated ideas as a means to guide decision-making, problem-solving, and action."[4] Internally generated ideas are those that an individual has, while externally generated ideas are those that an individual encounters from outside sources. The dual nature of this definition emphasizes the skills of evaluation and analysis, as well as the habits of open-mindedness and metacognition, which result in a decision or action.

Much has been written about critical thinking in the fields of psychology, philosophy, and education. In the realm of philosophy, the focus is on the ideal critical thinker, and philosophers like Richard Paul,[5] Robert Ennis,[6] Peter Facione,[7] Gerald Nosich,[8] and John McPeck[9] have contributed greatly to the understanding of what critical thinking is. Psychologists, such as Deanna Kuhn,[10] Diane Halpern,[11] and Patricia King and Karen Kitchener,[12] tend to theorize about and study the critical thinking behaviors that humans do (and do not) demonstrate. Along with educators, psychologists also research cognitive development and how maturation reflects changes in critical thinking levels,[13] an important consideration when examining critical thinking in first-year college students. The work of both philosophers and psychologists have been applied to the field of education to reveal a number of strategies for encouraging critical thinking. These strategies include, but are not limited to, discussion, inquiry-based learning, the use of real-world problems, the use of graphic organizers, problem-based learning, reflection, and practice of critical thinking skills.[14]

Peak interest in understanding and integrating critical thinking into the curriculum came in the late 1980s,[15] and librarianship's relationship with critical thinking was changing at this time as well. In the 1980s and 1990s, librarians began to see their roles increasingly encompass research instruction. Some scholars at the time expressed concern that these librarians conceived of "bibliographic instruction" as merely helping students use library tools to search for information.[16] This attitude was reflected in the "back to basics" movement of library instruction, which urged librarians to limit their instruction strictly to teaching research tool use.[17] Librarians who resisted this limitation called on their colleagues to move beyond these

simple "point-and-click" skills and to also cultivate critical thinking skills. With the adoption of the ACRL Framework for Information Literacy in 2016, the academic librarian community accepted a guiding document for information literacy instruction that focuses almost exclusively on higher-order thinking skills. While the Framework does not specifically mention critical thinking, the document makes clear that the librarian community has come a long way from merely emphasizing the "basics." Support for higher-order thinking skills are also clearly present in contemporary information literacy instruction models, such as metaliteracy and the CILIP (Chartered Institute of Library and Information Professionals) information literacy definition developed in 2018.[18]

While support for teaching critical thinking skills in library instruction has grown, the relationship between information literacy and critical thinking remains unclear. Some librarians view information literacy as consisting of the concrete skills of locating and using information, which then can be applied using critical thinking skills.[19] Others see the two sets of skills as distinct, but with the capacity to be "meshed" during library instruction.[20] Still others see correlations between critical thinking and information literacy but view critical thinking as internal mental processes and information literacy as the observable behaviors to which critical thinking gives rise.[21] None of these scholars suggest that information literacy and critical thinking overlap significantly, nor imply that the concepts of information literacy and critical thinking are the same.

In the time since the "back to basics" movement, the focus of library instruction has shifted considerably toward a focus on higher-order thinking skills, as demonstrated by the ACRL Framework. However, challenges to teaching critical thinking in information literacy instruction remain, including the librarian instructor's lack of control over the instruction environment/parameters, lack of adequate time in the session, and insufficient formal training in instruction.[22] These challenges can be compounded for first-year student instruction, as librarian interaction with students may be chiefly through general education courses that are large, standardized, and packed with content. First-year students may also have inconsistent prior experiences learning critical thinking skills, making it difficult to teach relevant critical thinking skills to all students in a class.

Despite these difficulties, information literacy instruction is a prime opportunity for librarians to develop critical thinking skills in first-year students. Higher educational institutions generally agree that critical thinking is a key learning outcome for students and an important indicator of success.[23] The focus on critical thinking instruction for first-year students in this study was deliberate for several reasons. First, the positive impact of critical thinking instruction/courses to first-year students has been demonstrated in higher education scholarship.[24] The value of critical thinking instruction early in a student's higher education career helps them to understand what critical thinking is,[25] increases their metacognitive skills,[26] and ensures a scaffolded and equitable approach to these important concepts.

Methods

In this study, 21 academic librarians across the country who teach first-year students were recruited through an open call for volunteers on a variety of listservs. For qualitative research, a sample of 21 is generally considered sufficient to be representative. The volunteer participants were then interviewed following a revised version of the protocol developed by the California Commission on Teacher Credentialing.[27] This protocol was used by the Commission in 1997

to determine the extent to which primary and secondary school teachers were prepared to teach critical thinking skills. Despite focusing on teachers of younger students, the Commission's study had very similar goals to this one and the protocol was, therefore, with some modification, an appropriate tool to use. Modifications included eliminating questions only relevant to full-time instructors and changing some questions to better reflect how librarians design and deliver instruction. Prior to being interviewed, participants were given the protocol and agreed to participate in the IRB-approved study. All interviews were completed over the phone and were recorded using the secure ACR phone application.[28] The questions attempted to discover how first-year instruction librarians conceive of and use critical thinking in their teaching. Additionally, the researchers asked questions about participants' teaching experience, education, and other demographic information (see full interview protocol in appendix A).

The interviews were transcribed from the audio recordings using the Google Docs speech-to-text feature, and participant names were replaced with pseudonyms. After an initial review of the transcripts, the researchers separately applied preliminary codes relevant to answering the research questions of the study (no software was used). The researchers then compared their independently developed codes to establish a master list of finalized codes (see appendix B for the final codebook).

After deliberation, the researchers chose to use a percent agreement calculation for interrater reliability rather than a Cohen's kappa or Krippendorf's chi because these latter methods are meant to work with quantitative data and account for chance agreement. With more than 20 codes, it is very unlikely that any agreement on the part of the coders was by chance. In addition, the qualitative nature of this research makes exact agreement less important than the understanding of the ideas and meaning presented by the participants.[29] The nature of the data also guided the researchers' decision to discuss coding before calculating interrater reliability. The best methodology for the context and goals was to carefully ground the code manual to represent the participants' ideas and experiences, to have significant discussion about the application of codes, and to ensure a straightforward comparison of coding between the researchers.

To determine interrater reliability, the researchers split the transcripts of 20 percent of the participants (four transcripts) into "meaning units," or smaller textual units that could each be assigned a single code. A meaning unit could be a paragraph, sentence, or phrase, depending on the text. Each researcher determined the meaning units for half (two transcripts) of the 20 percent subset of transcripts. Then both researchers coded each meaning unit of all four transcripts independently. They compared coding and, after discussion, determined the interrater reliability for their coding using a simple percent agreement calculation, which resulted in 85 percent agreement. This level of agreement is sufficient to establish interrater reliability.

After 20 percent of the transcripts were coded by both researchers, the rest were coded by the primary researcher to establish trends. Within a single transcript, a code was counted only once for every one to three times it was mentioned; this reduced inflation of a code count when a code was mentioned various times by the same participant, but still accounted for special emphasis of a code by a participant. For example, if the researcher coded a particular concept four times for a single participant, that code would be counted twice; if it was coded twice, it would be counted once.

In addition to coding the transcripts to look for themes, the researchers also documented demographic information and simple yes or no questions to provide context for the participants' education and teaching experience. This quantitative data serves as a supplement to the

exploration of trends through the coding process, improving the reliability and richness of the data used for the study, and increasing the researchers' confidence in the themes discovered.

Results

The 21 participants of the study came from a variety of institutions, including public, private, community college, and regional or satellite institutions. The participants were working in 18 different states, and their institutions' student populations ranged from 1,700 to 30,000. The majority of participants had been in their current position for one to six years, but their level of experience varied as well.

FIGURE 1
Number of Years Participants Had Served in Their Current Positions

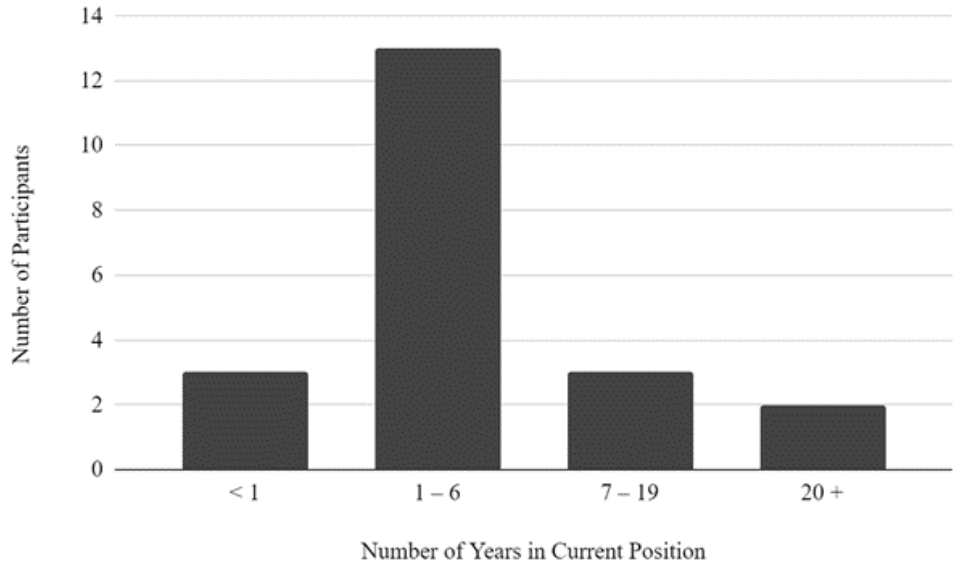
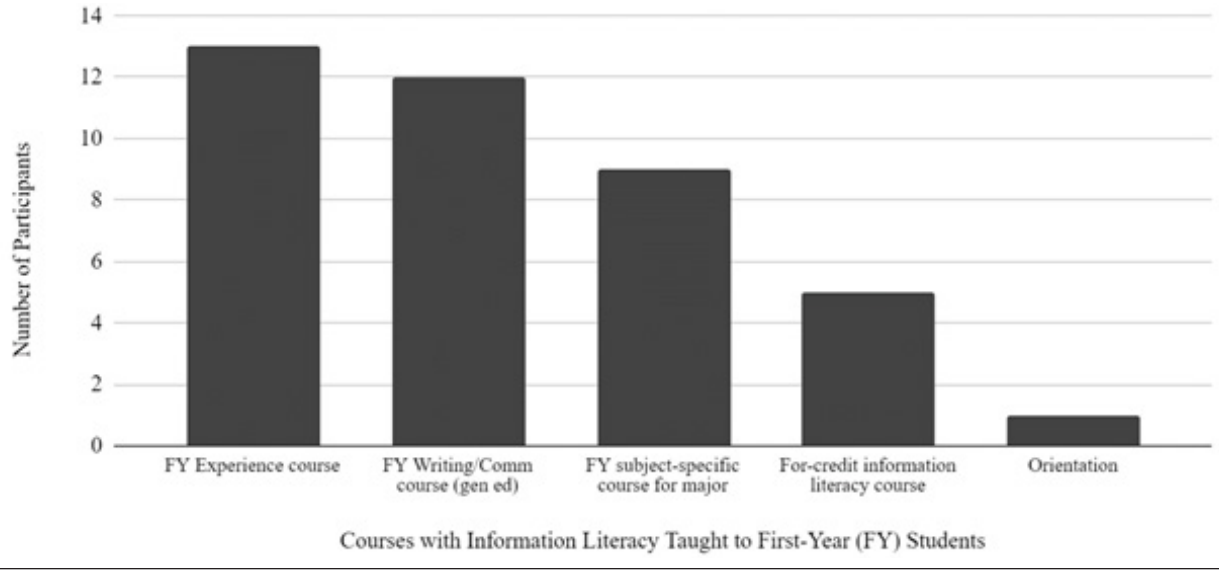


FIGURE 2
Types of Courses in Which Participants Taught First-Year (FY) Students Information Literacy



Most participants either described themselves as instruction librarians (62%) or subject librarians who spent considerable time working with first-year students (43%). The capacity in which participants taught first-year students generally consisted of instruction for a first-year experience course, a first-year composition or communication course, a subject-specific course with mostly first-year students, or a credit-bearing information literacy course.

When asked about their training in instruction and educational theory, most participants cited on-the-job experience (60%) or professional development (60%) as the primary source of their instruction knowledge. None of the participants credited a required course in teaching during their MLIS/equivalent degree, but eight (40%) did take an optional instruction course. Five participants also had a bachelor's degree, minor, or certification in education.

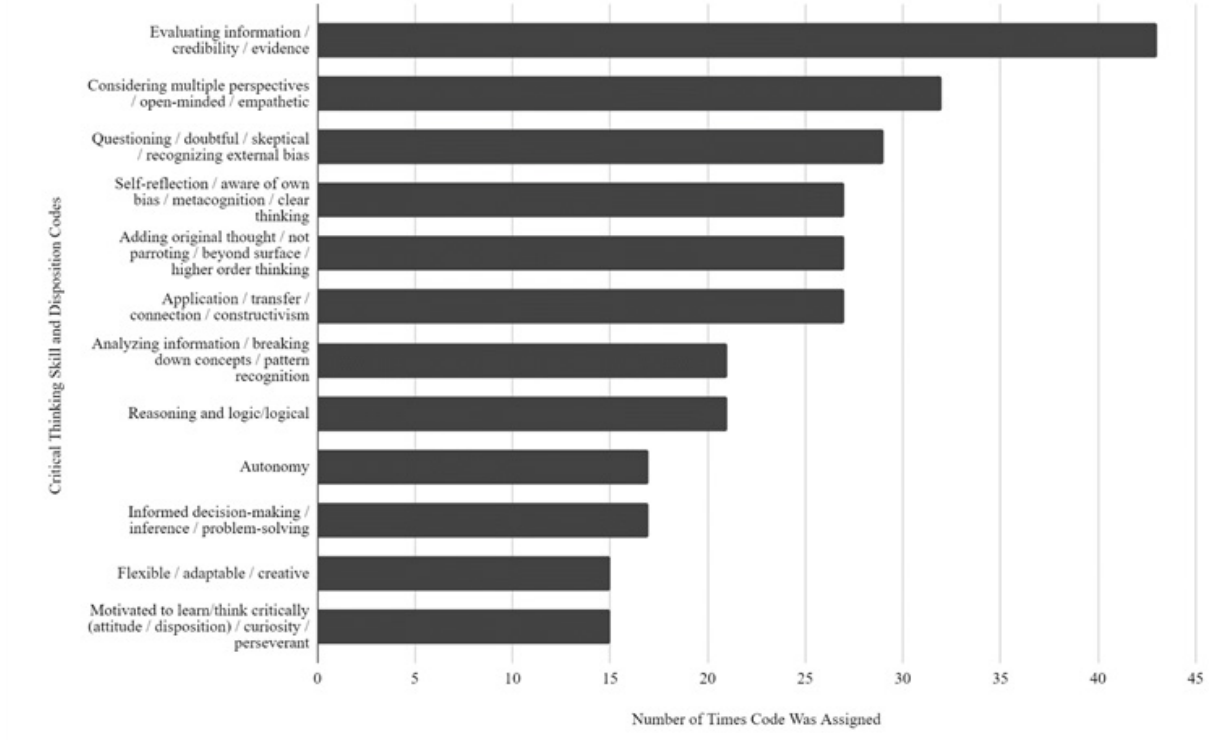
Themes

In the course of developing codes and thoroughly examining all of the transcripts, the researchers uncovered common themes throughout the participant responses. The themes generally fell into three main categories: Critical Thinking Characteristics (Skills and Dispositions), Critical Thinking vs. Information Literacy, and Critical Thinking Teaching and Assessment Strategies. Each theme and its associated codes are described below.

Theme 1: Critical Thinking Characteristics (Skills and Dispositions)

Participants were asked to describe critical thinking in several interview questions, revealing the skills and dispositions they associated most closely with critical thinking. Evaluating sources, considering multiple perspectives, and questioning or being skeptical were mentioned

FIGURE 3
Number of Times Critical Thinking Skill or Disposition Codes Were Present in Participant Responses (For full description of all codes, see appendix B)



most often. Many librarians in the study described critical thinking as involving a sense of skepticism or a questioning attitude. One participant, Sofia, emphasized critical thinking as "the habit of mind that you almost do without thinking that leads you to question and reflect on information you encounter … The earlier you can get this into students to think, to question, to reflect, the better." Zoe, another participant, saw critical thinking as "asking questions. Wanting to dig deeper into something, an idea, and wanting to know more."

Others were worried that too much skepticism could leave students feeling cynical and distrusting of everything. Kailani said, "Especially in this day and age, you feel like you have to be extra skeptical … probably not the right word. Cautious. … I'm starting to encounter students that are too skeptical; they don't believe anything." Edith and Sam, respectively, reiterated that successful critical thinking instruction is a balance: "[We should be] teaching them that healthy skepticism should take place. It's a medium between not believing everything you see and hear, but also not being completely pessimistic about everything you see and hear," and "Essentially, [critical thinking] is informed skepticism. It's not cynical skepticism, but an evidence-based approach."

In addition to identifying skepticism and questioning as important skills, librarians also noted that an openness to new ideas and alternative perspectives is an important component of critical thinking. Elif described critical thinking as "looking at something from multiple perspectives … for arriving at a conclusion. And I think part of that is, hopefully you're getting closer to the truth, but you're also not holding too tightly to it." Edith emphasized the importance of "having an open mind, even if you already have a strong feeling about something," and Mustafa stressed "being open to enter[ing] into a quality dialogue with other people with competing viewpoints." Tying the concept to creative thinking, Jacinta emphasized that "to me, critical thinking is thinking outside the box. You can have an idea, and you can have an answer to a question, but if you can't think outside of what's in front of you, then you're not thinking critically about it."

Original thought, thinking deeply, self-reflection, and application/transfer of skills were critical thinking skills also mentioned often. A number of librarians interviewed reported that an indicator of critical thinking is when students are "not just parroting backwards what they've heard" (Sofia), or that, for students, "the first domain is original thought versus repetition" (Carol). Participants described critical thinkers as individuals who pause, take time to think deeply about information or a decision, and look beyond the surface of what they've been presented. Maria addressed the example of website URLs:

> *Something that I see a lot is, [the students will] say, "If it's a .edu, .org, or .gov website then it's more credible than a .com." And saying, "Okay, that is something that is unfortunately not necessarily true. It would be nice if we could use those criteria absolutely, but if you think about it, even the website we're using now, Libguides.com, is a .com website." I also use my-own-name.org and will edit it in class off of something we've said or talked about to show that I can make it say anything I want.*

Some participants linked this deep-thinking to a student's sense of autonomy and ability to evaluate sources beyond an initial, gut reaction. Shanice emphasizes to her students that "you don't evaluate things, information, based on your gut or your opinion or what you've been told by your parents." Flora also highlights the importance of independent thinking: "To

me critical thinking involves the ability to move beyond just looking at a set of instructions and more the ability to take an idea and kind of run with it without needing to be spoon-fed instructions." For Lena, evidence of deep thought is a strong indicator of critical thinking: "I would rather have a student give me a wrong answer but be able to demonstrate how they may have reached that wrong answer than have a student who just happens to have the right answer, but they have no idea why that's the right answer."

Another important critical thinking skill mentioned frequently was the ability to self-reflect and use metacognition to improve one's own thinking. Mustafa said he characterized critical thinking as "knowing that you always have to be willing to change your mind on something, that your opinions can change and, depending on what we're talking about, should change." Danielle described it as: "at its core, the ability to reflect on a deep level." Several participants mentioned critical thinking in terms of metacognition, or the ability to recognize and regulate one's own thinking. For example, Maria advised that first-year students "should be encouraged to explicitly reflect on their own thinking and their own reasoning. Which is something that they might have to be told to do. So, engage in metacognition: think about your thinking."

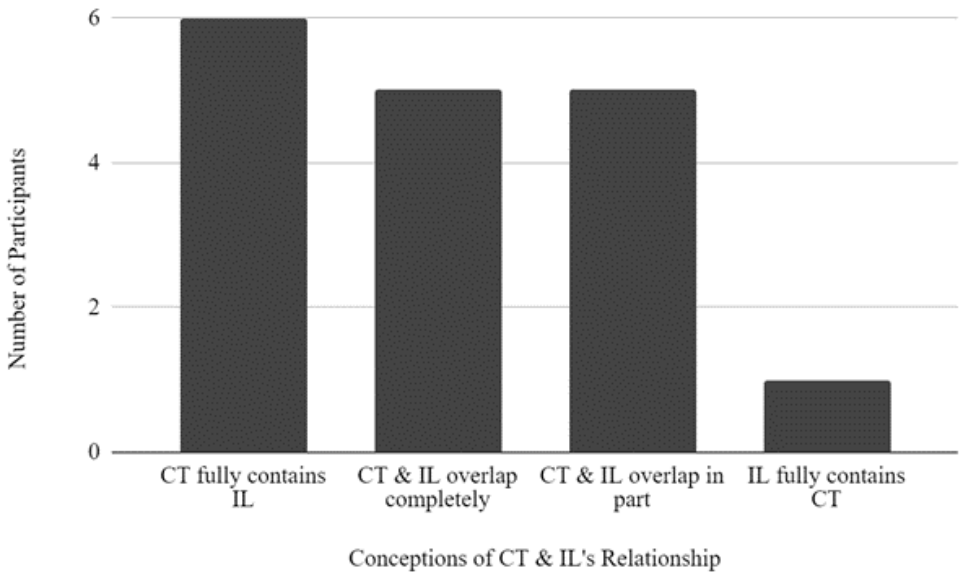
An important part of self-reflection is the ability to recognize one's own biases. Elif described critical thinking as "checking to see if you have any biases or prejudices that are clouding your thinking." Maria builds on this idea by recognizing that students "need to be encouraged not to close off their thinking based on their pre-existing beliefs, biases, judgments." Mustafa encourages students to "purposely seek out information that challenges the thinking process" and "[hit] that cognitive dissonance head-on with the express purpose of trying to resolve it through being more informed as opposed to just trying to avoid it." These understandings of self-reflection go beyond just taking time to consider thought processes, to actively guarding against opinions and ideas that are not well-founded.

