College & Research Libraries

CRL

November 2022 • Volume 83 • Number 6

Association of College and Research Libraries

C&RL

COLLEGE & RESEARCH LIBRARIES

November 2022
VOLUME 83
NUMBER 6
ISSN 0010-0870

Two Projects and Some Reflection

In the September guest-edited issue, some may have noticed that while some authors cited in accordance with the *C&RL*'s Author Guidelines' Chicago citation style, 16th edition, others cited using the American Psychological Association's (APA) citation style. Last spring in an Editorial Board meeting, the Board voted to change *C&RL*'s citation style to APA. After the nearly unanimous vote of a resounding "yes," guest editor and Board member Nicole Pagowsky volunteered her guest issue to be an instance where authors had a choice between the two citation styles. A few months have elapsed since this decision and like many projects, this one will take time and planning. In the coming months, there will be a subgroup formed from the Editorial Board to plan and organize the sequence of steps needed to communicate about and implement APA as C&RL's citation style. This may lead to other conversation concerning the Author Guidelines, if there are other needed changes or updates. In future issues, more information will be shared.

Another project in process is the *C&RL* data sharing draft policy work, in which Minglu Wang, Adrian Ho and I drafted a survey open to anyone interested in *C&RL* to consider responding with their feedback. While encouraging current and prospective authors to share their data with readers and other researchers, we recognize that some authors may not have the ability to share their data. The data from this survey will help with making decisions that are appropriate for the Journal and for its prospective authors. To illustrate, the survey shows examples of four publications[1] in which the data is shared in open repositories. It was our intention to show a variety of data examples, to show a diverse array of what could be considered data. Over the summer the three of us met with Health Sciences Librarian Kevin Read, who with others, planned and implemented data policies for the *Journal of the Medical Library Association* and *The Journal of the Canadian Health Libraries Association*. One of the many aspects I learned when meeting with him was that one of the most challenging parts of this work is to define data in terms of what *C&RL* considers as data. Defining what *C&RL* considers as data may be a next step after analyzing the data policy's survey data at the end of the year.

Beyond these projects, the day-to-day processes of receiving submissions, sending them out for double-anonymous review, giving constructive feedback, making decisions about submissions and other steps, along with my job experiences as a liaison librarian, I read authors' writing and reviewers' comments and wonder what each of them individually wants to see in *C&RL*. With a scope that includes anything that relates to academic or research libraries, there are so many possibilities, for future directions, experimentation and with regards to topics, space for growth or evolution in the profession.

As an editor, I am recognizing that part of my reality in this first year is that I always feel behind on the work, it is inevitable that I will make mistakes and that I have to keep moving forward. In addition to projects and day to day *C&RL* work, one of the prospects I am most excited about is continuing conversations with the Editorial Board, readers and others to increase engagement with *C&RL's* authors and readers with further interactions and conversations,

beyond the publication that bring authors' research into discussion. It adds another dimension to learning about others' research and to connect with other researchers, practitioners and students.

Kristen Totleben
University of Rochester

Note

1. Klassen, T. (2020). Science A&I Database Holdings at ARL and Oberlin Group Libraries, 2011–2016: A Longitudinal Study. *College & Research Libraries*, 81(2), 215–234. https://doi.org/10.5860/crl.81.2.215 (data available at https://doi.org/10.7939/DVN/JDNPNC).

Kvale, L. (2021). Using Personas to Visualize the Need for Data Stewardship. *College & Research Libraries*, 82(3), 332. https://doi.org/10.5860/crl.82.3.332 (data available at https://doi.org/10.5281/zenodo.3673053).

McGowan, B., Hart, J., & Hum, K. (2021). Specialized Regional Conferences Support the Professional Development Needs of Subject Librarians: A 5-Year Analysis of the Great Lakes Science Boot Camps for Librarians. *College & Research Libraries*, 82(4), 548. https://doi.org/10.5860/crl.82.4.548 (data available at https://docs.lib.purdue.edu/lib_fssup/7).

Wiggins, B., Hennesy, C., Vetruba, B., Logsdon, A., & Janisch, E. (2022). Digital Scholarship Programs in Practice. *College & Research Libraries*, 83(4), 568–592. https://doi.org/10.5860/crl.83.4.568 (data available at https://doi.org/10.13020/tdtb-2b96).

Investigating Nontraditional First-Year Students' Epistemic Curiosity during the Research Process: An Exploratory, Mixed-Methods Study

Michelle Keba Knecht

The purpose of this exploratory, mixed-methods study was to investigate the relationship between nontraditional undergraduate students' curiosity and their experiences researching a topic. The author collected and analyzed survey data and annotated bibliography rubric scores from 59 students at a private, liberal arts university and conducted in-depth interviews to gather a fuller picture of the students' curiosity. Based on the study's findings, librarians and professors should create opportunities for students to select research topics to which they have a personal connection while intentionally offering supportive feedback to students as they refine their topics to reduce anxiety and frustration.