Finally, many participants saw the ability to take skills learned in one realm and apply them to new contexts as an important critical thinking skill. Li defined critical thinking as "the ability to take information and apply it in new ways. Application without prompting is always really impressive to me and I think that is … critical thinking when that happens." For many participants, transfer-of-skills also involved building on current knowledge based on new information. For example, Carol looked for students to "take their knowledge that they know and synthesize the situation with that knowledge and then add to that situation new knowledge. Instead of just repeating or regurgitating something." Similarly, Kailani described critical thinking as "not just a passive activity, [but] an active activity, which asks an individual to take information and assess the quality and use that to build knowledge."

Theme 2: Critical Thinking vs. Information Literacy

Participants were all asked to describe the relationship between critical thinking and information literacy. Interestingly, some participants claimed these two concepts were identical. For example, when asked about the relationship between critical thinking and information literacy, Nikita said, "Oh my gosh, I think they're related in every single way," and Lena said, "To me, they're so related that they're nearly interchangeable." Most others described information literacy as completely consisting of critical thinking skills, even if some critical thinking skills do not overlap with information literacy. Anton pointed out that critical thinking is a term that is often more quickly recognized and widely respected by others than information

FIGURE 4
Participant Conceptions of the Relationship between Critical Thinking (CT) and Information Literacy (IL)



literacy. He posits that "librarians would get more buy-in by referring to critical thinking rather than the language of the [ACRL] Framework." These responses provide evidence that librarians often see the relationship between critical thinking and information literacy as so close as to be transposable.

However, one related issue that emerged from the interviews was the role that basic research skills play in librarian-led information literacy sessions and whether these can be considered information literacy skills, even though they arguably do not require critical thinking. Shanice acknowledged the difference between these sets of skills when she said, "I kind of distinguish library research skills from information literacy in my instruction. I teach both of those things." Hitting upon the root of the question, Kavya asked, "If we teach [students] how to think and how to work on their research question and think about all different kinds of sources, but they still can't find a book, have we ultimately failed them?" The role that basic research skills that do not require critical thinking play in information literacy instruction (and their role in the Framework as opposed to the Standards) requires further investigation.

Some participants described the relationship between critical thinking and information literacy one way but later contradicted themselves or otherwise described it inconsistently throughout the interview. Danielle described the debate that ensued in her own library when she brought the question of the relationship between the two terms to her colleagues:

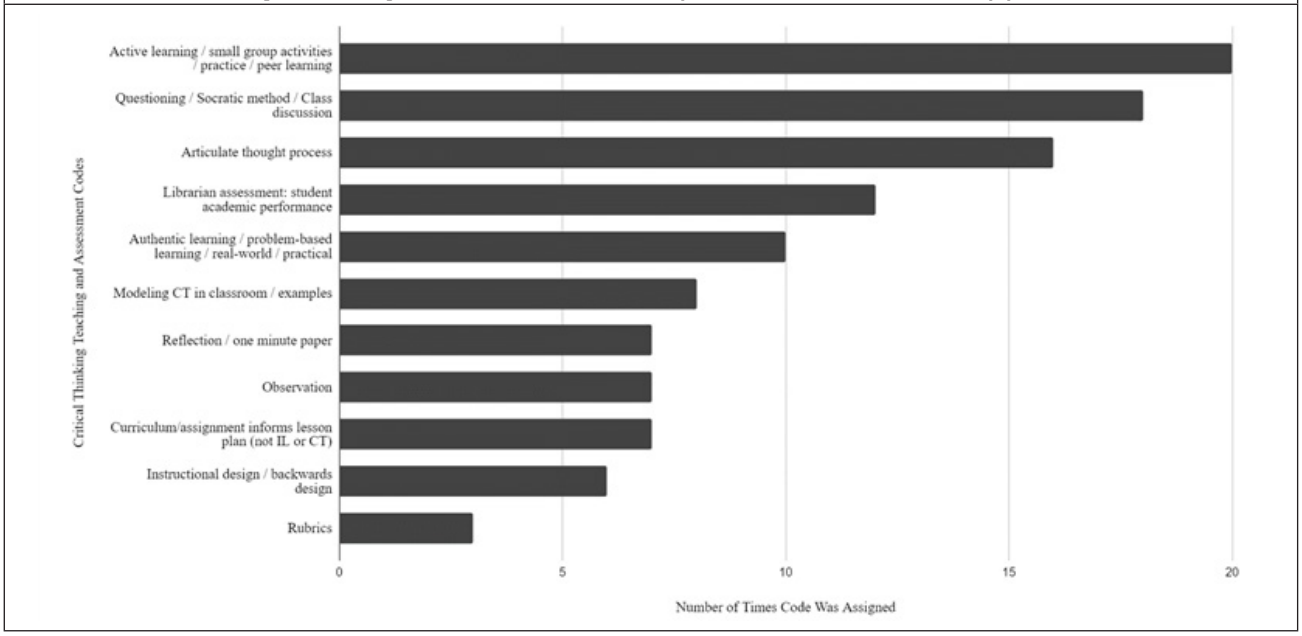
> *I asked my colleagues… and we had a huge debate. There's definitely no consensus in my unit. So, initially, my thinking was that critical thinking was this larger umbrella term and that information literacy kind of connected underneath that. But I mentioned that to my colleagues and … they were like, "No, no, no." … Some of my colleagues were saying that they saw [critical thinking and information literacy] as completely separate … I don't know. We had a pretty heavy debate.*

Based on our research, there is still no consensus among practicing instruction librarians about the relationship between critical thinking and information literacy. More research that explores the terms' relationship in practice is needed.

Theme 3: Critical Thinking Teaching and Assessment Strategies

Participants were asked to describe how they teach and assess critical thinking in library instruction. The most common teaching strategies mentioned were active learning, questioning/Socratic method strategies, and asking students to articulate their thought processes. Some active learning strategies used by participants included group work, evaluating given sources, online polling software, concept mapping, and peer learning. Using questioning and discussion in the classroom were especially popular techniques, a conclusion exemplified by a quote from Tara: "I don't think there are ever too many times when you can ask why." Similarly, Carol calls herself a "question guider."

FIGURE 5
Number of Times Critical Thinking (CT) Teaching or Assessment Codes Were Present in Participant Responses (For full description of all codes, see appendix B)



Participants were asked to describe how they would assess both a student's critical thinking skills and a teaching librarian's critical thinking instruction. In both cases, participants admitted that such an endeavor would be challenging and that significant development of students' critical thinking skills may not be possible from a one-shot session. Two strategies mentioned frequently for assessing a librarian's teaching were to have the librarian's instruction observed and to look at student work for evidence of critical thinking. However, in the latter case, determining the role of the librarian in fostering that critical thinking would be next to impossible. Most participants viewed critical thinking from library instruction as a long-term goal that may not be assessable in most individual library sessions.

Overall, many participants expressed frustration about a lack of time to teach critical thinking, as well as limitations placed on them by faculty priorities for library instruction

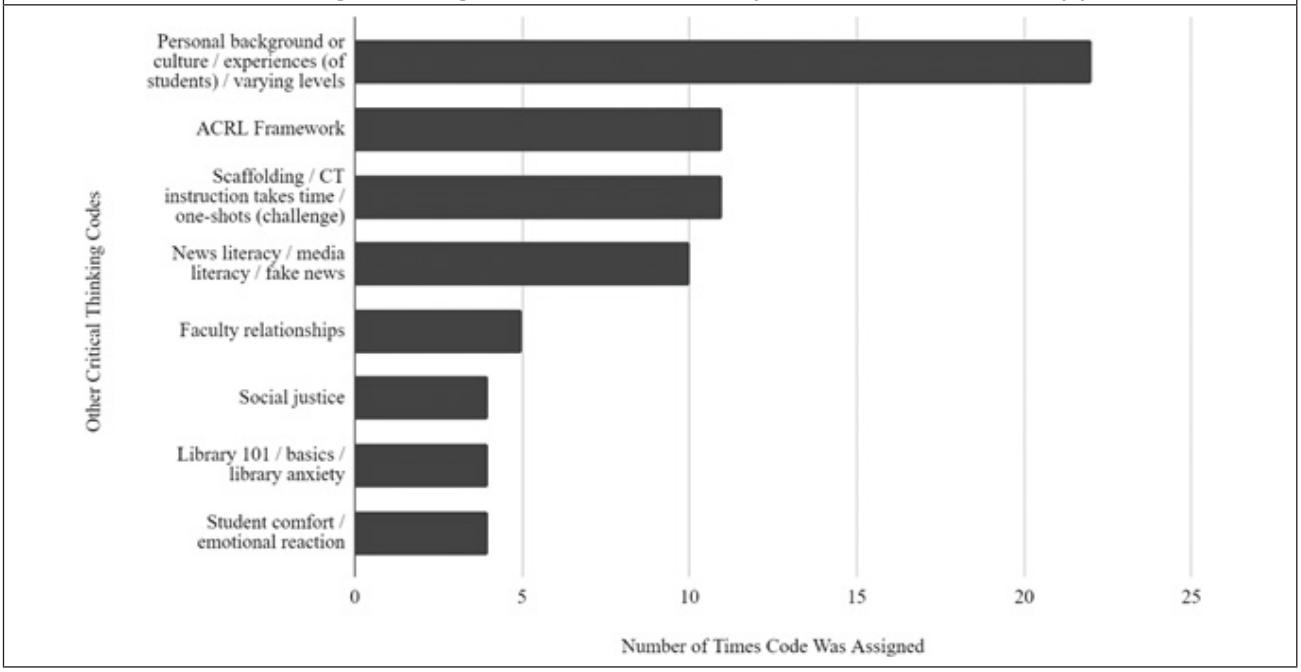
sessions. Some also noted a discomfort with commonly used, simplistic tools for teaching critical thinking skills, such as the use of checklists like the CRAAP test. A dislike of the term "standards" also pervaded the responses. According to Sam, "I would say it's not important for [the students] to have checklists or standards, because they're too prescriptive. Instead, students should be asking questions."

Other Topics That Emerged During the Interviews

Some additional ideas emerged from the interviews that did not directly describe skills or dispositions of critical thinking, nor methods for teaching and assessing it. The concept of news literacy arose a number of times, perhaps not surprisingly, given current events, and several participants directly invoked the ACRL Framework as well.

Because this study focused on first-year students, many participants noted the cognitive development of the typical first-year student and the fact that many students had not matured beyond black-and-white thinking or the idea that all opinions are equally valid.[30] Maria asserted that first-year students often have a low tolerance for ambiguity and need to "be willing to engage with that messiness." Many also argued that high schools often do not prepare students to think critically, and they especially disparaged standardized testing. Damion said, "Some of [the students] come from schools where it was all 'teach to the test' and they never have to write a paper in high school, which infuriates me." Carol observed, "I think there's a lot of basics that students don't come to us with, so to jump to more abstract critical thinking can be more difficult." Anton suggested that, often, the role of college is to help students mature: "A purpose of higher ed. and information literacy is to usher in adulthood [for students]." Most participants stressed that the varying maturity levels with which students approach research in their first year is not their fault and that, throughout the course of their post-secondary education, students will acquire a more complex epistemology.

FIGURE 6
Number of Times Codes Outside of the Three Main Critical Thinking (CT) Themes Were Present in Participant Responses (For full description of all codes, see appendix B)



In general, participants noted that first-year students are starting their college career with a range of skills and facing challenges that previous generations did not face. Kavya observed, "I think they're coming out [of high school] with more skills, but they also have more information to apply those skills to, which creates an even larger challenge than maybe my own experience." Students also have a variety of experiences exercising critical thinking skills while growing up, and, as Rhonda emphasized, they may find their beliefs challenged in a higher education environment: "One good thing about college is sometimes, earlier, students aren't forced to [think critically], so when you come to college, things that you believe in that you might have been taught as a kid or that you believe really strongly [are] sometimes opposed, so that forces you to think about it—do I actually still believe it? And think critically." Several participants also noted that first-generation students, students for whom English is a second language, and nontraditional students all may bring unique challenges and perspectives to the classroom when it comes to critical thinking instruction. There was a consensus among participants that first-year students have varying competence in using critical thinking skills but that all have the potential to improve during the course of their academic careers.

Some participants noted that critical thinking extends beyond information literacy skills and wondered who else is responsible, in a formal capacity, to ensure that students develop critical thinking skills. A sense that librarians do not have the time to fully address critical thinking in one-shot sessions underscored a concern that librarians should not be the only ones teaching critical thinking to first-year students. Elif suggested that librarians may also lack the expertise to teach some critical thinking skills: "When you get to that level [of critical thinking instruction], there are other people that are better equipped … So probably the faculty member would agree with me that I'm not the best person to do that, but I would agree with them that I'm not the best person to do that. … So the question is: Is it me, or is it them [responsible for teaching critical thinking]? I think it's both." Like information literacy, critical thinking may be a concept that is valued by our institutions but needs to be more deliberately incorporated into the curriculum (including in library instruction) to be effectively fostered in our students.

Finally, when asked about information literacy instruction training and, in particular, teaching critical thinking skills, many participants expressed frustration at not having received formal training opportunities in library school. For example, Edith said, "I just want to be on record saying that this is a fault of many library schools that do not train library students to be educators in this way in terms of showing students how to critically think about information or just in general information literacy and teaching it." Carol echoed Edith by saying, "I would love to see more of the [MLIS] graduate programs give some pedagogy [training] as they provide people with their advanced degrees." In general, those with an education degree or certification were more comfortable talking about critical thinking instruction. More training and professional development opportunities specifically focusing on teaching critical thinking skills in information literacy instruction could help.

Implications and Conclusions

Conducting this study was illuminating in many ways, one of which is that it gave the researchers an opportunity to witness librarians working through difficult conceptual questions and issues. The subject of critical thinking is mostly absent from the ACRL Framework (at least explicitly), and, clearly, more discussion about what role critical thinking plays in library

instruction is necessary. It was particularly instructive to hear librarians describe information literacy and critical thinking as completely overlapping. While information literacy and critical thinking are not necessarily the same, they were perceived by the interviewed instruction librarians to be at least highly related. The close relationship between information literacy and critical thinking provides librarians with opportunities to improve their instruction by reframing their faculty communication in terms of critical thinking, examining the relationship between other values-driven teaching approaches (such as critical librarianship) and critical thinking instruction, and using critical thinking as a guide in addressing misinformation and other information-related real-world problems.

Developing students' information literacy skills is a primary goal of academic librarians, so if that endeavor necessarily entails developing critical thinking skills, finding ways to integrate critical thinking into library instruction should be a high priority. However, the study participants pointed out that it is challenging to gain the time and freedom to teach students critical thinking skills, which are difficult to learn and require repeated practice. Often, librarians are limited in their ability to choose the content of library instruction, influence the assignments that students are given, and engage with students for sufficient time to impart instruction in critical thinking. The literature suggests that flipped classroom approaches, cooperative assignment planning with faculty, and having discussions with faculty can help address this problem.[31]

However, another potential approach would be to make the relationship between information literacy and critical thinking skills (or, simply, the work of instruction librarians) more transparent to faculty. The term "critical thinking" is likely more familiar to them, and institutions are often quick to point out that students need critical thinking skills, even while there is no formal place for critical thinking in the curriculum. For example, many academic programs adhere to accrediting bodies that emphasize the importance of enhancing students' critical thinking skills but not necessarily information literacy skills. Describing library instruction as a source for critical thinking training could raise its profile. There is also an enormous body of research both describing critical thinking instructional techniques and proclaiming their effectiveness. Library school training in teaching critical thinking skills and framing library instruction in terms of critical thinking may help.

In recent years, teaching librarians have been more firmly embracing their identities as instructors.[32] Perhaps an extension of this transformation should involve reframing library instruction as critical thinking instruction when possible. For instruction librarians, teaching critical thinking skills, as opposed to "point and click" skills, has the potential to be more impactful for students, as well as more meaningful to the librarian. While the connection was not made explicit by study participants, recent scholars have redefined critical thinking in terms of critical pedagogy, an important theory underlying social justice efforts in academia.[33] Reframing library instruction in terms of critical thinking can therefore support librarians' goals of promoting social justice as well.

These interviews reveal that librarians are often eager to discuss critical thinking's role in information literacy instruction, as well as the value of such instruction for solving real-world problems. Many drew connections between critical thinking skills and the application of these skills to important societal challenges, such as the spread of misinformation or the struggle for social justice. More discussions about critical thinking and information literacy, as well as the formalization of the relationship between the two, could help librarians clarify

their role in combating misinformation, hyperpartisan division, cognitive bias, and other causes of societal problems.

Presented here are several recommendations, based on analysis of the participants' responses, for academic librarians who teach first-year students:

- Use information literacy instruction to help first-year students balance questioning and skepticism skills with the habits of being open-minded and considering alternative perspectives.
- Help first-year students think more deeply and understand their own thinking processes by encouraging metacognition.
- Discuss the relationship between critical thinking and information literacy with colleagues. It may be surprising to learn how differently others imagine the relationship, despite the common assumption that everyone understands both concepts and their role.
- Use active learning techniques, especially questioning strategies, to engage first-year students in critical thinking.
- Recognize that first-year students may bring a wide variety of high school, upbringing, and other relevant experiences to information literacy instruction. Students will have diverse skill and tolerance levels for critical thinking instruction, a fact that is at least somewhat influenced by their maturity level.
- Manage faculty expectations about what critical thinking skills students can reasonably master in one-shot information literacy sessions.

Despite the potential for takeaways from this study's conclusions, there are several limitations to the applicability of the study. The librarian participants may have strong inclinations toward critical thinking and information literacy that prompted them to initially volunteer, so their responses may not be an accurate representation of academic librarians who teach information literacy to first-year students. Further, this study used grounded theory to allow the data to speak for themselves and allow themes to emerge during the coding phase. This scope of methodology requires flexibility and does not lend itself well to reproducibility. Finally, the prescribed questions created by the researchers may have been confusing or too limiting for participants to fully address the issues that were salient to the study's objectives.

The goals of this research were to explore librarians' attitudes toward teaching critical thinking to first-year students, define the perceived relationship between critical thinking and information literacy, and determine how academic librarians teach critical thinking in information literacy sessions. Through a thorough examination of transcripts, the researchers discovered common library instruction methods for teaching critical thinking, determined how the participants perceive the relationship between critical thinking and information literacy, and identified areas for growth in library instruction programs hoping to collaborate with faculty in promoting critical thinking. The results should help academic librarians who teach first-year students better integrate critical thinking into their instruction and identify areas of study that require more research.

APPENDIX A

Interview Protocol

Interviewee Pseudonym: _____

Interviewer: _____

I. Interview Introduction

Hello, my name is _____. Thank you so much for conducting this interview with me today. Before we get started, I'm going to tell you a little bit about our study and cover some housekeeping details.

To help us with our notes, I am going to audio-record this interview. Just so you know, only the researchers will have access to these recordings. For confidentiality, we're going to use study codes and pseudonyms on transcripts instead of recording identifying information. The recordings will be destroyed after they are transcribed and the transcripts will be destroyed after three years. You also submitted a signed form to us, which describes how we will keep the content of these interviews confidential. Do you have any questions about that form or the audio-recording of this interview?

Please let me know if you would like to stop the interview or stop recording at any time. You may also stop me at any time to ask questions. This interview is scheduled to last no longer than an hour. During this time, I'm going to ask you some questions, and I encourage you to give as complete of an answer as you would like. As was mentioned in the form you signed, this study seeks to explore the attitudes and understanding of academic librarians when it comes to critical thinking. We are especially interested in understanding the experience of librarians who teach first-year students. As you answer the questions we will discuss today, please limit your answers to your experience teaching first-year students as much as possible. Do you have any questions before we begin?

II. Interviewee Background

a. How long have you been in your current position?
b. Could you describe the teaching responsibilities you have in your current position, especially as they relate to first-year students?
c. What training or education do you have in education or educational theory?