Introduction

Teaching students how to find and evaluate sources for a research paper can be a difficult and demanding task, particularly when the research topic is not of interest to the students. One method for increasing student engagement and academic performance is to cultivate students' curiosity.[1] If curiosity leads to increased student engagement and performance in the academic context, could professors and librarians cultivate students' curiosity to increase their engagement with a research topic? This exploratory, mixed-methods study sought to answer that question by investigating the relationship between students' epistemic curiosity and their experiences selecting and researching a topic.

Epistemic curiosity is "the desire for knowledge that motivates individuals to learn new ideas, eliminate information-gaps, and solve intellectual problems."[2] This desire for knowledge begins with an information gap that a person seeks to fill. The gap then motivates the person to seek out missing information to reduce feelings of deprivation.[3] As individuals attempt to fill their information gap, they can experience a range of emotions. For example, if an individual successfully satisfies their epistemic curiosity through the research process, they can experience positive emotions such as fulfillment and pride. However, the initial stages of searching for information are often associated with negative feelings such as confusion, frustration, and doubt.[4]

---

*Michelle Keba Knecht is Senior Medical Librarian and Head of the Medical Health Sciences Collection and User Services Department at Charles E. Schmidt College of Medicine, Florida Atlantic University; email: kebam@health.fau.edu.

To avoid confronting the confusion, frustration, and doubt associated with the unknown, students may resort to choosing familiar topics they are comfortable researching rather than diving into new subjects that will spark their curiosity. This may be especially true for students with low information literacy self-efficacy. Self-efficacy is the belief in one's capabilities to accomplish a task,[5] and information literacy is "the set of integrated abilities encompassing the reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and participating ethically in communities of learning."[6] Beliefs about their information literacy capabilities can affect how resilient students are when faced with difficulties and how likely they are to persevere during the research process.[7] For this reason, the researcher also considered the students' information literacy self-efficacy levels when investigating the role of epistemic curiosity in the research process.

Literature Review

Most of the recent research on curiosity has been conducted by psychologists attempting to define the boundaries[8] and types of curiosity including perceptual curiosity,[9] interpersonal curiosity,[10] epistemic curiosity,[11] and performance curiosity.[12] Researchers have also studied the measurement of curiosity as a permanent personality trait versus as a more temporary state, with most assessments of curiosity focusing on curiosity as a trait.[13]

This study focused on epistemic curiosity because it was the type of curiosity most closely related to the intellectual pursuit required by an information search task, and its relationship to student motivation and academic performance has been studied within the context of higher education. In a meta-analytic review of research studies related to intellectual curiosity and academic performance, researchers found not only that students' academic performance might be increased when their intellectual curiosity is cultivated, but also that these students are more likely to enjoy their college experience.[14] A later study confirmed this finding through a grounded theory qualitative approach, noting that "curious students tend to pursue uncertainty, exhibit openness to discovery, and perform better in school."[15]

Epistemic curiosity has also been further broken down and studied as a trait composed of two types: deprivation (D-type) and interest (I-type).[16] D-type epistemic curiosity is motivated by the desire to alleviate the discomfort of being deprived of new knowledge, while I-type epistemic curiosity usually arises when there is an interest in gaining new information that is anticipated to bring pleasure.[17] I-type epistemic curiosity typically relates to "openness, preference for novelty, tolerance for ambiguity, and expressions of positive affect,"[18] while D-type epistemic curiosity typically relates to "mastery-achievement, performance-achievement, and failure-avoidance, reflecting concern for the accuracy and usability of new knowledge."[19] The parsing of epistemic curiosity into deprivation and interest types helps to explain the underlying motivations and affective responses students may have as they attempt to satisfy their curiosity.

Curiosity has received minimal yet growing attention within the field of information science. Several authors have written opinion pieces on the importance of incorporating curiosity and creativity into the practice of teaching information literacy skills and have offered suggestions for how to do so.[20] However, more research is needed to better understand and measure the effect curiosity has on information literacy capabilities and information literacy self-efficacy. Empirical studies on the topic have offered conflicting observations, with some studies finding that curiosity can be a powerful motivator for students. However, others determined that curiosity could induce feelings of anxiety and avoidance.

Regarding the positive influence of curiosity on the information search process, two studies that focused on the effect of personality dimensions on information behavior found that, among students who were open to experiences, intellectual curiosity encouraged broad information seeking[21] and that information literacy capabilities and self-efficacy were higher for students who were more curious.[22] Similarly, in a recent phenomenological study on how first-year students conduct research, curiosity emerged as a key theme that led to student inquiry and interest in a potential research topic.[23]

Alternatively, findings of other studies have focused on the negative emotions associated with curiosity. Using naturalistic research methods to collect data from adolescent students working on a school research project, Bowler found that, "contrary to the expectations of many educators and librarians—for whom curiosity is seen as a good thing—the participants in this study frequently juxtaposed curiosity next to negative feelings, such as nervous, worried, anxious, frustrated, overwhelmed and aggravated."[24] Similarly, in their qualitative study of undergraduate students in a first-year composition course, Rempel and Deitering found that, even when students are curious about a research topic, they will avoid unfamiliar topics to avert the possibility of failure.[25] Finally, in a recent study of the affective thresholds of information literacy, Mabee and Francher found that, even when students were researching topics of interest to them, most felt overwhelmed by the research process.[26]

Information literacy self-efficacy has been measured by a variety of instruments including the Information Literacy Self-Efficacy Scale (ILSES) and the Information Literacy Humanities and Social Sciences Survey (IL-HUMASS).[27] These scales are best viewed as additional assessment tools to better understand students rather than as direct predictors of information literacy abilities.[28] Though students' beliefs in their information literacy capabilities can affect their willingness to continue in the face of difficult research and searching situations, research on the Dunning-Kruger Effect has shown that students with low information literacy skills tend to overestimate their abilities.[29] While information literacy self-efficacy should not be conflated with information literacy skill level, it can still be considered a contributing factor to students' perseverance and resilience when engaging in an information search task.

Research Questions

The overall goal of this study was to understand the role epistemic curiosity plays in the research process to inform how research assignments are designed and how topic formulation should be taught. Based on the overall goal, the researcher identified the following three research questions for the study:

> *RQ1.* How do students describe their experiences of epistemic curiosity as they relate to the research process?
>
> *RQ2.* Do students who score at a high level on the Epistemic Curiosity Questionnaire[30] also have a higher self-efficacy level with the research process as rated on the Information Literacy Self-Efficacy Scale[31] than those who are less epistemically curious?
>
> *RQ3.* Do students who score at a high level on the Epistemic Curiosity Questionnaire perform better on an annotated bibliography as rated on the Information Literacy VALUE Rubric[32] than those who are less epistemically curious?

Methodology

This exploratory study used a concurrent triangulation mixed-methods design to investigate the relationship between epistemic curiosity and the research process. Data sets in concurrent triangulation designs are independent and analyzed separately before being integrated to validate the findings of each method.[33] The researcher chose this design to examine the quantitative relationship among epistemic curiosity, information literacy self-efficacy, and research quality while simultaneously exploring how participants described their experiences with epistemic curiosity during the research process. The qualitative component was included to provide a richer understanding of the statistical analysis and the lived experience of students. This study was approved by the institution's Institutional Review Board.

Participants in this study were enrolled in either the evening or online nontraditional undergraduate program at a private, liberal arts university. These students are typically adult learners (over 26 years old) who take advantage of the 8-week evening and online classes to work full-time during the day. During their first semester of study, the students are required to take a course titled "Academic Research Techniques," which is offered both online and in person. The course focuses on topic development, source selection, and assessment of research material for relevance, credibility, and validity. The Academic Research Techniques course was chosen for this study because it is the students' introduction to the research process in the program, and it is required of all undergraduate students in the evening and online programs. Additionally, the lead professor for the course was supportive of the aims and time commitments required for this study.

The study was composed of a census of all first-year, nontraditional students enrolled in both the online and in-person programs during the Fall A 2018 and Spring A 2019 semesters. In keeping with the university's Institutional Review Board policies, only those students who gave their informed consent were included in the study. Students who chose not to participate in the study were not penalized. The study had a 97 percent participation rate (N = 59) and is representative of the first-year, nontraditional students enrolled in the evening and online programs at the university. Demographic characteristics of the participants are reported under the Results section of this study in table 1.

The study used three data collection instruments. First, the study's participants completed a survey via Google Forms composed of demographic questions as well as the Epistemic Curiosity Questionnaire[34] and the Information Literacy Self-Efficacy Scale[35] to measure their epistemic curiosity and their information literacy self-efficacy. The Epistemic Curiosity Questionnaire is composed of 10 Likert-scale questions designed to measure interest type and deprivation type epistemic curiosity. The Information Literacy Self-Efficacy Scale contains 17 Likert-scale questions designed to measure information literacy self-efficacy. The survey was administered in week 4 of the course after the students received library instruction so participants would have a similar baseline knowledge of information literacy concepts. The librarian who provided the library instruction to the students was not associated with the study to avoid potential bias. Second, students were invited to participate in an in-depth interview in person or remotely during weeks 5, 6, or 7 of the course. Of the 59 participants, 24 chose to participate in an in-depth interview with the researcher. (See appendix for the interview protocol.) Finally, the researcher collected the students' culminating project, which was an annotated bibliography on a research topic of the students' choice and evaluated them using the Association of American Colleges and Universities (AAC&U) Information Literacy VALUE Rubric.[36] The Information Literacy

VALUE Rubric contains five rubric rows evaluated across four levels from benchmark at the first level to capstone at the fourth. Using three data collection instruments provided a fuller picture of the students' curiosity, thereby allowing the researcher to observe relationships among multiple sources of data rather than relying solely on one source.