III. Critical Thinking Foundations

a. In your view, do you think of knowledge, truth, and sound judgment as:
    i. Not fundamentally a matter of my own personal preference or subjective taste, or
    ii. Fundamentally, a matter of my own personal preference or subjective taste
b. Would you explain to me your concept of critical thinking? If you like, you can begin by completing the sentence, "To me, critical thinking is _____."
c. Could you give me an example of how critical thinking is useful outside the classroom that illustrates your concept of it? (in other words, as a consumer, parent, citizen, in a relationship, or other role)
d. What intellectual standards would you use to distinguish whether or not thinking

processes are being done critically or not?
e. Does your conception of critical thinking involve any particular traits of mind?
f. My concept of critical thinking is largely:
    i. Intuitive in my thinking, or
    ii. Explicit in my thinking
g. My concept of critical thinking is largely
    i. A product of my own thinking
    ii. A product of one or more particular theories of critical thinking to which I explicitly subscribe
h. How do you think critical thinking and information literacy are related?

IV. Critical Thinking in Library Instruction
a. How important is critical thinking to your instructional objectives when teaching first-year students?
    i. Of little or small importance
    ii. Of secondary importance
    iii. Of primary importance
b. In your view, how important is it for first-year students to acquire sound intellectual criteria or standards to use in the assessment of their own thinking and the thinking of others?
    i. Of little or small importance
    ii. Of secondary importance
    iii. Of primary importance
c. Is there anything you do on a regular basis in your teaching of first-year students that you believe fosters critical thinking?
d. Do you have any methods that you find particularly effective in teaching first-year students to think critically about information literacy?
e. Some librarians feel they have too much content to cover to have much time left for fostering critical thinking in library instruction sessions. What is your view of this position?
f. What particular critical thinking skills do you believe are most important for first-year students to develop?
g. If you had the task of assessing the extent to which a librarian was or was not fostering critical thinking through his/her instruction, how would you go about making that assessment?

V. Critical Thinking and Students
a. Do you feel that first-year students generally come to your classes with well-developed intellectual standards or criteria to use in assessing thinking?
    i. In general, yes, or
    ii. In general, no
b. What qualities do you look for in first-year students' reasoning that tell you whether or not they are thinking critically?
c. If a first-year student asked you what criteria she should use to decide whether to accept or reject a position someone is defending, what would you tell her?

Before we conclude the interview, is there anything else you would like to share about your conception of critical thinking or first-year students' experience learning to be critical thinkers?

APPENDIX B
Teaching Critical Thinking to First-Year Students through Information Literacy Instruction: Codebook

Code	Definition
Questioning / doubtful / skeptical / recognizing external bias	An attitude of having doubts or reservations; needing more evidence or having additional questions
Self-reflection / aware of own bias / metacognition / clear thinking	A tendency to think about one's own thinking process and decision-making
Considering multiple perspectives / open-minded / empathetic	A tendency to consider alternative ideas or outside viewpoints and change one's opinion or knowledge based on reliable new information
Flexible / adaptable / creative	The ability to adapt to new and unfamiliar scenarios or information, and/or the ability to devise or construct new, effective approaches or products
Analyzing information / breaking down concepts / pattern recognition	The ability to recognize sequences or relationships in information; to organize or conceptualize information in useful ways
Evaluating information / credibility / evidence	The ability to use appropriate, evidence-based, and/or rational criteria to evaluate information
Autonomy	The ability to perform higher-order thinking without direction or instruction from an adult or other authority
Adding original thought / not parroting / beyond surface / higher level/order thinking / slow thinking	The ability to synthesize information with new thoughts or ideas, coming to new and valuable conclusions
Motivated to learn/think critically (attitude / disposition) / curiosity / perseverant	The tendency to be motivated to think critically and use the skills described in the other codes
Reasoning and logic/logical	The ability to use inductive and deductive reasoning and logic, as well as the ability to identify poor logic or reasoning
Application / transfer / connection / constructivism	Using critical thinking skills appropriately in new contexts; applying critical thinking skills to previous knowledge/ skills
Informed decision-making / inference / problem-solving	Using critical thinking skills to make decisions, solve problems, or make inferences based on evidence and/or reasoning
Questioning / Socratic method / Class discussion	Asking students questions or having students develop questions; discussing issues as a class
Active learning / small group activities / entrance/exit activity / think-pair-share / practice / peer learning / brainstorming	Any activities that require students to actively engage with the class content
Reflection / one-minute paper	Activities that ask students to reflect on the content of the instruction, how it was delivered, or their own thinking

Authentic learning / problem-based learning / real-world / practical	Learning activities that draw on examples from students' own lives, current events, or difficult issues faced by many in society
Pre-/post-test	Using a pre- and post-test to assess student learning
Personal background or culture / experiences (of students) / varying levels	The influence of students' cultural or experiential background on their introduction to or abilities regarding critical thinking skills
News literacy / media literacy / fake news	Competence and skills when using news or other online sources; only used when specifically mentioned
Scaffolding / CT instruction takes time / one-shots (challenge)	The need for time and incremental instruction to effectively teach critical thinking
Social justice	Concerns about just treatment of all members of society as it relates to critical thinking
ACRL Framework	References to the ACRL Framework; only used when specifically mentioned
Library 101 / basics / library anxiety	Teaching students the basics about using the library, including addressing their anxiety about using it
Modeling CT in classroom / examples	Demonstrating critical thinking by modeling it in the classroom and/or showing examples of good critical thinking
Instructional design / backwards design	Deliberate approaches to designing instruction using pedagogy and instructional theory
Annotated bibliography	Mention of annotated bibliography assignment
Articulate thought process (communication)	Asking students to communicate their thought processes, either verbally or in written form
Observation	Observing other librarians to assess their instruction
Student comfort / emotional reaction	Concerns about students' emotional reaction to critical thinking instruction, or their general sense of ease employing critical thinking skills in the classroom
Rubrics	Use of rubrics as an assessment tool
Librarian assessment: student academic performance	Assessing librarian instruction of critical thinking by assessing or examining student work after a library session
Curriculum/assignment informs lesson plan (not IL or CT)	Attitude that the professor, assignment, or curriculum is the main driver for librarian instruction, not a focus on critical thinking or information literacy
Faculty relationships	Mention of the impact of faculty relationships on library instruction of critical thinking
None	None of the codes apply

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Integrating Library Resources in a Learning Management System: Exploring Instructor Obstacles and Motivations

Kenneth Haggerty, Caitlin Harrington, and Rachel E. Scott

This usability study investigates how instructors in a university setting integrate resources into their Learning Management System (LMS) course shells and explores barriers and incentives for doing so. Findings suggest that obstacles encountered while appropriately incorporating licensed library resources in a D2L LMS are substantial. Although many instructors articulate a desire to adhere to copyright guidelines and support the work of librarian colleagues, their methods for providing students access to assigned and recommended readings are influenced by convenience. These findings highlight the need for clear and easily implemented guidelines for providing access to licensed resources, as well as online platforms that are easily navigated for both students and instructors.

Introduction

Library personnel are invested in the authorized use of licensed resources. In academic settings, librarians acquire resources needed to support the curricular and research needs of their institution's faculty, students, and researchers. When instructors do not link to or appropriately integrate online library resources into their Learning Management System (LMS) classes, resource usage data will not reflect this usage and librarians will not know that the acquired resources have been assigned and represent a curricular need. Librarians leverage usage and turnaway data to inform library subscription, renewal, and licensing decisions, sometimes deciding to discontinue resources that have little or no usage. Librarians frequently make acquisitions decisions with input from institutional users; it would not, however, be practical for instructors to notify a librarian each time a licensed resource has been assigned and seek guidance on how to integrate it into the LMS appropriately. This study investigates how instructors in a university setting integrate resources into their course shell and describes their obstacles to and motivations for doing so.

There are many ways to integrate licensed content in an LMS; these vary according to the LMS used, the preferences of individual instructors, institutional policies, existing library

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reserves programs, and other criteria. This study employs usability methods to evaluate how faculty members, nonfaculty instructors, and graduate teaching assistants—inclusively referred to as instructors—navigate the process of integrating licensed library content into an LMS course environment. The University of Memphis uses D2L, locally branded eCourseware as the enterprise LMS.[1] Testing was conducted using Morae usability software, and additional observations were captured using think-aloud techniques.[2] The goal of this research is to reveal instructor practices and usability concerns related to the integration of licensed library resources into an LMS and to investigate Curriculum Builder, an LMS plugin, as a potential solution to this challenge.

Research Questions

1. How do instructors integrate licensed library resources in the LMS?
2. What are instructors' perceived obstacles to appropriately integrating library resources in the LMS?
3. What motivates instructors to appropriately integrate library resources in the LMS?

Literature Review

Academic libraries have a long history of supporting course-specific assignments. Reference, general circulating, and specialized library collections support broad and diverse learning opportunities, but course reserves and related collections have long functioned to support the course-specific needs of students and their instructors. Arthur Hamlin traces course reserves in American libraries to the late nineteenth century.[3] Physical reserves remained important services in academic libraries through the end of the twentieth century and continue to co-exist with electronic resources in some libraries; Brice Austin highlights early adopters of electronic resources in the early 1990s.[4] As use of physical library course reserves waned, electronic reserve use climbed.[5] Many authors documented the shift from brick-and-mortar reserve rooms to electronic reserves in the 1990s. For example, Don Bosseau discusses technical, financial, and copyright considerations in the creation of San Diego State University's Electronic Reserve Book Room.[6] Brett Butler considers electronic course reserves in the context of larger shifts toward digital library collections.[7] Cindy Kristof documents ARL libraries' electronic reserves guidelines, policies, and procedures in a 1999 Spec Kit.[8]

Kymberly Anne Goodson and Linda Fredericksen conducted an environmental scan on electronic reserve models by informally polling both Association of Research Libraries (ARL) and non-ARL institutions. They identified several trends, the most influential of which was LMS—also and previously referred to as CMS (course management system)—integration of licensed library materials: "Perhaps the most significant driver of change, however, has been the rapid adoption by academic institutions across the country of course management systems. CMSs allow for and support a self-service model for creating supplementary course materials."[9] The authors acknowledge that some institutions had opted to move electronic course reserve from the purview of the library to self-service models in which instructors would be responsible for integrating licensed content in their own course shell.

Several librarians have documented their experiences integrating library content into the LMS, but most of these focus on librarian-generated content such as LibGuide or other subject guides.[10] There are also several studies that demonstrate the benefits of embedding librarians in the LMS.[11] Steven Shapiro discusses the LMS as a potential marketing tool for

academic librarians.[12] Fewer studies, however, detail the integration of course reserves or licensed library content in the LMS; of these, most discuss the implementation of a vendor-supplied integration tool.

Library vendors have created products to support integrating licensed library materials in the LMS. Sharon Ince and John Irwin discuss their implementation of the LibGuides CMS eReserves module in a Blackboard LMS environment at Seton Hall University and indicate that the implementation led to a 142 percent increase in the usage of reserves.[13] Ex Libris offers Leganto, with which "instructors can create course resource lists [comprising] all types of materials, including print and electronic items from their library's collections, Open Educational Resources, and other resources available on the web."[14] Blake Galbreath is one of several librarians to have presented on Leganto implementation.[15] Olivia Walsby recently published a case study on the University of Manchester's implementation of Leganto.[16]

Additionally, EBSCO developed Curriculum Builder, a subscription-based LMS plugin that allows instructors to integrate library resources into their courses. To date, no articles have studied instructor integration of licensed resources into the LMS using Curriculum Builder. Although Lucy Rosenbloom and Jennifer Murray separately discuss the plugin, neither studied teaching faculty engagement with it.[17] Although somewhat cumbersome to use for instructors—they must navigate to external learning tools and click multiple times to create a completely discrete reading list—students can somewhat seamlessly access assigned readings from within the course shell. A clear advantage to employing a library product to integrate licensed content into the LMS is that usage data is ensured; if instructors do not know how to generate persistent links and upload PDFs instead, the actual use of the resource will not be accurately reflected in usage statistics. EBSCO recently launched Faculty Select, which like Ex Libris Leganto, "empowers academic libraries to directly support textbook affordability efforts" through a paid service.[18]

Although LMS plugins are increasingly used for class content delivery, they are not an instructor's only method for disseminating content. Some instructors, especially those teaching in-person classes, opt to refer their students to assigned or recommended content in other ways, which may or may not involve the institutional library. Accordingly, some librarians have taken proactive approaches to identify and acquire the materials instructors assign in their courses. Patrick L. Carr, James D. Cardin, and Daniel L. Shouse used their university's adopted text list to acquire books that were not actually textbooks.[19] Steve Rokusek and Rachel Cooke similarly purchased multiuser e-books in their institution's list of required social science texts.[20] Some librarians look to interlibrary loan requests to identify titles at the point of need; Emily Riha and Danika LeMay looked to interlibrary loan requests and found evidence that academic libraries best serve students by purchasing required materials as e-books with multiple user licenses.[21] The library acquisition of digital textbooks for CMS integration is not a topic that has been extensively covered in the literature, though some libraries have begun to license digital textbooks.[22] Several vendors offer digital textbooks subscription products, such as McGraw-Hill's Access Engineering platform.[23]

Once an academic library acquires digital content, it can be embedded in the LMS. That does not mean, however, that instructors will choose to do so or that the content will integrate with a given LMS. Several recent studies discuss this in relation to assigned e-books. Cindy Pierard, Vanessa Lynn Svihla, Susanne K. Clement, and Bing-Shan Fazio discuss some concerns surrounding using library-licensed e-books to support course-assigned readings.[24] Students

in their two-semester study noted more barriers than affordances to learning with e-books in courses; most frequently cited difficulties included navigation, printing and downloading difficulties, and interface design. Students in Mara Rojeski's study of e-books integrated into the LMS reported similar challenges.[25] Sara Samuel, Paul Grochowski, Natsuko Nicholls, Leena Lalwani, and David Carter noted that the perceived ease of use of e-books varies considerably depending on the platform in which content is provided.[26] Nicole Johnston and Neil Ferguson employed usability methods to discover that students did not think that digital features of eTextbooks helped them learn.[27] Learning Tools Interoperability (LTI) has facilitated integration of external content in the LMS, but embedding various types of content in the LMS can still cause a variety of problems for a range of reasons.

One might question whether course reserves are still necessary and helpful in an age of web-scale discovery. Would students be better served by being provided with a citation and told to find the resource themselves? Should students be pointed to the library's discovery layer or catalogs to find and vet their own sources, as they will in the "real world"? Instructional design emphasizes the importance of keeping all content within the LMS so students will have a more personalized and seamless experience.[28] Scholars have also demonstrated how embedded LMS content enables problematic tracking of more student data.[29] The integration of external resources into an LMS has been enhanced by LTI, which facilitates the embedding of a host of resources, including library resources like LibGuides, in the LMS. The authors have found that, although an application using LTI protocol may embed external content in the LMS, it does not necessarily yield a user-friendly experience. This study will investigate the usability of the Curriculum Builder plugin in a D2L environment.

Methods

Usability testing is a valuable tool to understand the experiences of library patrons. Academic librarians have employed usability to discover, for example, how users search library platforms and what obstacles they encounter in doing so.[30] According to the Digital Communications Division of the US Department of Health and Human Services, "usability refers to the quality of a user's experience when interacting with products or systems, including websites, software, devices, or applications."[31] Usability studies typically aim to measure intuitive design, ease of learning, efficiency of use, memorability, error frequency/severity, and subject satisfaction and employ methods including interviews, surveys, card sorting, focus groups, and task analysis. For the study at hand, interviews and task analysis were both deployed to investigate how instructors integrate library resources into LMS classes and their obstacles to and motivations for doing so.

The University of Memphis is an urban, public research university with a Spring 2020 enrollment of 20,245 and a Carnegie classification of Doctoral Universities: Higher Research Activity. The authors—at that time serving as User Interfaces Librarian, Electronic Resources Librarian, and Integrated Library Systems Librarian—met on several occasions before the Spring 2020 semester to plan the study. Planning involved designing tasks, questions, and prompts. Incentives for and recruitment of participants were determined in advance. The User Interfaces Librarian tested the instrument with several library staff and instructors to pilot-test the study.

In January 2020, the authors and library liaisons emailed departmental library representatives and personal contacts to recruit University of Memphis affiliates who used eCourse-

ware as instructors; participants were offered a $25 Starbucks™ gift card. Twenty instructors from various departments responded to the call. Data collection began in January 2020 and concluded in March 2020. The University of Memphis Institutional Review Board indicated that this study did not meet the Office of Human Subjects Research Protections' definition of human subjects research.

Once recruited, the twenty participants read and signed a consent form describing the study and indicating to them that the study involved collecting screen and audio recordings. The authors used Morae Usability Software to collect qualitative and quantitative data as participants went through prescribed tasks. The software was programmed to list the task and specify the starting page for each. As they completed tasks, participants were encouraged to think aloud to share their impressions of the functionality and opportunities for improvement as they integrated resources into eCourseware. The researcher was with the participants as they completed tasks, and there were occasions in which the researcher asked follow-up questions pertaining to the participants' opinions of the experience.

The complete survey instrument is provided in appendix A and consists of a pre-survey, six tasks, five follow-up questions, and a post-task survey. The pre-survey established the participant's department, title, familiarity with eCourseware, and current practices for providing students access to course readings—for example, by uploading a file to eCourseware, linking out, emailing or sharing files directly, providing citation information, or other means. The six tasks required participants to integrate licensed library content into eCourseware by various means: creating and embedding a persistent link, using the Curriculum Builder plugin, or uploading a PDF file. After each of these tasks, participants were asked to rate its difficulty on a scale of 1 to 5. The researcher asked open-ended follow-up questions to encourage the participants to share their thoughts on the Curriculum Builder interface and its benefits. The questions also prompted participants to discuss their obstacles and motivations to appropriately integrating library resources in the LMS, as well as the implications of integrating licensed content in eCourseware for library subscriptions and copyright law. After answering follow-up questions, participants completed a System Usability Scale (SUS), a ten item survey that has become an industry standard for measuring usability.[32]

To enhance the accuracy of the analysis and findings, the authors sought out and incorporated best practices for qualitative data.[33] After the completion of data collection, participants were invited to read and answer questions about the accuracy and completeness of a draft to promote participant "collaboration" and "member checking."[34] The authors invited colleagues inside and outside the library to critique their methods, interpretations, and reporting. The authors also presented their findings to EBSCO product managers for their input with the hope of identifying and resolving some of the problems. The authors then incorporated participant, peer, and vendor feedback back into the manuscript.

Results

Pre-survey

Participants represented a diverse group of disciplines that included STEM, Social Sciences, Humanities, and Arts. To protect participants' anonymity, their departmental affiliations and titles are presented alphabetically and grouped as appropriate in tables 1 and 2. The twenty study participants represented thirteen different campus departments, with three participants from the History, Communication and Counseling, Educational Psychology and Research

departments. While all participants provided instruction using the LMS, their titles varied significantly. A plurality of participants stated "Instructor" as their title, but other position titles included Assistant Professor, Associate Professor, Graduate Instructor, and Career Specialist.

TABLE 1
Participant Departmental Affiliation

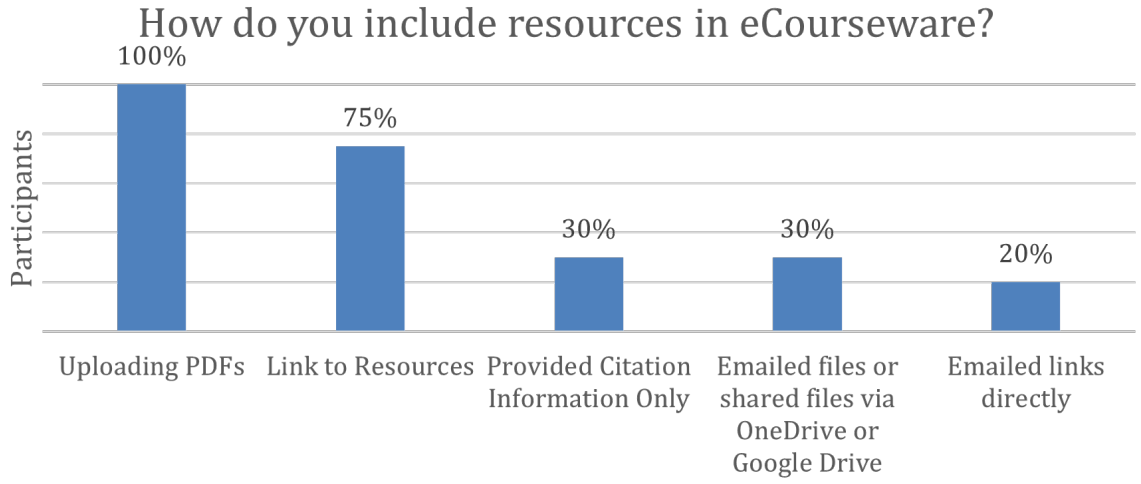
Business Information Technology
Career Services
Communication (3)
Counseling, Educational Psychology and Research (3)
English (2)
History (3)
Institute for Intelligent Systems
Instruction Curriculum Leadership
Physics and Materials Science
School of Music
Social Work
Student Success Programs
Theater & Dance

TABLE 2
Participant Title Affiliation

Assistant Director
Assistant Professor (3)
Associate Professor (3)
Career Specialist
Chair & Professor
Graduate Teaching Assistant (3)
Instructor (5)
Post-Doctoral Fellow & Adjunct Professor
Professor
Research Assistant Professor

Participants were then asked to use a scale of 1 to 5, with 1 being the lowest and 5 being the highest, to rank their familiarity with eCourseware and the tool Curriculum Builder. Overall, eight participants were very familiar (5), six participants were familiar (4), and six participants were somewhat familiar (3) with D2L/eCourseware. Only one participant had heard of Curriculum Builder; nineteen out of 20 participants had no prior knowledge of Curriculum Builder. A subsequent study will detail our investigation into external learning tools in the LMS, but initial results indicate that these plugins are often unfamiliar to instructors.[35]

FIGURE 1
Pre-Task Survey eCourseware (N = 20)



Finally, participants were asked to share how they currently provide access to course readings in eCourseware. Participants were directed to select all access methods that applied (see figure 1). All twenty participants selected "Upload PDF/other file to eCourseware," fifteen participants selected "Link to readings in eCourseware," six participants selected "Email file or share via OneDrive/Dropbox/Google Drive" and "Provide citation information only," and four participants selected "Email or otherwise distribute a link to the file." No participants described a method of providing access outside the five included in the survey.