The researcher transcribed, inductively coded, and analyzed the 24 in-depth interviews using applied thematic analysis to identify key themes connected to how students described their feelings of epistemic curiosity as they relate to the research process. Applied thematic analysis involves identifying key themes in the raw qualitative data and then translating them into codes that are assigned definitions to make a codebook.[37] At the end of the course, the researcher evaluated the students' annotated bibliographies on the Literacy VALUE Rubric and used linear regression analysis to compare the results of the survey that was given in week 4 to the students' scores on the Information Literacy VALUE rubric. The researcher used Microsoft Excel's Analysis ToolPak add-in to perform the statistical analysis.

Results

Of the students enrolled in the Academic Research Techniques courses, 97 percent chose to participate in and completed the study (N = 59). Demographic information for the participant group is reported in table 1. It should be noted that, while the ratio of males to females is typical for this program, it may not be representative of the broader population; the researcher acknowledges this as a limitation of the study.

TABLE 1
Age, Gender, and Method of Instruction for All Participants (N = 59)

Age	
18–24 years old	27%
25–34 years old	34%
35–44 years old	22%
45–54 years old	15%
Gender	
Male	30%
Female	70%
Method of Instruction	
Online	46%
In Person	54%

Qualitative Results

RQ1: How do students describe their experiences of epistemic curiosity as they relate to the research process?

The first research question in this study seeks to understand how students describe their epistemic curiosity as it relates to the research process. This question was answered through inductive coding and analysis of the in-person interviews. After coding the in-person interviews, three themes emerged from the data. First, participants expressed the importance of a personal connection to their research topic. Second, they spoke about their desire to dig deeper to satisfy their curiosity. Finally, they needed professor guidance to refine their curiosity.

Forging a personal connection to their topic was an overarching theme that was brought up in many of the interviews. Fully 70 percent of the participants mentioned having a personal connection to their research topic in their interviews. This personal connection to their topic increased the students' interest and piqued their curiosity. For example, one participant stated:

> "I found the more I researched, the more curious I got as I was unraveling all these different layers. If it was a subject that I wasn't passionate about or personally associated with or if we had been given the research topic and it's not something I could draw any parallels with I think that it would have been a lot harder and obviously my curiosity wouldn't have been as heightened and probably wouldn't have been satisfied."

Personal connections were revealed in three distinct manners. Participants felt a personal connection to their topic when it was related to their vocation, their friends and family, or their prior experience. For example, when discussing why she chose her topic, one participant stated, "Because it was something dear to my heart. Like I said I worked in Head Start for one year but since then I've been volunteering because it impacted me, and it was at a point in my life when I was trying to figure out my purpose." Another participant chose her topic because it related to her grandmother. In her interview, she stated, "The one I chose was about cancer and how can being a vegan decrease the probability of cancer. My grandmother died of cancer last year, so it really like interests me to learn about how we can prevent it." Finally, another participant related her topic to her prior experience and current needs. In her interview, the participant stated, "I work with special-needs children at church on the weekend, and it helped. I wanted to learn more about it and how to redirect that behavior, how to help them, how to understand what's going on during those stages and how to help in any way and teach that to the volunteers as well, so it was very interesting, and it was really helpful, and I would definitely continue doing more research on it after this class."

After they had developed a personal connection to their topic, many participants felt the urge to dig deeper to satisfy their curiosity. Just over one-third of the participants mentioned their desire to dig deeper as they learned about their topics. One participant stated, "I just didn't realize how involved researching could be. I never knew that I could dwell all that deep. Although I thought I had been researching deeply, I realized I could take it a step deeper." This desire to dig deeper led students to think critically about their topics and to follow their curiosity out of a sense of genuine interest. For example, one participant said, "After I found a certain article. I was like what? what? I didn't know that! Then I was like not even doing my assignment. I was just reading and not worried about my assignment because it became so interesting to me." Another participant explained, "You have to verify your sources, where it's come from. So critical thinking, it made me look at it more analytically, going in and really digging deeper."

Once participants had identified a personal connection with their topic and dug deeper to satisfy their curiosity, many of them acknowledged that they needed professor guidance to help them refine their curiosity into a thesis statement. A total of 83 percent of the participants mentioned receiving guidance from their professor. For example, one participant stated, "My actual original thesis statement was you know let's talk about the government shutdown. That's what I thought a thesis statement was. That was my question so right off the bat she's like that's not a thesis statement, so I had to be guided on how to formulate a better thesis because I did not understand to be honest." The professor also played a key role as students narrowed down their topics and when they brainstormed ideas for topics. One participant noted, "Since the beginning, I knew what I wanted to talk about, but it was too broad so she kind of helped me narrow it down a little bit" while others mentioned using the professor's suggestions to look for an article of interest via news outlets like the *New York Times* or the BBC.

Quantitative Results

Means and standard deviations for the I- and D-type (interest and deprivation) epistemic curiosity scales, the Information Literacy Self-Efficacy Scale (ILSES), and the AAC&U Information Literacy VALUE Rubric (ILVR) scores are reported in table 2. I- and D-type epistemic curiosity were measured using the Epistemic Curiosity Questionnaire, which rates items on

a four-point frequency scale from 1 *(almost never)* to 4 *(almost always)*. The Information Literacy Self-Efficacy Scale rates items on a 7-point frequency scale from 1 *(almost never true)* to 7 *(almost always true)*, and the AAC&U Information Literacy VALUE Rubric is composed of four performance levels from 1 *(benchmark)* to 4 *(capstone)*.

TABLE 2
Mean and Standard Deviation for I- and D-type Epistemic Curiosity, ILSES, and ILVR (N = 59)

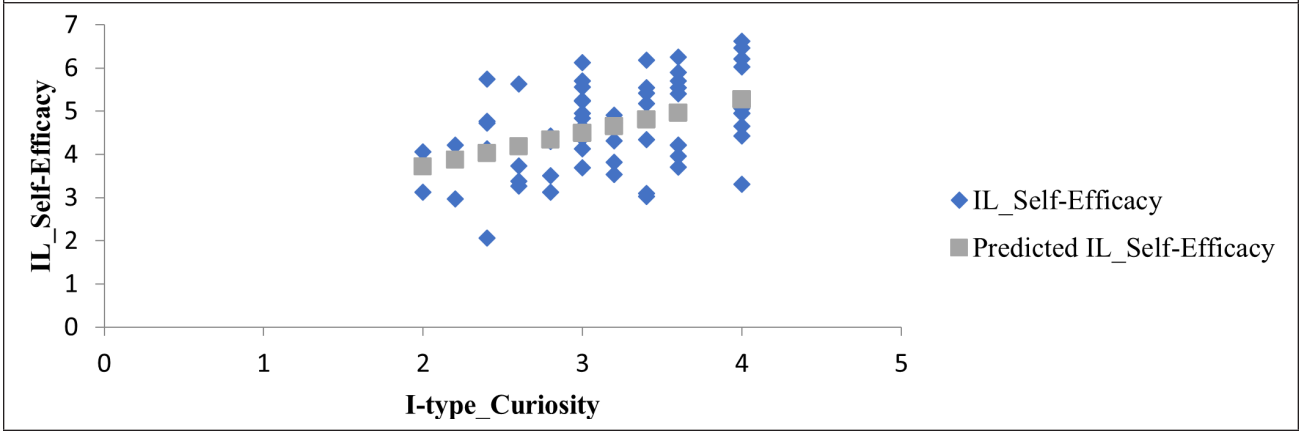
	Mean	(SD)
I-type Epistemic Curiosity	3.17	(0.57)
D-type Epistemic Curiosity	2.43	(0.63)
ILSES	4.63	(1.04)
ILVR	2.33	(0.43)

RQ2: Do students who score at a high level on the Epistemic Curiosity Questionnaire also have a higher self-efficacy level with the research process as rated on the Information Literacy Self-Efficacy Scale than those who are less epistemically curious?

The second research question in this study seeks to understand the quantitative relationship between the students' epistemic curiosity and their information literacy self-efficacy. This question was answered through a statistical analysis of the survey students completed at the beginning of the study. The survey included the Epistemic Curiosity Questionnaire, which measures both interest type and deprivation type curiosity, and the Information Literacy Self-Efficacy Scale, which measures information literacy self-efficacy.

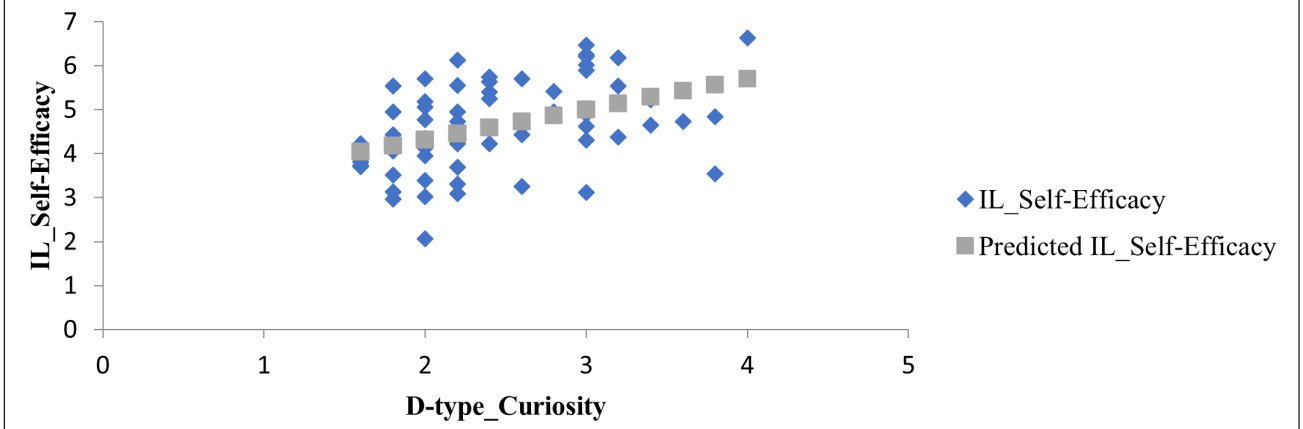
To answer research question 2, linear regression analysis was used to investigate whether the students' I-type and D-type epistemic curiosity could be used to predict their information literacy self-efficacy. Microsoft Excel's Analysis ToolPak add-in was used to run a linear regression analysis to predict if there was a linear predictive relationship between curiosity and information literacy self-efficacy. For I-type epistemic curiosity, the linear regression was statistically significant at $p < .01$ and the R^2 was 0.18. In other words, I-type epistemic curiosity could explain about 18 percent of the variation in the dependent variable, information literacy self-efficacy. A graphical representation of the regression line as related to the cluster of scores for I-type epistemic curiosity and information literacy self-efficacy shows the linear predictive relationship between the two variables in figure 1.