Six Tasks

The first two tasks asked participants to add persistent links to a predetermined article (Task 1) and e-book (Task 2) to a module in eCourseware, and the third task asked the participants to upload a predetermined article PDF to a module in eCourseware. To complete these tasks, participants had to use the University Libraries' discovery layer, EBSCO Discovery Services, to locate the articles and e-book.

Participants struggled to correctly identify persistent links to complete Task 1. Common issues included copying the digital object identifier (DOI) (three participants) or browser URL (three participants) instead of the persistent link or uploading a PDF (one participant) instead of using a persistent link as directed. Once familiar with persistent links—either after experimentation or after the researcher pointed them out—participants easily identified where and how to generate them in Task 2, which also required embedding a persistent link. Overall, participants had few issues completing Task 3, which entailed finding, saving, and uploading a predetermined article PDF to an eCourseware module. This method of content delivery was selected by all participants in the pre-survey and is apparently a familiar process.

The final three tasks required participants to use Curriculum Builder. Screenshots of Curriculum Builder are provided in appendix B. Participants were directed to add a predetermined article (Task 4), e-book (Task 5), and any article or e-book of their choosing (Task 6) to an eCourseware module using Curriculum Builder. For Tasks 4–6, the Curriculum Builder LTI provided access to the library resources required to complete the tasks, and therefore participants did not use the University Libraries' discovery interface for these tasks.

For all but one participant, who stated they had some familiarity with Curriculum Builder, Task 4 was the first time participants used the product. As with Tasks 1–3, participants struggled with Task 4 but recovered and had fewer issues with Tasks 5 and 6. Participants experienced various navigation and procedural challenges during Task 4, as they became accustomed to the tool and its interface. For example, since most participants had never incorporated plugins into their courses, many experienced difficulties locating Curriculum Builder despite having been provided with instructions. In addition, the long load times often caused participants to question whether they did something wrong. While completing Tasks 4–6, participants posed insightful questions about the purpose of Curriculum Builder: Is it a tool for assembling bibliographies, such as Zotero/End Note? Is it connected to interlibrary loan? Many participants expressed confusion regarding the Curriculum Builder reading list. They struggled to identify the "Add to Reading List" button within Curriculum Builder and lacked confidence in whether they had completed the task. Because Curriculum Builder is a plugin within eCourseware, some participants were unsure whether they were situated within Curriculum Builder or eCourseware after they completed Tasks 4–6.

Curriculum Builder's load time was a source of frustration noted by all but two participants. Regardless of time of day or location of the study, Curriculum Builder's load time within eCourseware lasted multiple minutes. Participants identified the location of Curriculum Builder within eCourseware and its name as two other common complaints. To access Curriculum Builder for the study, participants had to execute a number of steps that are not commonly a part of their activities within eCourseware. That Curriculum Builder is only accessible within External Learning Tools caused confusion for several participants who felt this location, or its label, was misleading or had not previously used External Learning Tools.

Follow-up Questions

Following tasks 1–5, participants were asked to use a scale of 1–5 to rate how easy it was to complete the preceding task. For task 1, users were asked to embed a persistent link into module 1 and rate how easy it was to complete the task on a scale from 1 (very difficult) to 5 (very easy). Ten participants thought the task was very easy (5). One rated the task very difficult. The average score among the twenty participants was 4.1. Task 2 asked users to embed an e-book link into module 2. It was very similar to task 1; but, overall, users felt it was much easier after conducting task 1. The average score for this task was 4.5. For task 3, users were asked to upload a PDF, which the vast majority of users had done before. The average score was 4.35. Task 4 was the first task in which users were asked to add an article to a reading list using Curriculum Builder. Ratings were expectedly lower with an average of 2.75. Finally, as users learned how to use Curriculum Builder, it became much easier; for task 5 the average score was 3.7. Ratings and averages for all tasks are presented in table 3.

TABLE 3
Task Ratings

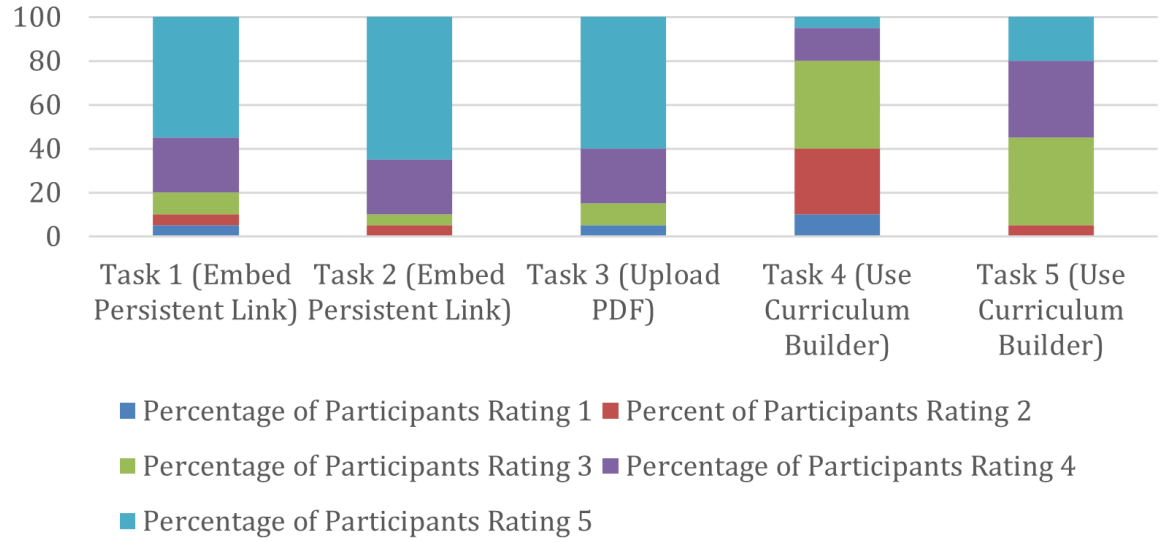
Task #	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	Average
Task 1	5	3	5	5	4	5	5	4	4	5	5	3	5	5	5	4	3	1	2	4	4.1
Task 2	5	5	5	5	4	5	5	5	4	2	5	4	5	5	5	5	4	3	4	5	4.5
Task 3	4	5	5	3	4	5	5	5	4	5	5	5	5	5	5	5	4	1	3	4	4.35
Task 4	2	1	4	3	2	3	4	3	3	3	1	2	5	3	4	2	3	2	2	3	2.75
Task 5	4	3	4	3	3	4	5	5	3	5	3	4	5	4	4	2	4	3	3	3	3.7

Overall, tasks that requested users to embed persistent links and upload PDFs were rated as easier to complete than tasks involving Curriculum Builder. This finding is supported by the higher percentage of participants rating tasks 1, 2, and 3 "very easy" (55%, 65%, 60%, respectively) compared to tasks 4 and 5, where only 5% and 20% rated the tasks "very easy" (see figure 2).

After completing task 6, in which users choose an e-book or article to add to a module using Curriculum Builder, participants were asked to verbally respond to the following questions:

- What are your thoughts on the Curriculum Builder interface? Under what circumstances do you see yourself using Curriculum Builder?
- What benefits do you see with using Curriculum Builder?
- Are there any improvements you would make to the plugin?

FIGURE 2
Ease by Task: Percentage Ratings 1 (very difficult) –5 (very easy)



- Unless instructors link to or integrate content via Curriculum Builder, the library does not know that a particular resource is being used by a course; without usage data, we may not be able to justify renewals or purchases. Does this influence how you might integrate library resources into eCourseware in the future?
- Additionally, PDFs posted directly to eCourseware may not be in compliance with copyright law. Does having this information influence how you might integrate resources into eCourseware in the future?

Despite issues with load times and branding issues, participants did not dismiss the potential utility of Curriculum Builder. Many participants stated that they understood the potential value of Curriculum Builder but indicated that they would only use it if certain issues were addressed. Participants identified the following as the most critical problems to address: improved organization and ease of use for students; renaming the tool to explicitly reference the library; fewer steps, consistency of the "Add to Reading List" button; and more robust training materials. A majority of participants did not anticipate that they would ever use Curriculum Builder in their eCourseware courses for some of the following reasons: disinterest in learning new tools due to time constraints, lack of need, opposition to the premise of accessing library resources outside of the libraries' interfaces, and belief that students would refuse to use Curriculum Builder.

The majority of participants stated that copyright compliance and helping the library with usage statistics would positively influence their prospective use of Curriculum Builder in the future. Participants who were not influenced by these benefits stated that they did not go to or use the library very often, that those same usage statistics could be collected by directing students to locate assigned readings via the libraries' interface, and because it was more important that a tool be user friendly for students than helpful to the libraries. Two participants indicated that they were unconcerned with copyright compliance because they believed authors care more about their work being read than copyright laws. One indicated that they only assign readings that exist in the public domain, and another indicated that, as all course materials are accessed through the libraries' resources, they should be copyright compliant.

Post-task Survey

A modified System Usability Scale was used in the post-task survey. Participants were asked to score the following 10 items ranging from Strongly Disagree (1) to Strongly Agree (5); results are presented in table 4.

TABLE 4
System Usability Scale for Curriculum Builder

Item	Average Score (1 Strongly Disagree/ 5 Strongly Agree)
I think that I would like to use Curriculum Builder frequently	3.5
I found Curriculum Builder unnecessarily complex	1.9
I thought that Curriculum Builder was easy to use	3.75
I think that I would need the support of a technical person to be able to use Curriculum Builder	2.3
I found the various functions in Curriculum Builder were well integrated	3.65
I thought there was too much inconsistency in Curriculum Builder	2
I would imagine that most people would learn to use Curriculum Builder very quickly	4.15
I found Curriculum Builder very cumbersome to use	1.9
I felt very confident using Curriculum Builder	3.85
I needed to learn a lot of things before I could get going with Curriculum Builder	1.95

The SUS allows researchers to gain a quick but reliable idea of a product or services usability. Since the late 1980s, it has become "an industry standard" and is a default survey when using Morae Usability Software. Morae Manager automatically calculates the SUS score when the SUS is included as part of a usability study. According to usability.gov, a score of above 68 is considered above average.[36] For this study, Curriculum Builder achieved a SUS score of 72.63 out of 100 as calculated by Morae Usability Software.

Discussion

Persistent Links versus Uploading PDFs

As indicated by the presurvey results, the most popular method for sharing course readings—selected by all study participants—was to upload a PDF or other file into eCourseware. Despite linking to readings being the second most popular choice, many participants struggled to correctly identify the persistent link for the predetermined article in order to complete task 1. Two participants attempted to copy/paste the URL from their browser window, while another participant initially selected the article digital object identifier (DOI) before locating the persistent link. While the DOI is a stable link, it does not include the proxy information required for access outside of University of Memphis's IP range. Some participants self-reported while completing tasks 1 and 2 that they did not often use EBSCO record tools that include persistent links, or that it had been many years since they used persistent links, and yet they had no issues correctly identifying a persistent link. Their ability to quickly find and use the persistent link generator tool perhaps speaks to an advanced conceptual understanding of library tools and resources, or a high degree of comfort with online library resources.

Embedding persistent links from the libraries' resources provides reliable access to assigned readings while also making it possible for the library to account for use. Tasks 1 and 2 indicated a disparity between the participants' behavior reported in the presurvey of linking to course readings, and the evidence of their behavior when asked to add a persistent link to the eCourseware module to complete tasks 1 and 2. In the presurvey, fifteen out of twenty participants stated that they linked to course readings in the LMS. However, the results from tasks 1 and 2 reflect that eleven out of twenty participants struggled to locate the persistent link. The presurvey did not ask participants how they link to course readings, or from where, so it is possible that they are not linking from library resources, but from the World Wide Web.

Another reason librarians at the University of Memphis advocate for use of persistent links over uploading files to the LMS is concerns around the accessibility of uploaded content. Vendors are required to vouch for the accessibility of their product, and many of our article database providers provide enhanced accessibility features such as read-aloud and text/file formats designed to work with browser readers.[37] Participants in this study were not asked about the accessibility of assigned content and whether that is a consideration in the content delivery methods they choose. How accessibility interacts with instructors' motivations for and obstacles to integrating content in their courses requires additional research.

Helping the Library

Of the twenty participants, seventeen (85%) agreed that helping the library with usage statistics would influence them to consider using Curriculum Builder in the future. One participant, however, was not unconcerned with the libraries' ability to track resources but correctly noted there were other ways for libraries to track student use of resources than using Curriculum Builder. Providing persistent links to assigned texts or providing only citation information are two methods participants are already using to provide access to content in the LMS, while also supporting the libraries' efforts to track usage statistics.

The participants' interest in supporting the libraries' goal to improve the documentation of assigned texts through usage statistics indicates an opportunity for instructor education about ways to integrate library resources in the LMS. The most commonly used method for assigning course readings, uploading a PDF/other file to the LMS, does not help the library track usage statistics. While a benefit of Curriculum Builder is its ability to track usage of library resources assigned in the LMS, it cannot be presented as the only, or best, option. Instructors should receive regular reminders about the variety of ways they support tracking usage statistics through their assigned readings with plenty of assistance from the libraries.

A limitation of this study was not asking participants to rank the importance of helping the library with usage statistics among other concerns, such as ease of utility for the instructor, perceived ease of use by students, and other considerations. Participants were not asked to elaborate on or qualify the degree to which helping the library would influence their use of Curriculum Builder in the future. Furthermore, the researcher who conducted the study is a librarian, and this may have created an element of social pressure or professional courtesy to express interest in helping the library.

Copyright Compliance

Most participants were sympathetic toward the protection of works of authorship and expressed a willingness to use Curriculum Builder for the purposes of complying with copyright

law. In many cases, instructors stated that copyright compliance is something they strongly consider when including resources in their classes before learning about Curriculum Builder. However, as displayed in the presurvey, all twenty participants had included resources in their courses by uploading PDFs, which is a method that does not guarantee copyright compliance. There were a few participants who stated that, although they were sympathetic to the author's rights, they would not be willing to use Curriculum Builder because it was not user-friendly and ease of access for students was more important to them than complying with copyright.

Curriculum Builder Load Time, Branding, and Location

The post-task SUS survey indicates that users identified potential benefits of the Curriculum Builder product. Participants also expressed considerable frustration with locating the plugin within the LMS and waiting for Curriculum Builder to load. Although Curriculum Builder achieved an SUS score that was above average, its continued use should not be assumed. In order for the University of Memphis libraries to consider next steps with Curriculum Builder, such as creating training materials and robust campuswide promotion, the issues related to excessive load time and branding and location of Curriculum Builder would need to be addressed. These are issues that must be resolved in conversations with the product vendor, EBSCO, and the University of Memphis's Information Technology Services (ITS) department, who is responsible for the maintenance of the LMS and integration of products within it.

The name "Curriculum Builder" belies the purpose of the tool for the end users: instructors and students. Because this product is sold to libraries for the improved use of their resources, the name may have been selected to suit the library audience instead of the end user. However, the purpose of Curriculum Builder must be easily intuited by all relevant parties, librarians, instructors, and students, for widespread adoption. The authors were pleased to learn from EBSCO that Curriculum Builder can be rebranded locally.

The location of Curriculum Builder within eCourseware came up throughout the study. Participants referenced a need for fewer steps and a disinterest in using a plugin generally. Within eCourseware, the Curriculum Builder plugin is located under an area labelled "Add Existing Activities." Four participants reported that they would never check "Add Existing Activities" for a tool related to library resources and assumed only functions related to class activities, such as discussions, lived in that section of eCourseware. This is an issue to be addressed with the LMS vendor, D2L, via the ITS department at University of Memphis. While it is in EBSCO's best interest to situate Curriculum Builder intuitively within all learning management systems, in reality it is not yet intuitive or well-integrated.

Conclusion

As the first study to employ usability methods to investigate instructor obstacles to and motivations for integrating licensed library resources in the LMS, this study provides insight into how and why instructors provide access to licensed content in online courses. Providing access to licensed resources through the LMS is a perennial challenge, one in which academic librarians have a vested interest. This study not only investigates the relative utility of the Curriculum Builder tool but also provides rich context surrounding the options instructors have and the choices they make when integrating resources in the LMS. Findings suggest that instructors are interested in supporting their librarian colleagues and providing their students access to required texts in a way that is compliant with copyright laws, even if they may not

be sufficiently committed to do so in practice. The convenience of providing content directly to students appeals to instructors and often trumps other considerations.

This study is also the first investigation of the perceived usability of Curriculum Builder, a product devised to facilitate the integration of licensed library content in the LMS. For a variety of reasons—frustration with the load time, branding, and location of the plugin, among others—using this ready-made solution has not been embraced at the University of Memphis. Because the library is financially invested in the authorized use of licensed resources, and librarians are charged to be good stewards of these resources, a solution—or at least an improvement—is required.

The authors will continue to explore the complex motivations and obstacles to the appropriate integration of licensed content in the LMS and endeavor to make this process as streamlined as possible. Most participants were quick to understand how to create a persistent link and the importance of doing so; the authors will pursue education surrounding this process to facilitate increased linking to proxied resources as opposed to sharing PDFs. Conducting this usability study has not only provided insight into instructor practices and usability concerns but has also suggested a potentially viable path forward: creating and embedding persistent links. This process supports copyright compliance, accessibility for users with diverse abilities, ease of access for instructors and students, and resource usage data for librarians.

APPENDIX A

Survey Instrument

Pre-Task Survey

1. What department are you in?
2. What is your title?
3. On a scale from 1 to 5, how familiar are you with D2L/eCourseware?
4. How do you provide access to course readings? (select all that apply)
    a. Upload PDF/other file to eCourseware
    b. Link to readings in eCourseware
    c. Email file or share via OneDrive/Dropbox/Google Drive
    d. Provide citation information only
    e. Other, please describe

User begins at home page of the course "Library Curriculum Builder Course"

Tasks

1. Add the article "A Qualitative Examination of User Perceptions of User-Driven and App-Controlled Hearing Technologies" into Module 1 by embedding a persistent link to the article.

Task Survey 1: On a scale from 1 to 5, how difficult was it to complete this task?

2. Add the e-book *Chemistry: The Impure Science* into Module 2 by embedding a persistent link to the e-book.

Task Survey 2: On a scale from 1 to 5, how difficult was it to complete this task?

3. Add the article "The Implicit Morality of the Market and Joseph Heath's Market Failures Approach to Business Ethics" into Module 3 by uploading a PDF file.

Task Survey 3: On a scale from 1 to 5, how difficult was it to complete this task?

4. Add the article "Big Music Data, Musicology, and the Study of Recorded Music: Three Case Studies" into Module 4 by using Curriculum Builder.

Task Survey 4: On a scale from 1 to 5, how difficult was it to complete this task?

5. Add the e-book *Film, Theory, and Philosophy: The Key Thinkers* into Module 5 by using Curriculum Builder.

Task Survey 5: On a scale from 1 to 5, how difficult was it to complete this task?

6. Add an article or e-book of your choice into Module 6 using Curriculum Builder during which feel free to share your thoughts and opinions of the plugin.