FIGURE 1
I-type Curiosity Linear Regression Analysis



For D-type epistemic curiosity, the linear regression was statistically significant at $p < .01$ and the R^2 was 0.17. In this case, D-type epistemic curiosity could explain about 17 percent of the variation in the dependent variable, information literacy self-efficacy. A graphical representation of the regression line as related to the cluster of scores for D-type epistemic curiosity and information literacy self-efficacy shows the linear predictive relationship between the two variables in figure 2.

FIGURE 2
D-type Curiosity Linear Regression Analysis



RQ3: Do students who score higher on the Epistemic Curiosity Questionnaire perform better on an annotated bibliography as rated on the Information Literacy VALUE Rubric than those who are less epistemically curious?

The third research question in this study seeks to understand the quantitative relationship between the students' epistemic curiosity and their score on the annotated bibliography they created as the culminating assignment of the course. This question was answered through statistical analysis of the students' responses to the Epistemic Curiosity Questionnaire and their scores on their annotated bibliography as rated by the researcher on the Information Literacy VALUE Rubric. To answer research question 3, linear regression analysis was used to investigate whether the students' epistemic curiosity (I-type and D-type) could be used to predict their scores on the Information Literacy VALUE Rubric. The linear regression of these variables was not statistically significant. The *p*-value for I-type curiosity was 0.76 and the *p*-value for D-type curiosity was 0.24. It is possible that the sample size (N = 59) was too small or that there was no correlation between the two variables.

Discussion

This study attempted to investigate the relationship between students' epistemic curiosity and their experiences selecting and researching a topic to determine how research assignments should be designed and how topic formulation should be taught. Through qualitative and quantitative analysis of the data, the researcher found that personal connection to a topic plays a key role in motivating students to dig deeper into a research topic and that those feelings of curiosity should be encouraged and cultivated through professor support and guidance.

These findings are in line with prior research on the topic. Similar to the results of this study, in a recent phenomenological study of first-year students, researchers found that ob-

taining relevant sources sparked students' curiosity and encouraged them to dig deeper to continue their research.[38] In another recent study, researchers found that students were excited and passionate about topics that were relevant to their lives and that they were better able to establish a work/life balance when they chose a topic to which they had a personal connection.[39] Though the students were excited about their topics, feelings of anxiety and frustration were still apparent as they searched. The participants in this study referred to similar feelings of frustration especially when crafting the thesis statement for their annotated bibliography, but in this study the professor's guidance and support helped to alleviate those feelings.

Implications and Limitations

Regarding *RQ1,* the researcher suggests that librarians and teaching faculty work together to design assignments and activities that will encourage students to choose research topics about which they are curious and to which they have a personal connection. However, the professor and/or librarians should intentionally plan how they intend to actively support and guide the students as they narrow and refine their topic into a researchable thesis statement.

While it is outside the scope of this study to describe and create specific activities to cultivate and guide curiosity, other authors have included suggestions in their articles. For example, when introducing students to a research project, Rempel and Deitering recommend carefully considering the terms you will use. They suggest using phrases like "learning" about a topic and for students to choose something they are "curious" about rather than "finding sources" and selecting something about which they are "passionate." They also recommend developing activities that will allow students to explore their curiosity in a curated manner such as by reviewing press releases on the university's research channel and encouraging students to spend time reflecting on their curiosity.[40]

For *RQ2,* the researcher recommends that future research continue to investigate the relationship between epistemic curiosity and information literacy self-efficacy. The results of this study imply that there is a statistically significant relationship between epistemic curiosity and information literacy self-efficacy. However, future research should focus on how epistemic curiosity and information literacy self-efficacy interact as students work on a research project and what role they play in students' willingness to persevere and dig deeper as they research a topic. Future studies should also be expanded to include additional student populations including traditional undergraduate and graduate students.

In response to *RQ3,* further research needs to be conducted on the relationship between epistemic curiosity and the quality of student research assignments. Though there was not a statistically significant relationship between epistemic curiosity and the students' scores on the Information Literacy VALUE Rubric in this study, it is possible that the sample size (N = 59) was too small to achieve statistical significance. Future studies should include a larger sample size and additional co-researchers so that the rubric scores can be normed and so that inter-rater reliability can be calculated. Additionally, future research should attempt to study epistemic curiosity as a state related to the choice of research topic rather than as a fixed trait and should evaluate the effect of curiosity-building exercises on student engagement with research projects and papers.

Conclusion

This study offers the first exploration of the role epistemic curiosity plays in the research pro-

cess specifically for nontraditional undergraduate students. The results should be considered when professors and librarians design research assignments and decide how topic formulation should be taught. Based on the findings of this study, librarians and professors should create opportunities for students to select research topics to which they have a personal connection to pique the students' curiosity and encourage them to dig deeper into the research on their topic. However, to avoid feelings of anxiety and frustration associated with the early stages of the search process, professors and librarians should design opportunities for students to engage with a variety of researchable topics about which they may be curious and should give students feedback and support as they refine and narrow their topics. By cultivating curiosity while guiding and supporting, professors and librarians can engage students in the research process.

Acknowledgments

Michelle Keba Knecht wishes to acknowledge that the work for this study was completed while a librarian at Palm Beach Atlantic University. She would also like to thank the students who participated in the study and recognize the support she received from the Institute for Research Design in Librarianship (IRDL), especially her mentor, Frans Albarillo.

APPENDIX. In-Depth Interview Guide

Hello, my name is Michelle, and I'm a librarian here at the university. Thank you for volunteering to participate in this interview. The purpose of this study is to understand the role curiosity plays in the research process. During the interview, I will ask you a few questions about your experience researching for the annotated bibliography assignment in your Academic Research Techniques Course. Your participation is completely voluntary, and you can stop the interview at any time. I'd like to record our time together just so I can refer back to it later, for accuracy. Is it okay with you if I record this? [Include guidelines for discussion and information about informed consent and confidentiality from your university here.] Finally, do you have any questions before we begin?

1. Let's get started by talking about the research process. By research, I mean independent work or a class assignment. **Can you tell me about a time when you had to write a research paper prior to this class?** *(Descriptive)*
2. **What's the most interesting research project you've ever had?** *(Descriptive) Possible probe: What made it interesting?*
3. Ok; thank you for the information about your prior experience. Now we're going to shift to what's happening in your class right now**. Think back to when you first selected the topic for your annotated bibliography in this class; what topic did you choose and how did you choose your research topic?** *(Descriptive)*
4. **What did you know about this topic before you selected it?** *(Perception)*
5. Thank you for your responses. Let's now move to the next section of the interview and discuss curiosity. **How would you define curiosity in your own words?** *Clarification: if they ask what I mean by curious, use the alternate term "interested in" to clarify.*
6. **According to the definition that you just gave me, what aspects of your research topic were you curious about?** *(Perception) Possible probes: If they can identify aspects they were curious about, ask, Have you always been curious about this topic? If they say they were not curious about the topic, have them identify at least one thing they are curious about; ask, Even if you weren't curious initially, was there anything that emerged that piqued your interest? Who or what could've made your response different? Is there anyone you could've talked to more about this inside or outside the classroom?*
7. **At what point in the process did you begin feeling that curiosity?** *(Descriptive) Possible probes: Why was it then and there? What was going on in your head?*
8. **How did your curiosity about this topic affect your feelings while researching?** *(Perception) Possible probes: How do you feel about research or how do you feel about yourself as a researcher?*
9. **Is there anything we haven't touched on about curiosity or your research topic that you would like to tell me?** *(Closing) Possible probes: What insight could you share with me that I didn't touch upon? What can you open my eyes to about researching as a student?*

Notes

1. Eileen Hulme, Daniel T. Green, and Kimberly S. Ladd, "Fostering Student Engagement by Cultivating Curiosity," *New Directions for Student Services* 143 (Fall 2013): 53–64, https://doi.org/10.1002/ss.20060; Sophie von Stumm, Benedikt Hell, and Tomas Chamorro-Premuzic, "The Hungry Mind: Intellectual Curiosity Is the Third Pillar of Academic Performance," *Perspectives on Psychological Science* 6, no. 6 (2011): 574–88, https://doi.org/10.1177/1745691611421204.

2. Jordan A. Litman, "Interest and Deprivation Factors of Epistemic Curiosity," *Personality and Individual Differences* 44, no. 7 (2008): 1586, https://doi.org/10.1016/j.paid.2008.01.014.