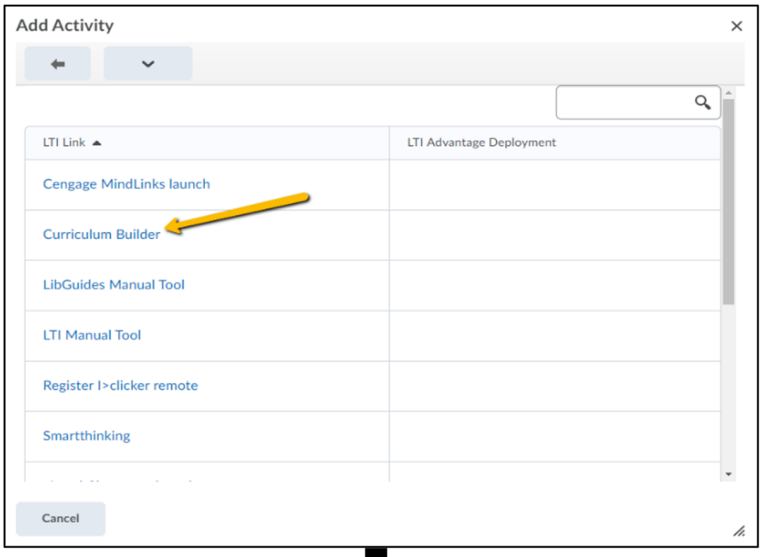
Follow-up questions:

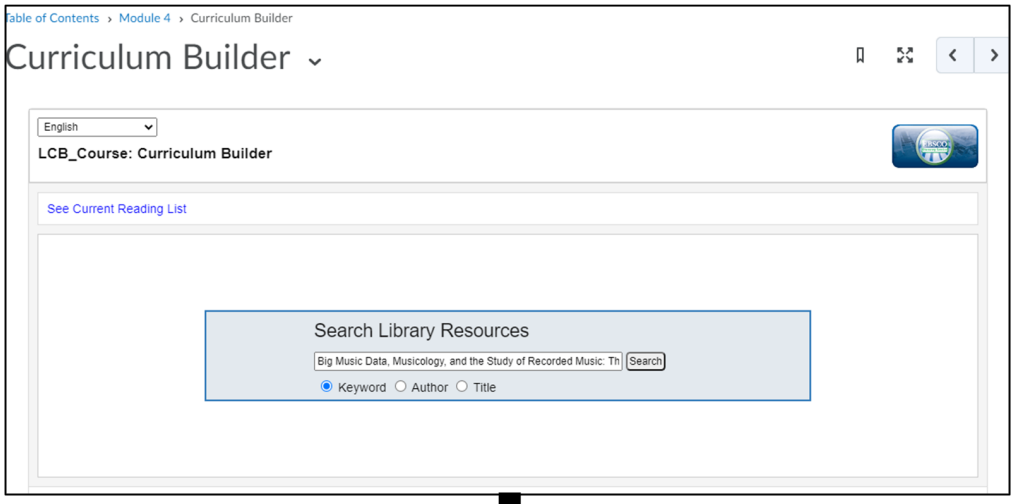
i. What are your thoughts on the Curriculum Builder interface? Under what circumstances do you see yourself using Curriculum Builder?
ii. What benefits do you see with using Curriculum Builder?
iii. Are there any improvements you would make to the plugin?
iv. Unless instructors link to or integrate content via Curriculum Builder,

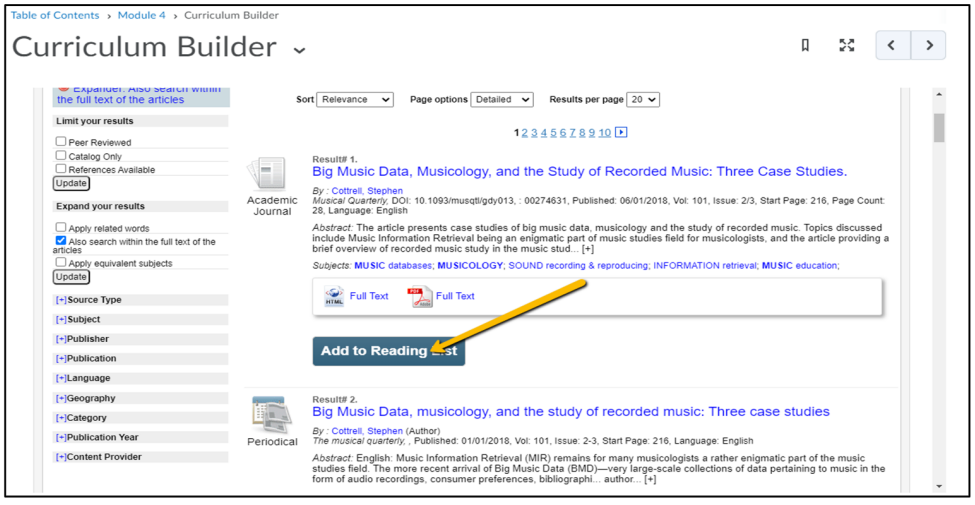
the library does not know that a particular resource is being used by a course; without usage data, we may not be able to justify renewals or purchases. Does this influence how you might integrate library resources into eCourseware in the future?

v. Additionally, PDFs posted directly to eCourseware may not be in compliance with copyright law. Does having this information influence how you might integrate resources into eCourseware in the future?

APPENDIX B
Curriculum Builder Screenshots







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Creating New Roles for Libraries in Academic Research: Research Conducted at the University of Calgary, 2015–2020

H. Thomas Hickerson, John Brosz, and Leonora Crema

A recently completed study at the University of Calgary has had broad professional impact and generated increased attention to the role of academic libraries in campus research. This multiyear, evidence-based study was conceived in recognition that the role libraries have traditionally played in research is of decreasing relevance. With support from The Andrew W. Mellon Foundation, this study employs intensive partnership among library staff, scholars, and research administrators to identify the transformational changes necessary for repositioning libraries in the research enterprise.

Introduction

The historic role in scientific and scholarly research upon which today's academic libraries were designed is of diminishing importance. Three principal and closely related areas of change have combined to produce this transformation:

- Information production, dissemination, and accessibility
- The nature, character, and scope of research
- Research methods and analytical tools

In the age of Open Access, Open Science, and Open Data, the sources traditionally purchased or licensed by the library are decreasing relative to scholarly information that is openly available. Enabled by the internet, a critical foundation for the Open Access Movement was established in 1991, with the formation of arXiv.org by Paul Ginsparg at the Los Alamos National Laboratory, making physics preprints freely available worldwide.[1] With the arrival of the World Wide Web in the mid-1990s, both scholars and students were able to access library resources from almost anywhere—and increasingly other information sources, as well. The volume of scientific publishing outside traditional journals has grown, including increased open-access publications and online prepublication platforms. Adding to this, sharing of research data has become an essential component of research. In response to the current COVID-19 pandemic, these trends have only accelerated.[2]

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Changes in research have been transformational, and, although the impact has varied across disciplines, no area has gone unaltered. The transition to interdisciplinary and multidisciplinary research has created both new interdisciplinary clusters and research partnerships spanning such clusters. Changes have been further stimulated by funding agencies' promotion of "grand challenges" research in which the scope and complexity of inquiry necessitates diverse coalitions. Related in character and effect is the increasing emphasis on community-based research explicitly embedded in a sense of societal mission.

Equally impactful has been the extensive methodological change in research sources and products and in the analytical tools being employed. Research information recorded as electronic data has been common for decades, and software for statistical analysis is broadly applied. Paralleling this development in recent decades is spatial analysis. Geographic Information Systems (GIS) allow users to create interactive, user-created queries using visualization and visual analytics to address areas as diverse as astronomical, climatological, cultural, and historical investigations. Combined with text mining, computational analysis, AI, and the integration of data generated by diverse disciplines, a new and different research ecosystem of shared, cited, and published resources has evolved.

In this rapidly changing landscape, libraries are facing a paradigm shift in the ways they contribute to achieving the research objectives of their universities. They are recognizing that traditional services and organizational models require fundamental reexamination if they are to fulfill these new roles.

A multiyear research project, funded by The Andrew W. Mellon Foundation and conducted at the University of Calgary, has sought to programmatically define a new model for the role of libraries within the research ecosystem. Notably, this project employed an evidence-based approach incorporating direct input from scholars and research leadership, with findings demonstrated through a series of real-time collaborative research projects and external review by an expert panel.

As a concluding step, the project hosted an international symposium to present its findings and those of other projects seeking to reimagine research services in academic libraries.[3]

Collectively, the project and its further deliberations integrating library and research administration perspectives offer important insights into what organizational transformations and new relationships will be needed to ensure academic libraries' future vitality in campus research.

Literature Review

In the past decade there has been considerable discourse about libraries' new roles in research and opportunities to engage throughout the research lifecycle. Changes in research methodologies have been the main motivating factor, including the rise of digital scholarship,[4] an increase in multidisciplinary and interdisciplinary inquiry, and an emphasis on societal impact. Interest in research services office (RSO) partnerships has also grown. Studies of the implications for library practice are outlined under the themes below.

Transformation of Librarian Roles

In a 2008 CLIR study, librarians and other stakeholders convened to "rethink the research library in a dynamic, swiftly changing landscape dominated by digital technology."[5] Case studies in Europe trace a similar shift.[6] Bourg, Coleman, and Erway developed an academic

library manifesto focusing on new areas of research support and issuing a call to action.[7] Librarians at Cornell combined with Ithaka S+R to study *A Day in the Life of the (Serious) Researcher*, envisioning new service models.[8]

Perhaps the most examined issue has been the evolving nature of librarians' roles. In an RLUK study, Auckland explores the reskilling required for a changing research environment.[9] In their landmark study, *New Roles for New Times,* Jaguszewski and Williams identified the increasingly hybrid and functional nature of liaison work.[10] Discipline-based roles yielding to functional specialities are also noted in a study by Eldridge et al.[11] and were realized by University of Manchester Library in a reorganization based on functional specialization (Hoodless and Pinfield; Bains).[12] In 2014, examining new competencies for research engagement, Kenney advocates attention to scholars' needs and success indicators, and universities' focus on academic productivity.[13] Around this time, a growing literature of digital scholarship librarianship emerges, along with further evolution of librarians' roles, as recently studied in the Canadian context by Ducas, Michaud-Oystryk, and Speare.[14]

New Services, Spaces, Technologies

Academic libraries have implemented new services and organizational models supporting research. Restructuring efforts at University of Arizona[15] and University of California, Riverside were among those seeking to intensify involvement in research projects, data management, dissemination, and measuring impact.[16] As a touchpoint for services, research commons spaces began to emerge along with digital humanities and digital scholarship centers, focused on research support and development.[17] Lippincott, Hemmasi, and Lewis documented developments in digital scholarship centers including their service and spatial attributes.[18]

Technological change has driven innovation; as early as 1999, Deckelbaum identifies GIS as a potent analytic tool for research problems across a broad array of disciplines.[19] A 2007 Association of Research Libraries study describes developments in e-science and team science with implications for practice.[20] Horstmann and Brase articulate libraries' roles in data-intensive research combining theory, experiment, and simulation.[21] Sustaining this infrastructure is a challenge, prompting new campus partnerships and resource strategies linking collections and computational capacity expenditures (Orcutt, Davis, Raschke).[22] Library embeddedness in research projects is taking new forms in areas such as research reproducibility[23] and systematic reviews.[24] Fernández-Marcial and González-Solar offer recent case studies on models for library-research engagement.[25]

Partnerships with Research Administration

Relationships between libraries and research administration are less well examined. MacColl and Jubb note differences between the UK, where the RAE/REF dominate the researcher, librarian, and research administrator consciousness, versus North America where there is clearer division between librarian and research administrator roles.[26] Bryant et al. also note jurisdictional differences, such as varying involvements in CRIS/RIM systems.[27] However, bibliometrics are potential meeting points for libraries and research administration, more commonly in Europe, Australia, and the UK, and increasingly in North America.[28] Krzak and Tate describe Edinburgh University Library's collaboration with research administrators tracking open access compliance.[29] Knowledge mobilization is another intersection, as universities seek more public profile for their research.[30] Universities worldwide are contributing to UNESCO

Sustainable Development Goals, with Times Higher Education incorporating this new metric in its ranking systems.[31]

Studying campus reporting lines, Corrall notes growing tendencies to group libraries with student-facing and education-related services, "arguably not a positive move for libraries trying to reposition themselves as credible partners and collaborators in research activities."[32] In a comparative review of the literatures of library and information science and research administration, Bradley finds limited awareness of the activities of the other, concluding they are working as "bounded" professionals, with only occasional forays into "cross-boundary" activities.[33] However, Rieger and Schonfeld's recent study of senior research officers suggests there may be growing efforts to bridge these gaps.[34]

The research project conducted at the University of Calgary is based in this spectrum of multifaceted change, both illustrating the impact of such change on the role of libraries in research and demonstrating the outcomes of creating a new model.

The Academic Research and University Libraries Project

In 2015, recognizing the critical importance of evolving changes in academic research, the University of Calgary Library (Libraries and Cultural Resources) initiated a study to discern the infrastructure, expertise, and services most essential in supporting current research. Acknowledging the inadequacy of the disciplinary silos commonly used to organize staffing and services, investigations also focused on new integrative partnerships within the library and between the library and research administration. Calgary was well positioned to undertake such research by the completion in 2011 of a new technologically advanced central library structurally designed to incorporate ongoing change, including new spaces, technologies, and staff supports for learning and research.

With the support of the Vice President for Research and funding from The Andrew W. Mellon Foundation, the project began in November 2015 with three days of workshops designed to elicit perspectives and research support needs from groups of faculty researchers. Fifty researchers from 15 disciplines took part, focusing on the humanities and social sciences but also with representation from STEM fields:

- Anthropology
- Archaeology
- Architecture
- Chemical and Petroleum Engineering
- Civil Engineering
- Computer Science
- Environmental Design
- Geography
- Geology
- History
- Military, Security, and Strategic Studies
- Political Science
- Public Health
- Real Estate Studies
- Urban Planning

Workshops were led by outside facilitators from elsewhere in Canada, the United States,

and Australia. Three faculty researchers from other Canadian universities participated to broaden the scope of the discussions. A small number of library and Office of Research Services staff attended, but serving only as observers to remain at arm's length from the deliberations.

There was remarkable consensus among the participating scholars. The principal needs they identified included:

- Data Curation and Sharing
- Analytics and Visualization
- Metadata Services
- Digitization
- Rights Management and Dissemination
- Collaborative Spaces

Based on these initial findings, the next goal was to instantiate this constellation of services as a research platform capable of efficiently supporting a diversity of scholars and students.

Realizing this new paradigm was the focus of a new research grant, "Academic Research and University Libraries: Creating a New Collaborative Model," funded by The Andrew W. Mellon Foundation in 2017 and completed in February 2020.[35] The main objective of this project was to identify a new platform of library research services. But rather than further focus group studies or theorizing about the nature of scholars' needs, the project employed grants to fund internal faculty research projects that would allow scholars to work directly and iteratively with the library and thereby discover how services would be used.

Starting in the spring of 2017, two rounds of competitive, internal grants (subgrants) were issued to support University of Calgary research conducted in partnership with the library. Projects were required to employ multidisciplinary teams, actively engage with the library's emerging research platform, and conduct research within one of three overarching themes that were strategically important to the university:

- Smart Cities: investigations of sustainable, resilient, secure, and culturally dynamic cities;
- Arctic Studies: research of the North American and the circumpolar Arctic through the environmental and social sciences, the arts, and the humanities; and
- Cultural Discourse: multidisciplinary inquiry into the various aspects of artistic expression, communication modes, and societal traditions and norms.

The duration of the subgrants was limited (six to eight months) to encourage an intense time of learning and exploration for the scholars, as well as to provide the library an opportunity to quickly learn and apply the findings from the experience.

After initial adjudications based on a letter of intent, library staff met with research teams to ensure they were aware of the variety of potential areas of collaboration with the library and to assist in development of the full proposal. In many cases, these proposal meetings led to increased engagement with existing areas such as: metadata services (for instance, in training graduate students in metadata production and quality assurance); or making use of library resources in different ways (like having trained student assistants digitize material with the library's equipment rather than paying for outside technicians to complete this work); or drawing on new areas of library expertise in areas such as data visualization or geospatial analysis.

These meetings also identified a new requirement for the research service platform, which was development and preservation of moderately complex websites. This supported the public dissemination role needed by many projects. Rather than having research teams make use of student-created sites (often with quality concerns or challenges in maintainability) or

commercial developers (expensive and time-consuming), the library offered the opportunity to make use of the library's web development team. Virtual reality (VR) was identified as another area where the library could provide useful enhancements to researcher capabilities.

Adjudication of subgrant proposals was overseen by a panel comprising senior library staff, senior researchers, and research administrators from across campus. Projects were selected on the quality of their:

- Research concept (40% of weighting)
- Alignment with and support for the library research platform (30%)
- Methodology, feasibility, and budgeting (30%)

Successful projects were eligible for funding of up to $40,000 (CAD). In the first round (2017–2018), five projects were approved; in the second (2018–2019), seven projects were funded. A total of $400,000 was dedicated to funding subgrant research. Each project round was followed by an external review by library and research experts from the United States and Canada, as detailed below.

The coordination of this process and of the project support was managed by a library Project Coordinator. The Coordinator organized the proposal meetings, inviting the research team and all library staff that could potentially contribute to the project. With the announcement of successful applications, the Coordinator arranged kickoff meetings introducing the teams and library personnel and establishing project timelines and data management plans. Once the research was underway, the Coordinator served as a central contact for scholars and library staff to keep participants up-to-date, secure resources, and assist in resolving problems.

Additionally, the coordinator organized a half-day, midproject meeting between all the research groups, library contributors, and senior research administrators. This meeting featured presentations on current progress by all the research teams. In feedback, the researchers expressed appreciation for how this event informed teams about additional library resources and expertise that they could employ in their projects. These discussions also alerted research administrators to new research underway on campus and the roles being fulfilled by the library.

Research Projects

Over two years, 12 projects from 31 applications were funded and completed. The projects were diverse in scope and included scholars from many disciplines. Findings were significant, producing a broad array of outcomes. The projects[36] included:

Open Data for a Smarter City: Creating a Data Infrastructure Pilot Initiative, led by Ryan Burns (Geography), created a data repository for local city data from researchers, community associations, nonprofits, and others. While the City of Calgary operates an open data portal, this new repository targets data outside the city's purview. http://yycdatacollective.ucalgary.ca/

Paper Traces in Digital Environments: Enhancing Analysis and Representation of Content and Materiality in Digitized Print Collections, led by Stefania Forlini (English), explored enhancing the digitization process and metadata records of the Bob Gibson Collection, 850+ hand-crafted anthologies of early speculative fiction. Existing mass digitization techniques focus on the text at the expense of material properties that can be essential to scholars' research (in speculative fiction it is important to differentiate low-cost "pulp" publications from high-cost "glossies"). This project explored mining the material archive[37] by enhancing the digitization process, expanding the collected metadata, and incorporating macro photography of paper and ink to accentuate these collections' unique historic, aesthetic, and material qualities. http://stuffofsciencefiction.ca/

Digital Preserving Alberta's Diverse Cultural Heritage, led by Peter Dawson (Archaeology), created an online repository for three-dimensional scans of cultural heritage sites. The resulting website, developed by library staff with its content created and controlled by the research team, links to deposited datasets in the library's data repository. The associated data includes building information models that provide means to monitor at-risk heritage sites, as well as detailed imagery and 3D models within virtual reality applications for education and outreach. https://preserve.ucalgary.ca/

ArcticSensorWeb: A Research Platform for Real-Time Dissemination of Arctic Data, led by Brent Else (Geography), created a web portal to make scientists' weather and environmental sensor data available in real time to local communities in the Arctic. This included consultation to ensure that the data and visualizations were useful as well as accessible with low-bandwidth internet access. https://sensorweb.arcticconnect.ca/

Mapping Urban Healthscapes: Bringing Together Big Data and Empathic Cultural Maps in a Knowledge Transfer and Exchange Project, led by Suzanne Goopy (Nursing), developed empathic cultural maps to take accounts of qualitative immigrant experiences of city infrastructure and the health system and links these accounts to city and census data with the goal of more effectively communicating concerns to municipal and provincial policy-makers, community members, and educators. http://bit.ly/storymapecm

Mapping and Visualizing Victorian Literary Sociability, led by Karen Bourrier (English), examines how social networks influenced the careers of Victorian writers, artists, editors, and publishers, with a particular focus on women's careers. This team employed a variety of sources to compile geo-referenced data on the residences of Victorian writers, artists, editors, and publishers. This will inform the team's in-depth analysis of propinquity's effect on the literary careers of women in nineteenth-century London. https://victorians.ucalgary.ca/

Are Smart Cities Healthy? led by Jennifer Godley (Sociology), explores how a variety of Canadian cities compare with each other in terms of economic, health, social, and infrastructural factors. In sociology and public health, there is a tradition of studying how socioeconomic factors influence individual health; this project extends this by incorporating economic factors pertinent to building smart, sustainable cities.

Visualizing a Canadian Author Archive: Alice Munro, led by Murray McGillivray (English), explores the enhancement of finding-aid metadata and TEI encoding in conjunction with data visualization to enhance exploration of this significant collection. Beyond gaining a greater understanding of how these techniques can enhance digital humanities' methodologies, the research team specifically investigated Alice Munro's methods for drafting and refining her stories and the effects of publisher feedback on 14 of her short stories. https://library.ucalgary.ca/munroarchiveproject

Soper's World: A Journey into the Canadian Arctic through Art, led by Maribeth Murray (Anthropology and Archaeology), explores naturalist and explorer Dewey Soper's multifaceted role in the Arctic and highlights Canadian Arctic exploration. Through digitization of his paintings and a virtual exhibit mapping Soper's explorations, this project combines geography, art, history, and biology to create an educational window on the Arctic for the public. The virtual exhibit provides a variety of content for teaching and outreach. https://www.arcgis.com/apps/Cascade/index.html?appid=936ecf2673ae4ffb9f33b0b1ac8752ed

Making Specialized Natural History Collections Accessible to Diverse Users: A Case Study Involving the Bees of Alberta, led by Mindi Summers (Biology), seeks to address the

need for biodiversity by developing an open-access platform providing data on Albertan bees, including project-created, high-resolution images, to scientists, city planners, and interested members of the public. The project also developed guides to support nonscientific users in exploring this collection and answering questions related to biodiversity, local bee populations, and resources on bio-inspired urban design. https://biodiversity.ucalgary.ca/

Preserving and Disseminating Maker Skills with Mixed-Reality Videos, led by Anthony Tang (Computer Science), seeks to assist learners in becoming effective users of makerspaces by using mixed-reality videos that ease self-learning. To move beyond 1:1 teaching in makerspaces, this project explores new communication modes—specifically, how mixed-reality technologies can be used to preserve knowledge of and to acquire skills with makerspace tools. These explorations will result in new forms of videos that prospective learners can use and study to learn how to use maker skills. One of the produced videos from the project is available at https://prism.ucalgary.ca/handle/1880/110506.

SmartCampus: Interactive Visualizations for Data-driven Design, led by Wesley Willett (Computer Science), explores interactive data visualization of phone-GPS data from university students with the goal of providing tools for campus designers and architects. Four design sessions with practicing architects explored prototype visualizations, gathering insights on how these data and visualizations may answer and guide questions on campus design. https://smartcampus.ucalgary.ca/

Project Findings and Evaluation

Library Staff Experience

Several findings related to the experiences of library staff, approximately 45 in all, who contributed to the projects. Particularly notable was staff appreciation of the opportunity to engage directly with researchers, employing their expertise and developing new skills. For example, the library's newly hired metadata librarian was surprised to move beyond a collection support role and have an opportunity to engage with a variety of research projects immediately upon starting the position. The manager of the metadata unit noted that her staff, a group with deep expertise working with bibliographic material but without much experience with datasets and other "born-digital material," were highly engaged and concluded that this initiative led them to be more aligned with the university's mission and goals. Despite sometimes stretching their expertise into new areas, library staff found that researchers were both comfortable and confident in their capacities.

Another important aspect of the staff experience was building relationships with researchers. The ability to engage with researchers in project meetings before the research proposal was finalized was unique and contributed to the quality of the projects. It allowed library personnel to provide more fulsome support, often incorporating technology or services that the research team did not initially consider. Researchers noted how their research topics were sometimes reframed based on conversations with library staff. There was also cross-learning within the library (such as personnel in data curation and visualization developing workshops and design sessions that integrated new knowledge into research projects).

For library units supporting these projects, a new style of collaboration developed. o Whereas a digitization project formerly would be driven entirely by the digitization group, in this process they now shared responsibility for these projects with other units (such as metadata, web development, and copyright). This increase in cooperative efforts also high-

lighted some shortcomings in the library's project support infrastructure, particularly the lack of secure, short-term file storage and transfer capabilities and project tracking. In the second round of projects, the library employed new systems (Trello for tracking projects and a new file server for sharing files) to improve these processes.

Researcher Experience

In their post-project reporting, the subgrant investigators provided crucial feedback. One important aspect of collaborating on research with the library is that the library must avoid a "one-size-fits-all" approach, instead prioritizing openness to exploration and the tailoring of services to the needs of the research. Researchers also expressed needs for ongoing support from the library for continued distribution of research outcomes beyond the lifespan of the short-term research team. Participating scholars especially valued the variety of spaces in libraries, which they found useful for facilitating collaboration with both university and community partners and for conducting project events.

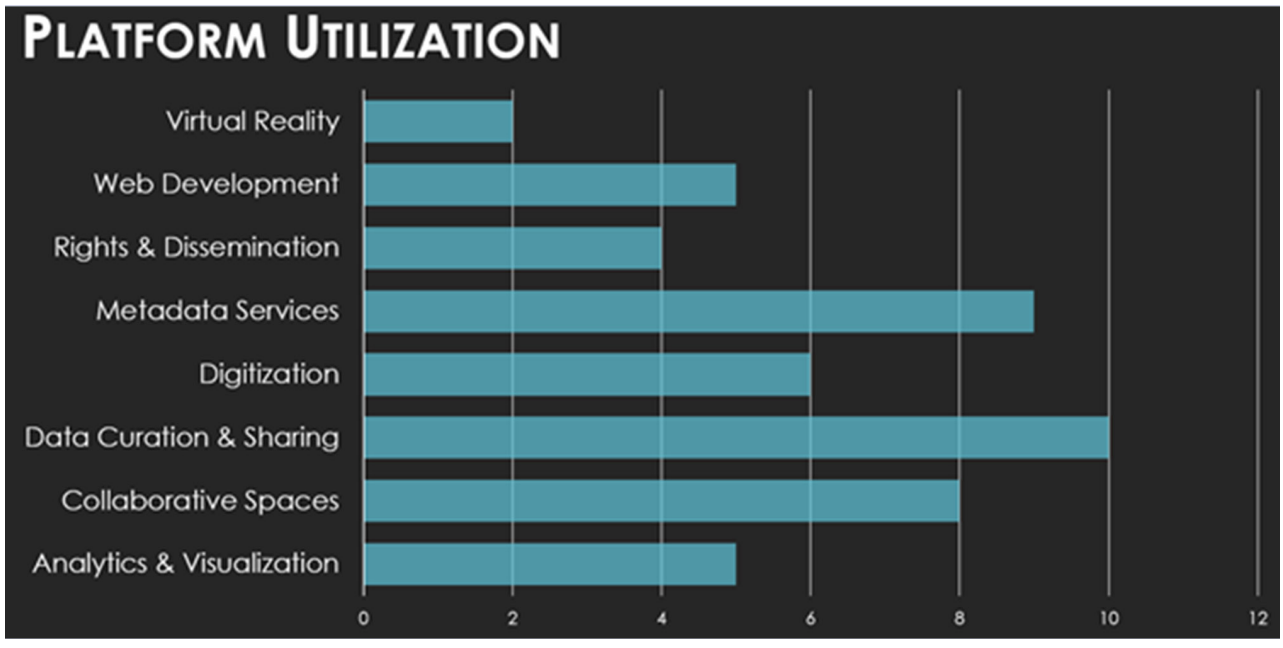
The Project Coordinator was seen as particularly helpful in ensuring the project partnerships were fulsome. The Coordinator was able to find further expertise and resources and assisted in keeping collaborations on track. But despite the Coordinator's role in helping to secure services, there were challenges determining library collaborators' scope of expertise and time capacity to contribute to research projects.

The research teams also remarked that the short timelines of these projects (6–8 months) led to challenges in initiating their projects, particularly finding and hiring research assistants.

Implementing the Platform

Figure 1 illustrates the components of the library research platform used by the research projects. Data curation, metadata services, and collaborative spaces were widely used throughout the majority of the projects; digitization, visualization, and web development were used by almost half of the projects.

FIGURE 1
Number of Projects Using Each Element of the Research Platform



Beyond demonstrating how the research platform complemented current research practices, this initiative also demonstrated how it could be useful across a variety of campus disciplines. The research teams involved scholars from nine faculties/institutes (Architecture, Planning and Landscape, Arctic Institute of North America, Arts, Business, Education, Engineering, Medicine, Nursing, and Science) drawing on 28 different departments. As the platform components are not tied to specific disciplines, they can provide important economies-of-scale benefiting a variety of scholars.

Collaborative space is an important element within the research platform. Projects made use of space in different fashions. Some made use of the library's newly launched Lab NEXT[38] as a working space where students and scholars from different disciplines could gather when they did not have sufficient departmental space of their own.[39] Others made use of library spaces such as the Visualization Studio, the Makerspace, and other areas for functions such as launch events, design sessions, meetings, and workshops. Even in this time of COVID-19, researcher interest in digital research skills and analytical tools remains high, and training sessions can occur in an online-only environment.

An important consideration for establishing the research platform is the degree to which it builds upon services, infrastructure, and expertise that already exists within academic libraries. The approach taken was to craft these functions into a singular user-experience, essentially a one-stop approach, so that researchers could discover and more effectively use these resources in combination and did not need to navigate internal complexities of the library.

Feedback from both the research teams and library staff strongly supported this approach. Particularly appreciated was the Coordinator's role in acting as a central point of contact, in both directions, to resolve issues and ensure projects proceeded as planned. Research and library staff both noted that frequent meetings were essential to the success of the collaborative endeavor. The value of data management plans to encourage early discovery of infrastructure and service needs was also recognized.

External Review

Essential to validating the findings at Calgary were the external reviews conducted at the conclusion of each round of funded research projects.

The External Review team included Larry Alford (University of Toronto), Charles Eckman (University of Miami), Lorcan Dempsey (OCLC), Harriette Hemmasi (Brown University), Megan Meredith-Lobay (University of British Columbia), Shan Sutton (University of Arizona), and Joan Lippincott (Coalition for Networked Information, CNI). In both May 2018 and September 2019, the Review team met with the project researchers, library teams that had participated in the projects, and research administrators. Findings from the Review were very positive, and the reviewers encouraged broad dissemination of project findings.

Principal observations from the review team included the following:

- the critical importance of conveying the depth and breadth of library services and expertise to researchers;
- that new models of collaboration are essential library-to-researcher but also among library departments;
- that interaction with research administrators is needed to articulate and incorporate this redefinition of the library's role throughout the research lifecycle;
- the openness of librarians to redefining their understanding of researcher needs;

- the importance of the Project Coordinator, supported by a core team of advisors from the library and the Research Services Office, facilitating the work of all project participants; and
- issues surrounding the scalability and sustainability of this new model.

In concluding their report, the External Review Committee wrote: "The ultimate measure of success in repositioning the library in the research enterprise occurs when faculty come to the library not because they are given a financial incentive but rather, when they perceive the services provided and partnership potential as things that they truly need. The University of Calgary Library has done tremendous work in re-establishing the library's perception and reality in our changing environment."[40]

Symposium Combining Library and Research Leadership Perspectives

Concluding the *Academic Research and University Libraries: Creating a New Model for Collaboration* Project, a symposium was conducted to provide an opportunity for active engagement by a diverse audience of library and research professionals. The Symposium was held December 11, 2019 in Washington, DC, and was organized by a team including the Calgary principal investigator and leaders of other important projects exploring new roles in research. Three Vice-Presidents/Associate Vice-Presidents for Research presented their views and offered reflections throughout the day. Attendees included 120 attendees from 86 institutions in the United States and Canada, as well as attendees from France, Germany, and Nigeria.

In his opening comments, Thomas Hickerson enunciated the programmatic mission being addressed: "In so many ways—whether in organizations still modelled on a print paradigm, in the utilization of staff, and in the image that libraries have on many of our campuses—I believe we are behind the pace of change. And yet, research continues to evolve. If we do not create a new prism through which to envision and realize a redefined role, our role in this vital area will diminish. This is the urgency, and this is why we are here today."[41]

New Collaborations with Campus Research

Wolfram Horstmann, Director of the Göttingen State and University Library at Georg-August-University of Göttingen, delivered the opening keynote. He noted that, with research becoming more collaborative, distributed, and data-intensive, institutions must adapt internally and seek external collaboration with peers. He described the eResearch Alliance,[42] a new service at Göttingen in which the library, computing, and the research office partner to provide one-stop research technology support. The library is pooling its resources with others, thereby strengthening local expertise and infrastructure.

The keynote was followed by a session moderated by Mary Lee Kennedy, Executive Director of the Association of Research Libraries, in which speakers highlighted recent initiatives to engage libraries with research. Charles Eckman, Dean and University Librarian, described the University of Miami's library interactions within multidisciplinary research teams organized to address challenges presented by UNESCO sustainable development goals as part of their U-LINK[43] initiative. Xuemao Wang, Vice Provost of Digital Scholarship and Dean and University Librarian, spoke about new alignments between the library and research through their Digital Scholarship Center and Research Data Center at the University of Cincinnati.[44] Thomas Hickerson concluded the panel, describing the underlying research conducted at Calgary in which scholars defined principal needs enabling today's interdisciplinary research.

These comments were followed by responses by senior research administrators from the respective institutions: Susan Morgan, Associate Provost for Research Development at the University of Miami; Pat Limbach, Vice President for Research at the University of Cincinnati; and Penny Pexman, Associate Vice-President (Research) at the University of Calgary. All saw libraries' value as partners, collaborating with researchers and disseminating their work in new ways. Library staff can also help faculty in enhancing their technology skills, often a challenge due to lack of available time. Administrators agreed that experimentation is essential and that change must encompass all aspects of library space, staffing, and organization. In response to audience questions about the risks of enacting such change, Eckman replied, "The risk is in not experimenting and making these changes—that is the high-risk strategy."

Strategies for Transformation

The next panel, moderated by John Brosz, Project Coordinator at the University of Calgary, focused on key strategies for aligning libraries with research. Joy Kirchner, Dean of Libraries at York University, described a multiyear reorganization of the library on functional rather than disciplinary lines. Greg Raschke, Senior Vice Provost and Director of Libraries at North Carolina State University, spoke of the need to reexamine the purpose and allocation of collections funding. Today, research resources are not just collections; they are also the computational infrastructure that researchers need to analyze and work with them. Leonora Crema, Scholarly Communications Librarian at the University of British Columbia, described recent collaborations with research services administering an internal grant, promoting the community impacts of research, and in researcher identity systems. She urged libraries to shift attention from research discovery (what can our researchers access) to researcher discovery (who accesses their work and how).

Plenary Discussion and Areas for Focus

Presentations were followed by plenary discussions, moderated by Joan Lippincott, Associate Executive Director, CNI. Attendees identified other strategies for change: what would they advocate at their own institutions? What might the challenges be? In lively afternoon breakout sessions, attendees discussed these issues, and common areas of interest emerged:

- Partnering with research administration. If libraries are to draw a clearer link between their activities and research outcomes, closer ties are essential. Starting points include collaborating on research impact, faculty development, research policy, and shared digital infrastructure.
- Collaboration to create a single customer-facing service for research computing. This was viewed as a compelling model, one that elevates the library's expertise in the institution and improves what, for researchers, can be a siloed experience.
- Reorganization including more functional expertise. Many libraries are already making such shifts: but how can we grow functional capacities while maintaining effective disciplinary connections?
- Building new staff competencies. Dedicated training, cross-departmental internships, meet-ups, and mentorships were among the ideas mentioned. Library and information science curriculum also plays a part.
- Space. Digital scholarship centers have become a venue for engaging students and faculty in research. How will libraries sustain these and other innovations, including the

programming and partnerships to make these spaces successful?

- Collection as platform. Reimagining investment brings challenges but also opportunities to buy and build the corpus, provide new analytics and tools for community engagement, and help researchers create machine-actionable content in reproducible open formats.
- Research impact analysis. Universities care about this, and so should libraries. Some are developing new metrics supports for their campuses. The ability to demonstrate impacts of publicly funded research will be increasingly important.
- Transinstitutional library collaboration. Many libraries are already undertaking collaborative infrastructure investments and have experience in areas such as shared governance.
- Funding models, workloads, and measurements for prioritization. As we build these new partnerships and platforms, how do we sustain the other missions of the library? What takes priority? What are the new terms for success?
- Communicating new roles. At many points in the day, attendees wondered if researchers and university leaders recognize the new capacities that exist in libraries today. Libraries need a succinct new way of telling their story. OCLC's Lorcan Dempsey summed it up by saying that libraries "used to have a short elevator speech. Today that speech requires a very tall building."

Research Administrators Respond

Susan Morgan and Penny Pexman reflected on the day's deliberations. They agreed that for most universities, research funding and impact are core. Libraries can contribute by identifying where campus scholarship is particularly robust, using traditional metrics but also altmetrics and new qualitative approaches. Research intelligence is another priority. In areas where the university has research strength, how can this be marshalled to new areas of funding support? When a call for partnership in an area such as "healthy cities" comes out, who are our strongest collaborators? The tools and networks libraries already have access to can prove valuable assets here.

There is clearly a role for libraries in faculty development and training in digital tools. The spaces libraries are creating with their central locations, cross-disciplinary meeting places, and specialized technology can support and showcase faculty work. Multidisciplinary research teams can sometimes experience translational challenges. Librarians are comfortable in this arena, cutting across differences and leveraging commonalities of interest.

Closing Observations

In summary remarks, Clifford Lynch, Executive Director of CNI, affirmed that today's research landscape is complex, and the challenges are many. As libraries are adopting these new roles, it will be "and" not "instead of" our role sustaining the scholarly record. He urged thinking five years out, to what research will look like, and to the funding models necessary for new infrastructure as a complement to the resources we already invest in.

Professional Implications

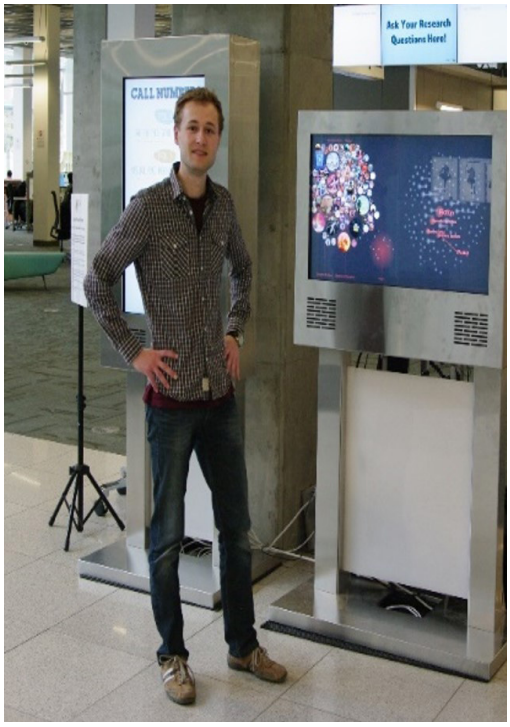
Through the various components of this study—the researcher workshops, the funded research projects, and the multistakeholder symposium that followed—overlapping themes emerged, as did a sense of urgency for change. It is clear that libraries are recognizing the critical need to redefine, redirect, and reposition their presence in the research lifecycle on their campuses and beyond.

FIGURE 2
Libraries Can Provide Shared Research Tools such as the Visualization Display Wall and VR/AR Hardware Shown Here to Engage Campus Scholars

(Photo by John Brosz)

FIGURE 3
A Scholar Engaged in a User Experience Study in the Library Creates a Dynamic Research Experience

(Photo by John Brosz)



The changes that will be required are fundamental, and will include making strategic shifts in these areas:

Digital Media and Analytical Tools

The information sources scholars use today are increasingly valued in direct association with the analytical tools that enable research. In a new paradigm, libraries' choices about content should increasingly be linked to these analytical capacities (see figure 2). Directly linking these investments will create a New Synthesis driving collection decisions and expenditures.[45]

Disciplinary to Functional

Organizational structure and services should be redesigned to strengthen library functional capacities, with less focus on traditional disciplinary roles.[46] Cross-disciplinary platforms can serve multiple needs both on and beyond campus.

Research Resources to Research Experiences

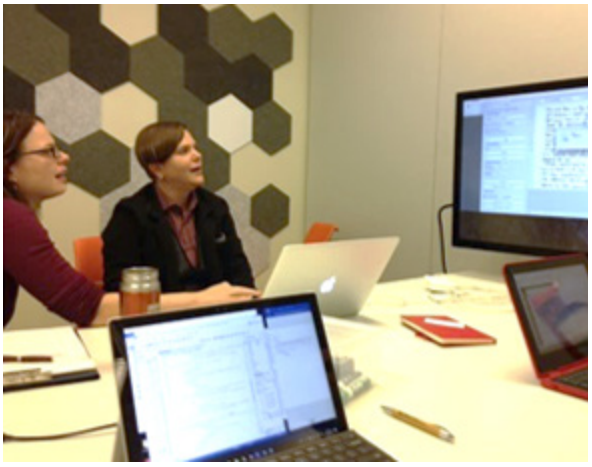
Focus attention on the nature of research today, rather than on acquisition of those resources that libraries have invested in historically. Today's research sources are often drawn from beyond what libraries purchase or licence, especially in an age of Open Science. Research platforms will continue to change, so we must employ an evidence-based response to current research practice and needs (see figure 3).

Partnerships Rather than Transactions

Stop counting and start building relationships. Libraries must be involved in all stages of the research lifecycle, not just capturing the end products of research. Library staff should pursue deep partnerships in the research process, offering expertise, infrastructure, and interdisciplinary collaboration (see figure 4). This may not align well with traditional, transactional service models.

FIGURE 4
Librarians and Researchers Working Collaboratively

(Photo reproduced with permission from Christie Hurrell)



Reducing the Cost of Research

Libraries offer inherent efficiencies in applying shared resources—expertise, infrastructure, and services—to enhance the impact and value of research investments. One research project lead investigator, cultural anthropologist and Associate Professor of Nursing Suzanne Goopy, reported that using library services to support her research rather than other means cut the cost of her project from $100,000 to $30,000. These kinds of savings can make a significant difference in the scope of a project and have broad institutional implications.

Collaborative Spaces

Library spaces are becoming labs serving as hubs for discovery and creation.[47] Increasingly, they will feature constellations of research services, linking throughout the library, across campus, and with communities in support of socially engaged scholarship. Planning should incorporate principles of openness and permeability,[48] with research leadership as key partners.

Conclusion

In the five years of this project, evidence-based inquiry determined principal components of a research platform designed to address researchers' current needs. Through substantive research conducted by a diversity of scholars working in combination with library staff, services, and infrastructure, critical new alignments were created. Researchers developed a new understanding of library expertise and services. And critically important to the repositioning of the role of the library, research administrators and research services staff developed an expanded awareness of potential contributions to the research enterprise.

The experience and findings of the project have been systematically reviewed and broadly disseminated. Parallel investigations have been conducted elsewhere, and common findings have been incorporated into professional practice and policy. Library organizations worldwide are devoting increased attention to recreating a central role for libraries in the research lifecycle.[49] On many campuses, new collaborative models in which libraries, research computing, and research services combine to provide a single point of intersection with the research process are being successfully implemented.

In the coming years, libraries may remain valuable learning spaces, but their importance and financial support will decrease without a central role in the research enterprise. Fundamental change is essential in realizing the potential for libraries to attain enhanced relevance in academic research. But the redefinition and repositioning of the library also requires institutional change. An expanded partnership with research administration and research services is critical, and most important is shared understanding and active collaboration campuswide.

The required organizational changes will be transformative, but attainable. Much of the needed infrastructure and expertise is already present in libraries and awaits rechanneling into new roles. Libraries already embody elements critical to success in addressing such challenges:

- **Trust**—A record of responsible stewardship;
- **Neutrality**—Exercising a campuswide mission;
- **Universality**—Employing common methods and standards; and
- **Economies-of-Scale**—One solution/multiple uses.

Ongoing redesign of the library environment in ways responsive to evolving needs will be essential, seeking opportunities to reshape scholars' vision of the library and to have their experiences reshape the library.

Through this new paradigm, libraries will remain relevant in academic research and reestablish their vital bonds with scholars. As research project lead Professor Goopy concludes: "I used to come to the library for the books and journals. These days, I come for the people."[50]

Acknowledgments

The authors wish to acknowledge the support of The Andrew W. Mellon Foundation, particularly Donald J. Waters, former Senior Program Officer; Edward McCauley, former Vice President for Research, University of Calgary, for his project sponsorship supported by Research Services, coordinated by Robin Smith; all the scholars who contributed to the workshops and the multidisciplinary teams in the funded research projects; and Libraries and Cultural Resources staff contributing to the project, particularly Kerri Calvert, Mary McConnell, Susan Powelson, and Kathryn Ruddock.

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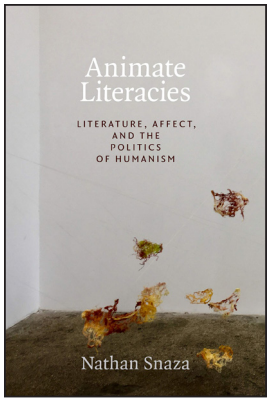
Book Reviews

Nathan Snaza, *Animate Literacies: Literature, Affect, and the Politics of Humanism* (Duke University Press, 2019); **Jack Halberstam**, *Wild Things: The Disorder of Desire* (Duke University Press, 2020); **Julietta Singh**, *Unthinking Mastery: Dehumanism and Decolonial Entanglements* (Duke University, 2018)



"Wildness, instead, disorders desire and desires disorder."
Jack Halberstam, *Wild Things*

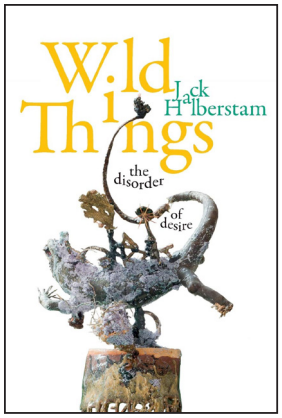
When people think of academic libraries, they don't usually think of them as wild places, or *de*humanizing institutions. Quite the opposite, in fact. The disciplinary order of the library is generally considered to be, along with higher education itself, an expression of the highest form of humanist discourse and ideals. Not only do these books bear an intellectual kinship with one another, but they are also all published by Duke University Press, and in their writings, the authors have each acknowledged one another as friends. The lessons offered by Nathan Snaza, Jack Halberstam, and Julietta Singh are useful to academic librarians because they call into question some of the metaphors, objectives, and stated values of our profession—things we tend to take for granted like mastery, discipline, universality, and order—and describe some of the ways in which these concepts are derived from colonial projects. Together, these books provide insight into what queer desire and decolonization have to do with each other, calling some of librarianship's foundational principles into question and expanding the range of what can be thought in our own field.

What I find so enchanting about this group of books is their embrace of bewilderment and wildness as method. Some readers may find them frustrating for their idealism or use of theory, but my view is that readings like these and ongoing discussions about the questions they invite are necessary background work that prepares us for going about what-should-be-done. These works will resonate with people who resist the politics of correction, or who respond to the irrationality of library bureaucracy with bewilderment.[1] Library workers and researchers are increasingly calling attention to our histories to consider the ways in which libraries and information support colonial imaginaries, and the books reviewed here can serve as guides for thinking about dismantling colonial practices and structures. They also offer techniques for revising our professional standards, values, and the metaphors we live and work by.

Nathan Snaza's *Animate Literacies: Literature, Affect, and the Politics of Humanism* will resonate most obviously with information literacy librarians, but his critique of the institutionalization of reading practices is also useful for people across library departments. Snaza is interested in the situatedness of literacy and suggests that all the dimensions of books and reading comprise a scene of politics. His starting point is what Sylvia Wynter, Franz Fanon, and Paulo Freire have already described: "Humanizing education cannot proceed without simultaneous dehumanizing" (13). Difference is affirmed through differential access to humanizing education, and education rewards and upholds certain humans while exploiting or otherwise diminishing

others. In the context of librarianship, this would mean that we might consider the hidden costs of our services and resources, in part due to a legacy informed by a history of colonialism. Snaza draws from Frederick Douglass's autobiographical narrative and Toni Morrison's *Beloved* to illustrate just how dehumanizing literacy education is, as it depends upon an Other who may not only be barred access from literary resources but also produces the material conditions that make "humanizing" literacy available to some. As so many critical librarians have observed, one of the barriers to changing ordering techniques in libraries is because they become "increasingly durable, tangible, and real in part because its reality is built into the material configuration of institutions and their disciplinary divisions" (67). Snaza suggests we dwell with hauntings—that we pay attention by turning "toward questions of how that particular social order was able to emerge and at what costs" (21). He extends Sara Ahmed's observations of the gendered "conditions of emergence or…arrival" and suggests that they require our attention: "Those materials—the table, the paper, the ink, the pencils—also involve exploitative extraction and expropriation of labor and natural resources along linked circuits of production and transformation."[2] One is affected by all of the objects and conditions, and "this larger affective situation creates the conditions of possibility for the emergence of the human" (67). These possibilities for becoming fully human vary based on one's place in time.

In fact, he suggests there is something to be said for a "wild literacy" or for bewilderment itself. Rather than focusing on answers and permanence, we might privilege the state of wonderment and ephemerality—the affective experiences of seeking information, being in a body in a library, of being bewildered by the library and its classifications, and exploring one's curiosities.

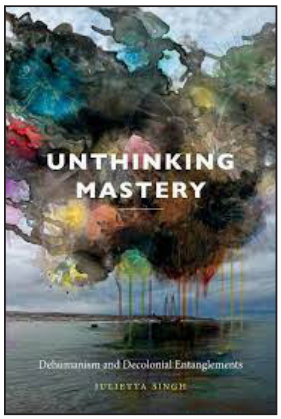


This is why Jack Halberstam's subtitle, *The Disorder of Desire*, is more striking than the title proper and why his book is so relevant to academic libraries. *Wild Things* invites readers to embrace bewilderment, to privilege desire (especially queer desire), and *un*master the disciplines.

Halberstam trains our attention toward critiquing and refusing the settler colonial desire that inscribes so many cultural and educational institutions. The book opens with a description of *Where the Wild Things Are*, a children's book, which, as Halberstam notes, some libraries chose not to circulate when it was first published. The desire and rage and threats to domestic serenity were apparently not fit for children in some librarians' eyes. For so many people who visit the library, the rationality that drives ordering practices is completely bewildering and befuddling, so we can hardly suggest that the ordered library is not always already organized by desire. The desire for mastery, authority, dominance, and control is a very particular type of desire that frames and contains knowledge and experience. Of course, it is true that the desires of readers and the contents of their reading materials exceed those structures. What if we intentionally undisciplined the library and reorganized in ways that privilege excess and contradiction? Bewilderment is something like enchantment, wondering and longing, mystery, and sitting with not knowing and being lost. It is a "disorientation to space with a wandering moment free of any destination" (67).

For Halberstam, "Wildness names simultaneously a chaotic force of nature, the outside of categorization, unrestrained forms of embodiment, the refusal to submit to social regulation, loss of control, the unpredictable" (3). "The wild" also stands for subjects who have been

marginalized because they can't be explained, don't fit within universalizing frames, or fall outside of a specified norm. It is a "space of potential" (3). And so, to privilege the wild is to privilege the subject who "escapes and defies the regimes of regulation and containment that shape the world for everyone else" (23). Halberstam works with and through a wide range of cultural materials about the natural world, from Roger Casement to Nick Cave, from the performance of *The Rite of Spring* to the paintings of Kent Monkman (an Indigenous Two-Spirit artist who appears frequently as Miss Chief Eagle Testickle), and a variety of texts on falconry and children's books. His chapters on domesticated animals and the pet industry are not obviously relevant to critical librarianship, but, on the whole, his work supports his observation that "the very classifications that seem established and right in the nineteenth century begin to wobble and topple over" (23). There is much to be said for applying Halberstam's method to inquire into long histories of authority control, and its resultant marginalization of subjects in our library classifications. In many ways, the hierarchies and naming techniques are rooted in ideas about nature, what is natural, and the promise of discipline.



Julietta Singh's *Unthinking Mastery: Dehumanism and Decolonial Entanglements* is in direct dialogue with the other two books and gets at the very heart of the problems with colonial institutions. Singh's critique of mastery as a concept provides a map for dismantling the metaphors underlying knowledge production and acquisition. Indeed, most of us take for granted that students and faculty aspire to master an academic subject and that one aspect of a librarian's work is to support researchers in this quest. One could argue that a library is organized and designed with mastery in mind. But Singh makes it clear that we can't talk about the mastery of academic subjects without thinking about master and slave relationships and the history of the plantation. To be a master of one's domain has historically meant that the "colonial master understands his superiority over others by virtue of his ability to have conquered them materially and by his insistence on the supremacy of his practices and worldviews over theirs, which renders 'legitimate' the forceful imposition of his worldviews" (9). Singh begins by critiquing humanitarian literature, including the work of Mohandas Gandhi and Franz Fanon, and then works through the ethical possibilities and limitations of the concept of mastery in postcolonial writers including Mahasweta Devi, Indra Sihha, J.M. Coetzee, Jamaica Kincaid, and Aimé Césaire. Singh is direct in her account of the dehumanizing aspects of books and reading, converting the terminology into a critical practice she calls *dehumanism.* Such a practice involves "stripping away the violent foundations (always structural and ideological) of colonial and neocolonial mastery that continue to render some beings more human than others. Dehumanism requires not an easy repudiation and renunciation of dehumanization but a form of radical dwelling in and with dehumanization through the narrative excesses and insufficiencies of the 'good' human" (4). Like Snaza and Halberstam, Singh is not looking for a solution. What matters is the critical practice and the questions it gives rise to, as well as finding "new forms of living together, gathered in collectives that promise to astonish us" (174). She writes, "To survive mastery, we must begin to deconstruct our own movements (intellectual, activist, corporeal) that remain entangled with the violent erasures of other lives, and of things we declare insensate" (173). I feel compelled to add that Singh's other recent publications—*No Archive Will Restore You* (Punctum 2018) and *The*

Breaks (Coffee House Press 2021)—are beautifully and honestly crafted projects, which many readers will find relevant to LIS.

While the (anti-)principles set forth in these books may appear to be antithetical to a library's purpose, and even a threat to ideals that so many of us hold dear, perhaps a wild "framework" born out of a "utopian hopefulness" can help us to imagine our way out of the colonial structures that order academic libraries and librarianship. As Halberstam writes, "It is within the epistemologies established by colonial encounters, by colonial brutality, and by a colonial will to know that the wild is established as a space of otherness" (18). We can start by questioning "mastery," "disciplinarity," and literacy itself, considering the ways in which libraries have become spaces that have othered wildness in order to contain it. It seems very possible that privileging enchantment, bewilderment, fugitivity, relationality, and the erotic in our libraries would help to rearrange the library according to queer, anti-racist, and anti-colonial principles. Sometimes I wonder if the purpose of a library's order is to contain desire. If what Anne Carson says is true—that reading and writing are erotic experiences that reside in "the play of imagination called forth in the space between you and your object of knowledge," a library is an overflowingly erotic place.[3] If readers and researchers and library workers all encounter their desires, their wonder, their beloved objects of study, then the space in which this happens is indeed a wild one. Helping current and future readers and researchers inquire into and gain access to their own desires is an indispensable (and too often unacknowledged) aspect of our profession.—*Melissa Adler, Western University*

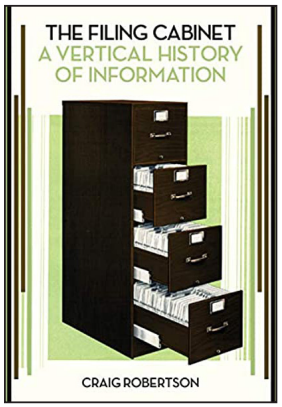
Notes

1. See Emily Drabinski, "Queering the Catalog: Queer Theory and the Politics of Correction," *Library Quarterly* 83, no. 2 (2013): 94–111; Karen P. Nicholson, Jane Schmidt, and Lisa Sloniowski, "Editorial," in Special Focus on Academic Libraries and the Irrational, *Canadian Journal of Academic Librarianship* 6 (December 2020): 1–11, https://doi.org/10.33137/cjal-rcbu.v6.35194.

2. Sara Ahmed, *Queer Phenomenology: Orientation, Objects, Others* (Durham, NC: Duke University Press, 2006), quoted in Snaza, *Animate Literacies*, 93.

3. Anne Carson, *Eros the Bittersweet*, (Princeton, NJ: Princeton University Press, 1986), 109.

Craig Robertson. *The Filing Cabinet: A Vertical History of Information.* Minneapolis, MN: University of Minnesota Press, 2021. 280p. Paper, $27.95 (ISBN 978-1517909468).



Take a moment and think: when did you last consider the humble filing cabinet? Ubiquitous to the point of invisibility, especially for anyone who has worked in or simply passed through an office, reading Craig Robertson's *The Filing Cabinet: A Vertical History of Information* set this reviewer's mind adrift, wondering when I had last seen this piece of furniture. Once a required presence in any office, the filing cabinet now appears to be the purview of interior designers looking to add an *industrial chic* edge to a loft, or a cheap DIY project of choice for smoked meat enthusiasts.[1] Has the filing cabinet's moment passed, condemned to become a relic—much like slide rules, banker's lamps, drafting tables, barrister shelves, and the like—to be fetishized by weekend flea market browsers?

Robertson would argue otherwise. It would be tempting to be pithy and state that, regardless of its physical presence in our lives, this is the filing cabinet's world and we're just living

in it, but the situation is more complicated than that. Robertson aims to show that, while the filing cabinet itself is not an agent of change, its very materiality provides a window into a particular moment in industrial capitalism when *information*, along with *information work* and the *information worker*, as opposed to the knowledge worker, was ascendant, and how that shaped—and continues to shape—the world we inhabit.

The book opens by considering a key principle in the late nineteenth century business world: *verticality*. Not only was this manifested physically in the form of the skyscraper—an efficient way of housing a maximum amount of office space and workers on a relatively minimal plot of land, the construction of which was made possible by breakthroughs in the manufacturing of steel—but also in the organization of companies for the sake of efficiency and cost-cutting in the name of cornering markets. In these hierarchical, heavily Taylorized spaces, there existed an increased need for the retrieval of discrete bits of *information*—anticipating both Paul Otlet and Vannevar Bush—as opposed to reliance on larger, more holistic bodies of knowledge. Modern theories of management had no need for the wizened clerks and scriveners of old, doddering about in dusty offices and retrieving bits of paper from batteries of pigeonholes in rolltop desks. Newer, sleeker, and more easily operable technological developments were called for. Enter the filing cabinet. With a steel form evocative of the skyscrapers they would be housed in, these storage containers allowed for the vertical storage of files in a series of drawers that, through the miracle of hanging folders and tabbed dividers, could accommodate a wide range of organizational schemes.

Technology, however, is only one facet of this history. Durable and efficient, the filing cabinet still requires someone to perform the action of filing. Perhaps unsurprisingly, this was work largely considered acceptable for younger, single women with some—but not too much!—education. While varying levels of managers and administrators took on ever more granular and specialized tasks involved in the running of large firms, they depended on the labor of secretaries with incredibly generalized training. The principle governing the operation of the filing cabinet was one of speed: one simply needs to glance at a few specific fields on a document to know where in the filing cabinet it ought to go. The same principle works, nearly in reverse, for the retrieval of a file. This operation was considered, both by the managers of business using filing cabinets as well as the sales departments of the filing cabinet manufacturers, to be so logical as to be practically automatic. However—and this is where Robertson's book truly shines—such semblances of automation promised by technology hinge on the labor of people considered to be so interchangeable and fundamentally marginal as to be rendered invisible. While the ideal filing secretary would not be so educated as to overthink her duties, filing cabinet manufacturers published reams of training material on basic filing systems, even manufacturing miniature filing drawers and other didactic tools for course modules that were pushed by industry and taken up in many junior and high schools across the United States. Reading this, it's not hard to hear echoes of the many tiresome calls to "learn to code," and subsequent pushes to have this preferred form of skill building integrated into school curricula as a means of combating twenty-first century job stagnation, or even the pointed disdain and interchangeability to which contingent workers for the myriad rent-a-serf apps are expected to accustom themselves.

Moving beyond labor, the filing cabinet has had a curious lingering cultural impact. The vogue for efficiency represented by the filing cabinet made its way into the home early on—particularly in America, where the built-in closets in our bedrooms and the particular

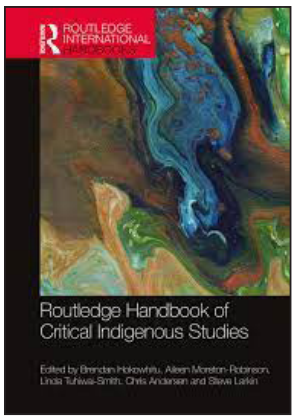
manner in which built-in kitchen cabinets are arranged in relation to refrigerators, ranges, and ovens, offers a vestigial promise of better living by getting one's house in order. And by the time GUIs made their way into computing, the language of the filing cabinet had become so naturalized that both the file folder and its companion, the trash bin, became icons to orient users in operating a new piece of machinery.

It is difficult to do justice to Robertson's thrilling history of the filing cabinet. Other outstanding surprises include a panoply of amusing images—early advertisements depicting men jumping into open filing cabinet drawers to demonstrate just how well-built a particular cabinet is, disembodied and shapely hands caught in the act of opening a file drawer (sex, as always, seems to sell), ridiculous cartoons—and even a poem gently mocking secretaries making filing errors while distracted by the thought of after-work dates and other frivolities. A useful and thought-provoking text for those of us dependent on the filing cabinet and the subsequent technologies they inspire, this book deserves a wider readership in both the art historical and cultural studies fields.—*Caleb Allen, Independent Scholar*

Notes

1. That's right—strip down your filing cabinet, add a heating element, and you too could be making a few briskets in a Fire King filing cabinet. Prefer something more novel? That's alright, you can transform your neglected filing cabinet into a rotisserie as well.

Routledge Handbook of Critical Indigenous Studies. Brendan Hokowhitu, Aileen Moreton-Robinson, Linda Tuhiwai-Smith, Chris Andersen, and Steve Larkin, eds. Milton Park, UK: Routledge, 2020. 632p, 32 B/W illustrations. $250.00 (ISBN 978-1138341302).



For better or worse, Routledge has a long history of publishing content on Indigenous peoples and has recently published handbooks on Indigenous people's rights, Indigenous peoples of the Arctic, Indigenous environmental knowledge, and, most recently, Indigenous well-being. *The Routledge Handbook of Critical Indigenous Studies* was published in late 2020; it asserts that it is "ambitious in scope, ranging across disciplines and national boundaries, with particular reference to the lived conditions of Indigenous peoples in the first world."

As one would hope, all authors are Indigenous, with roughly a third of the authors identifying as Native American or First Nations peoples, one third as Māori, and the remaining third of authors as Aboriginal, Kānaka Maoli or Kānaka ʻōiwi, Sámi, Alaska Native, Mexican, and Samoan.

In many ways, I am the model audience for this book, as an Indigenous practitioner in multiple disciplines and professional spaces. Additionally, many of the authors in this volume are scholars whose works I had read previously and whose works I follow closely. On a personal note, it is nice to see other Māori scholars so well-represented in a mainstream work. However, I see this book as having a broad appeal across many disciplines, ranging from Indigenous studies (including Hawaiian, Māori, Pacific Islander, Native American, First Nations, or other Ethnic Studies departments or programs), history, sociology, anthropology, gender or queer studies, law, politics, literature, social movements, and more.

Moreover, this book embodies a spirit of collaboration and an uplifting of Indigenous ways of knowledge sharing that is evident in the very organization of the book. A different

Indigenous editor guides each of the five main sections of this handbook, organized as follows: Part 1—Disciplinary knowledge and epistemology (Chris Andersen, Métis); Part 2—Indigenous theory and method (Linda Tuhiwai Smith, Ngāti Awa, Ngāti Porou, Tūhourangi); Part 3—Sovereignty (Aileen Moreton-Robinson, Goenpul); Part 4—Political economies, ecologies, and technologies (Steve Larkin, Kungarakan), and Part 5—Bodies, performance, and praxis (Brendan Hokowhitu, Ngāti Pūkenga).

In a time where many pivotal Indigenous conferences and gatherings have been postponed or squeezed into unaccommodating online platforms, this volume meets a need for a celebratory gathering of Indigenous scholars. The 43 chapters include personal narratives, poetry, and retelling of stories, in addition to the more traditionally theoretical text one might expect in an academic handbook. It all has a place here, from Linda Tuhiwai Smith's multilayered narrative of Indigenous perspectives on COVID-19, to Michelle M. Hogue's piece on how centering Indigenous sovereignty can transform Indigenous retention and outcomes within STEM.

Several scholars within this volume take the opportunity to reflect on Indigenous Studies as a discipline and the complicated way that Indigenous scholars navigate academia. For example, the opening chapter by Chris Andersen gives a history of the Native American and Indigenous Studies Association (NAISA), and the tension between support for Indigenous studies from NAISA and from the institutions where NAISA members are employed. The following chapter, by poet and scholar Alice Te Punga Somerville, uses her personal narrative to trace the ways Indigenous scholars have their legitimacy dictated by an institution. Examples include whether te reo Māori is accepted as a foreign language requirement in an American PhD program, or whether a Māori literary scholar with four degrees in English should be based in English studies or Māori studies. Across chapters, authors reflect on our similarities with and differences from other disciplines, and the ways that colonization has impacted our presence in the academy, and non-Indigenous perceptions of our work.

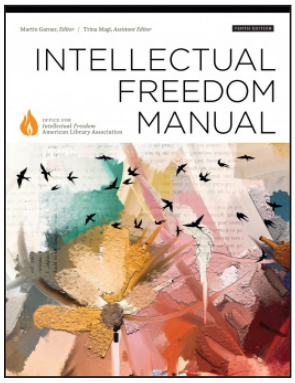
Dr. Te Punga Somerville writes,

> *We often talk about the ways that Indigenous Studies looks and works so differently in nation-state contexts, as if specificity overriding uniformity is a bad thing or unique to Indigenous Studies. But English looks different in different places too: English in New Zealand is supremely white, and extremely conservative, whereas departments of English in the United States (and Canada) tend to be places that critical thinking about race, colonialism, gender, sexuality, etc. happen.*

At 632 pages, this is a hefty volume that presents Indigenous knowledge as a dynamic set of frameworks that both draw from our traditional knowledges and set aspirations for those of us in the academy—students, workers, and elders alike. While identity, region, and focus shift from one author to another, ideals of relationality and community do not. Some of our elders are represented here—such as Linda Tuhiwai Smith, known as the Mother of Indigenous Studies. With sadness, I note that the late Haunani-Kay Trask did not have a piece in this volume—undoubtedly due to illness, not an editorial oversight. Both Trask and Smith were elected to the American Academy of Arts and Sciences this year, with both scholars noted as founding Hawai'ian and Māori tertiary studies in their respective homelands.

Still, the late Dr. Trask is cited throughout the book, and scholar Nālani Wilson-Hokowhitu writes, "I write in honour of Haunani and our long lineage of mana wāhine." Many of the authors pay their respects to those who encouraged, mentored, and supported them on their academic journeys, past and present—a reminder of the sovereignty, disciplines, and enduring care that are core to Indigenous ways of knowing, and that makes the *Routledge Handbook of Critical Indigenous Studies* such a compelling and energetic volume.—*Nicola Andrews, University of San Francisco*

Intellectual Freedom Manual, 10th ed. Comp. the Office for Intellectual Freedom. Martin Garnar and Trina Magi, eds. Chicago, IL: American Library Association, 2021. 352p. Paper, $69.99 ($62.99 ALA members) (ISBN 9780838948187).



Intellectual freedom (IF), the freedom to seek and obtain information across viewpoints, is a long-supported ethical cornerstone of librarianship. Supporting intellectual freedom within libraries is widely seen as a vital underpinning to democracy. This newest edition of the *IFM*, like former editions, recounts and explicates the history of intellectual freedom within the profession. Comprising 16 sections (over three parts), the updated edition includes 17 essays by such renowned IF scholars as Deborah Caldwell-Stone, Theresa Chmara, Kristin Pekoll, Helen R. Adams, and others. As such, the *IFM* remains the authoritative reference work on this subject and makes a strong case for why intellectual freedom matters while giving practical advice on how to support intellectual freedom within the library. This edition also continues the *IFM*'s tradition of evolving and adapting topics in response to the evolution of libraries and librarianship. Accordingly, some valuable ancillary issues are included for discussion, while other information has been taken out or added. Copyright is a wise inclusion carried over from the 9th edition, but now gone is the "Deeper Look" specifically dealing with privacy concerns and RFID. The section dealing with "Meeting Rooms, Exhibit Spaces, Programming, and Education" has also been expanded on from the 9th edition. A particularly useful addition is section 10 (in the second part), entitled "Special Lenses: Guidance across Issues." This section includes chapters on Equity, Diversity, and Inclusion, Intellectual Freedom for Academic Libraries, Politics, Religion, Free Expression, and the Visual and Performing Arts. Though such a section may seem to be a bit of a hodge-podge, the effect is rather that any questions or uncertainties on the part of the reader have been anticipated and addressed. This foresight regarding readers' potential anxieties is one of the *IFM*'s major strengths. Ample resources to learn more about an issue are provided throughout the *IFM*, including the ALA core intellectual freedom documents such as the *Library Bill of Rights* and the *Code of Ethics* as well as official ALA policy statements and advice on creating intellectual freedom policies for libraries. In addition, references to further resources are found throughout the manual. Indeed, the *IFM* is a complete examination of intellectual freedom from multiple angles.

This newest edition comes at an interesting and complicated time for librarianship due to the particularly fractious political divide within the United States. What does intellectual freedom mean in such an era of social reckoning, and why should a library or a community care about IF, especially when hate speech or challenges to library decisions might feel personally harmful to some library workers and community members? This manual does not resolve that issue for the individual reader. Intellectual freedom, for libraries, depends on a

belief in neutrality. Perhaps there is no happy medium for the reader who wants to fully support IF within the library while also protecting more vulnerable populations from injurious or inflammatory speech. These positions would appear to be diametrically opposed. The *IFM* instead offers practical advice for implementing intellectual freedom practices in libraries and answers legal questions regarding intellectual freedom while explaining why librarians and library workers should want to do this. It is a tough lesson in many ways.

While the material is consistently written in a clear, easy-to-follow fashion, readers may still feel unsatisfied and unsure of how to square their own personal feelings with the case the authors make for IF as an absolute principle. This tension is never openly addressed in the *IFM* outside of advice about how policy can be composed for issues like collection development or uses of meeting spaces to avoid conflict with community or in discussion of how content should not be removed from a library's collection because it might be found objectionable. However, a chapter new to this edition, "When to Call the Police," dealing with patron privacy and requests from law enforcement, at least hints at societal conflicts that may sometimes personally affect library workers and the library community. Calling the police is suggested only for times when illegality occurs. This advice will not sit well with librarians who feel that, in choosing neutrality, they are participating in the harm of some part of their communities. The volume's silence on these components of intellectual freedom may seem inadequate for library workers looking to resolve real struggles in their communities.

Critiques of former editions suggested that the *IFM* was not thorough or broad enough, that dissident positions go unacknowledged, and that the tone is smug and self-righteous. This most recent edition, however, really does appear to have considered such criticism. This is true even in consideration of the critiques being offered in this present review. The *IFM* is thorough and broad: supplementary issues are addressed (for example, censorship and lobbying are carried over from the previous edition). Dissident positions are addressed in discussions of collection development policies that reflect the entire community—although, as previously mentioned, dissident positions are not addressed in other ways. Finally, the tone of the *IFM* is straightforward and complete: it reflects both the gravitas and the complexity of the issues but appears to trust the reader to understand the complicated issues and to be capable of making the "right" decisions. In some ways, the *IFM* even feels nurturing: it gives the reader the materials that they need to understand intellectual freedom.

The thoroughness of the *Intellectual Freedom Manual* alone makes this a recommended read. Intellectual freedom is a complex, difficult topic, and the *IFM* handles it well.—*Sarah McHone-Chase, Northern Illinois University*

Jonathan Beller. *The World Computer: Derivative Conditions of Racial Capitalism*. Durham, NC: Duke University Press, 2021. 338p. Paperback, $28.95 (ISBN: 9781478011163).

At the heart of this complex, ambitious, and difficult book is an intriguing idea: that the logic of capitalism has been to turn the entire world into a computer. In one stroke, all the tendencies toward the quantification of everything (of the human sciences, of social media, of our relationships to our bodies, of human achievements) becomes part of a single process: the precise and never-ending computation of value. Every incremental quantity, in every aspect of human life, is tabulated within the circuits of this computer. And there's more: because quantification and value—modeled on the idea of price—can only exist within a ratio of difference, of more to less, the "world computer" can describe not only the meaningless differences

between, say, one Olympic athlete and another, but the more insidious differences implicated in racism and other structures of oppression.

It is not easy to tease out all the ramifications and consequences of this idea from *The World Computer*. Beller writes in an extremely compressed style, combining terms and expressions from computer science, political economy, sociology, activism, and media studies together with a violence of juxtaposition that is breathtaking but often almost impenetrable. This is due largely to what Beller is trying to accomplish: an aggregation of much important work done in Marxism, Critical Race Theory, and political economy during the last decade or so, throwing together the disparate strands of this work while still remaining loyal to their differences and, in some ways, their incommensurability. To seamlessly synthesize these different tendencies would be difficult enough; to attempt it while still elucidating the central idea of the world computer sometimes proves too much.

The book is divided into three long sections with two appendices. In the first section, on *Computational Racial Capitalism*, Beller outlines "the social difference engine." He describes this as the social machine that tabulates differences and distributes resources (including social capital) accordingly, emphasizing the specific way this difference engine works along racial lines. Beller draws on Marx's theories of the machine as well as the postwar history of computation and communication and its application to racialized classification to draw conclusions about the ways a "computational unconscious" now serves to reinforce the logics of racial capitalism independently of human decision-making: "Computers organize the whips and chains while humans watch and help" (96).

The second section, *The Computational Mode of Production*, develops Marx's understanding of capitalism as a system oriented around the production and exchange of commodities for money. For Beller, the new digital economies (with their attendant data visualizations and metrics) are oriented around images and code in which "image-code, the network commodity, replaces what was formerly understood as the commodity on its way…from money to more money" (122) and where "the image became and remains a paradigmatic work-site of capitalism" (123). The imbrication of labor within screens, images, and codes give the computational mode of production "a carceral logic of enclosure, a settler-colonial logic that posits consciousness as a standing reserve" of untapped energy (122).

One of Beller's arguments is that the computational mode of production allows for the financialization of all aspects of human life, making possible "derivative conditions." Risk, success, and the distribution of life chances are controlled by the financialized machine that registers and acts upon the stored, socially constructed differences between identities. As a result, derivative conditions can be manipulated and turned to the profit of racial capitalism itself as "categories of social difference function…as wagers on the economic value of their underliers and as means of structuring risk for capital" (7).

This brief outline does not do justice to the scope of Beller's argument and the wide survey of theoretical and empirical material. However, this scope is itself a weakness of the book. Quite simply, Beller is trying to do too much, and, by forcing the languages, concepts, and facts of all his different inspirations together, he makes the book almost impenetrable. There is a lot going on here, and some intriguing and complex questions raised and investigated, but the amount of work required to follow Beller is immense.

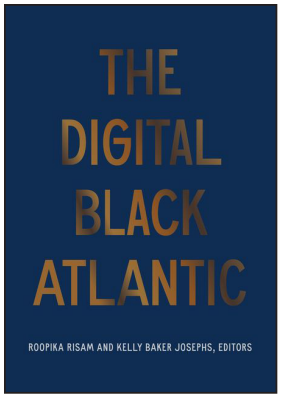
Whether this work is worthwhile or not is an open question. Another consequence of the vast scope of Beller's investigation and the constraint of putting it all into a single volume is that certain aspects of the analysis and argument appear ungrounded and vague. At times—and this is also a function of his very difficult style—it is unclear whether Beller refers to a concrete material reality, a theoretical construct, a metaphor, or perhaps all three at once. In many ways, these two weaknesses are a result of Beller's obvious passion and excitement for the project, as words and ideas fall over themselves in the urgency of their expression. But the work would have benefited from more space and more clarity of expression.

The kernel of Beller's project is that "the history of the commodification of life [is] a process of encrypting the world's myriad qualities and quantities" (6) and that "what we today call digitization began more than seven centuries ago with commodification" (17). This work will be of interest to anyone working in the area of digital services, education, information management, and technology from a critical perspective. There are plenty of compelling ideas in here, not the least of which is the offering of a program to "secure victory—in the form of a definitive step out of and away from racial capitalism—for the progressive movements of our times" through the "decolonization of information, and therefore of computation, and therefore of money" (7).

This book can be recommended for anyone interested in the critical theory of information, with the caveat that it will require a disproportionate amount of work to intellectually come to grips with Beller's extensive engagement with his material and to excavate what is significant or useful. More specific to librarians is Beller's contention that the business-as-usual of racial capitalism and the world computer are insufficient for survival and revolution. Librarianship's focus on technological solutions, and even the progressive politics of much of Digital Humanities, must directly confront the mechanisms of technological oppression Beller describes. "The politics, expressivities, pedagogies, practices of relation, and media of value creation and distribution adequate to the task of redesigning the entanglements of culture and economy remain to be collectively realized" (254), Beller writes, and this might stand as a mission statement for academic libraries committed to real social transformation. As challenging as this book is, library workers can draw valuable lessons about the relations between racial capitalism, technology, and information work, lessons concerning both the immensity of the challenges we face and the importance of addressing them.—*Sam Popowich, University of Alberta*

The Digital Black Atlantic. Roopika Risam and Kelly Baker Josephs, eds. Minneapolis, MN: University of Minneapolis Press, 2021. 272p. $124.32 (ISBN 978-1517910808).

Along with increased attention and investment in the digital humanities during the past two decades, there also seems to be increased attention to Black print, digital, and material culture. Editors Roopika Risam and Kelly Baker Josephs—active in the scholarly digital humanities conversation for some time—set out to assemble a collection of essays based on Paul Gilroy's framework of *The Black Atlantic,* which theorizes that the intellectual legacy and life of Black peoples is not marginalized but transnational. *The Digital Black Atlantic* is a welcome addition to the University of Minnesota press *Debates in the Digital Humanities* annual series. This is the sixth volume in the series and serves as a departure from predominantly white discussions and practices in the digital humanities. In the 2016 collection, the notion of a Black digital humanities was advanced in Kim Gallon's chapter, "Making a Case for the Black Digital Humanities," and is frequently cited by the contributors of this volume.



Risam and Baker Josephs define the digital Black Atlantic as "the body of interdisciplinary scholarship that examines connections between African diasporic communities and technology" (ix). The introduction is organized into four sections, with the final section offering a summary of 19 essays included in this volume. The book concludes with acknowledgments and contributor biographies. Black Atlantic motifs are used as the four-part organization of the book: Memory, Crossings, Relations, and Becomings. Chapter topics map across the digital Black diaspora and include discussions on familiar digital humanities tools and pedagogical terrain from textual analysis, linked data, and open educational resources (OER), to the more experimental, 3D, and virtual reality–enabled software built atop a game engine platform ("Digital Queer Witnessing") and the recreation of a music notation from a seventeenth century travel diary with Jamaican musicians ("Musical Passage"). Contributed essays are interdisciplinary and include explorations of the digital Black Atlantic through the disciplines of African diasporic studies, library and information science, archival science, Queer studies, communication, game studies, history, and literature, to name a few (xvi). Contributors refer to each other's work throughout in a call and response musical mode.

The editors and contributors direct readers to relevant introductory literature throughout the volume, but the book will be most useful for those with at least a rudimentary understanding of digital humanities. Chapters include discussions relevant to special collections librarians, archivists, and librarians; there is acknowledgment of and collaboration with memory professionals. But as is often the case with DH scholarship, there is a hint of boundary-policing. This raises the question: what work could be done without the keepers? This subtext can be dispiriting for marginalized librarians and archivists interested in DH work.

Still, the Black Atlantic juxtaposed with digital humanities, both vast and nebulous areas of inquiry, succeeds as long as readers are aware of its principal themes: the ship, chattel slavery, and music. Chapters include both global and local DH practices. For instance, Alexandrina Agloro describes a digital humanities project that creates a space that is part music recording studio and part community center; contributors used social media to fundraise globally from Cape Town, South Africa.

Contributors introduce experimental projects and well-developed explorations, projects, and collaborations that go beyond a retread. However, in many of the most important structural ways, Blackness cannot seem to function independently of whiteness. Recovery as the overarching theme of the book often means that many of the materials that create the foundation of Black Atlantic DH projects are held tightly by elite, well-resourced institutions that often win what limited grant funding is available. Some cultural heritage materials held by public, smaller and/or Caribbean institutions function as the local, and are still inextricably linked to and controlled by white dominant systems (Library of Congress, Google, Facebook, and other entities). It is the simple reality. That said, Black peoples have always "made a way out of no way," as some contributors do with their projects.

A few contributors, including Toniesha L. Taylor, acknowledge how technology has been used against Black people, but is often subverted in ingenious ways. Using Abdul Alkalimat's opening chapter on eBlack Studies and recovery (the Sankofa Principle) as a springboard, Amy E. Earhart contends that digital Black Atlantic scholarship could be all for naught if the

archival sources and/or rare literary texts are not accurately evaluated, described, and documented. Alkalimat, Earhart, and others have worked on Black bibliography in particular for many years, so this is a profound point: the lack of attention, care, and detail to Black cultural heritage materials has and continues to shape the scholarship to which researchers, students, and community members have access to and use, and can perpetuate inaccurate scholarship and history. Anne Donlon's close collaboration with librarians and archivists places her attention on finding aids. Donlon misses some of the nuances of this work: understaffing of special collections libraries and archives, contingent hiring of project archivists, labor practices that separate reference work from processing, and an institution's level of investment in technology are all elements that influence description and discovery, two topics that are currently and frequently discussed in the library and archives professions.

Finally, there are still many white academics involved in this recovery work, so I appreciate the notion from Dubois et al. of *digital repatriation*. Digital repatriation suggests a return of Black cultural heritage. And, with some exceptions—Alkalimat, Donaldson, Esprit, Nieves, Rice, Moore Pewu, Opeibi—the volume is thin on advocating for digital Black Atlantic research, projects, and initiatives to be led by people of the Black diaspora. That is, are we increasing access to the tools of history-making for our communities, or are we creating fancy academic tech projects for the already well-resourced? Therein lies the tension. Similar to the discussion in Şengün and Olson's chapter, white researchers and DH practitioners are often positioned to "play out their fantasies of domination" through Black DH. This may seem like a quibble, as many of the contributors to this volume are members of the Black diaspora. However, one contributor notes that it was more important to have Black voices recovered than to be concerned about potential biases of white students involved in a local oral history project. This suggests that Black peoples are legible to anyone, contrary to Moore Pewu's concept of *spatial fluency*, the idea "that all sites speak to something, someone, or some other site from the past, the present, or the site's intended future and that traces of this language become inscribed into the physical landscape and the ways inhabitants interact with the landscape" (111). This volume demonstrates that it matters who is involved in the work. To convince members of the Black diaspora that Black DH recovery is not niche but essential, Black peoples should be included in the work (Esprit). If this happens first, there is plenty of time to advance discussions on the selection of appropriate DH tools (Bhattacharyya).

Overall, this dense but short volume accomplishes what the editors and contributors set out to do: take readers on a complex interdisciplinary journey of the digital Black Atlantic, an ambitious endeavor that the editors acknowledge is risky (x). This collection of essays is valuable in terms of its contribution to the discussion in Black DH and introduces a fresh vocabulary through the digital Black Atlantic. That said, there are still leftover questions about sustainability, preservation, and working outside of proprietary systems, institution-dependent open source, or global tech and media companies. Additionally, how will these projects be managed past the scholars' active participation? Granted, some of the contributors share these exact concerns, but this reader was looking for something more—we are simply not there yet. The volume is more interesting in terms of what it highlights about the needs of the present: the training of and investment in Black practitioners in DH and the financial feasibility of digital preservation.—*Kellee E. Warren, University of Illinois Chicago*