3. George Lowenstein, "The Psychology of Curiosity: A Review and Reinterpretation," *Psychological Bulletin* 116, no. 1 (1994): 75–98, https://doi.org/10.1037/0033-2909.116.1.75.

4. Carol C. Kuhlthau, "Inside the Search Process: Information Seeking from the User's Perspective," *Journal of the American Society for Information Science* 42, no. 5 (1991): 361–71.

5. Albert Bandura, *Self-Efficacy: The Exercise of Control* (New York, NY: W.H. Freeman, 1997).

6. *Framework for Information Literacy for Higher Education*, Association of College & Research Libraries (ACRL) (2016), available online at www.ala.org/acrl/standards/ilframework [accessed 18 December 2020].

7. S. Serap Kurbanoglu, Buket Akkoyunlu, and Aysun Umay, "Developing the Information Literacy Self-Efficacy Scale," *Journal of Documentation* 62, no. 6 (2006): 730–43, https://doi.org/10.1108/00220410610714949.

8. Paul J. Silvia, "Interest: The Curious Emotion," *Current Directions in Psychological Science* 17, no. 1 (2008): 57–60, https://doi.org/10.1111/j.1467-8721.2008.00548.x.

9. Robert P. Collins, Jordan A. Litman, and Charles D. Spielberger, "The Measurement of Perceptual Curiosity," *Personality and Individual Differences* 36, no. 5 (2004): 1127–41, https://doi.org/10.1016/S0191-8869(03)00205-8.

10. Jordan A. Litman and Mark V. Pezzo, "Dimensionality of Interpersonal Curiosity," *Personality and Individual Differences* 43, no. 6 (2007): 1448–59, https://doi.org/10.1016/j.paid.2007.04.021.

11. Litman, "Interest and Deprivation Factors of Epistemic Curiosity," 1585–95.

12. Carlos Alós-Ferrer, Jaume García-Segarra, and Alexander Ritschel, "Performance Curiosity," *Journal of Economic Psychology* 64 (Feb. 2018): 1–17, https://doi.org/10.1016/j.joep.2017.08.002.

13. Thomas G. Reio Jr. et al., "The Measurement and Conceptualization of Curiosity," *Journal of Genetic Psychology* 167, no. 2 (2006): 117–35, https://doi.org/10.3200/GNTP.167.2.117-135; Todd B. Kashdan and John E. Roberts, "Trait and State Curiosity in the Genesis of Intimacy: Differentiation from Related Constructs," *Journal of Social and Clinical Psychology* 23, no. 6 (2004): 792–816, https://doi.org/10.1521/jscp.23.6.792.54800.

14. von Stumm, Hell, and Chamorro-Premuzic, "The Hungry Mind," 574–88.

15. Hulme, Green, and Ladd, "Fostering Student Engagement by Cultivating Curiosity," 63.

16. Litman, "Interest and Deprivation Factors of Epistemic Curiosity," 1585–95; Jordan A. Litman, "Relationships between Measures of I- and D-Type Curiosity, Ambiguity Tolerance, and Need for Closure: An Initial Test of the Wanting-Liking Model of Information-Seeking," *Personality and Individual Differences* 48, no. 4 (2010): 397–402, https://doi.org/10.1016/j.paid.2009.11.005; Marco Lauriola et al., "Epistemic Curiosity and Self-Regulation," *Personality and Individual Differences* 83 (Sept. 2015): 202–07, https://doi.org/10.1016/j.paid.2015.04.017.

17. Lauriola et al., "Epistemic Curiosity and Self-Regulation," 202–07.

18. Lauriola et al., "Epistemic Curiosity and Self-Regulation," 202.

19. Lauriola et al., "Epistemic Curiosity and Self-Regulation," 203.

20. Randy Burke Hensley, "Curiosity and Creativity as Attributes of Information Literacy," *Reference & User Services Quarterly* 44, no. 1 (2004): 31–36; Siu Hong Yu, "Just Curious: How Can Academic Libraries Incite Curiosity to Promote Science Literacy?" *Partnership: The Canadian Journal of Library and Information Practice and Research* 12, no. 1 (2017), https://doi.org/10.21083/partnership.v12i1.3954.

21. Jannica Heinstrom, "Five Personality Dimensions and Their Influence on Information Behaviour," *informationresearch* 9, no. 1 (2003), available online at http://informationr.net/ir/9-1/paper165.html [accessed 18 December 2020].

22. Noa Aharony and Hadas Gur, "The Relationships between Personality, Perceptual, Cognitive and Technological Variables and Students' Level of Information Literacy," *Journal of Librarianship and Information Science* 51, no. 2 (2019): 527–44, https://doi.org/10.1177/0961000617742450.

23. Elizabeth Kocevar-Weidinger et al., "On Their Own Terms: First-Year Student Interviews about Everyday Life Research Can Help Librarians Flip the Deficit Script," *Reference Services Review* 47, no. 2 (2019): 169–92, https://doi.org/10.1108/RSR-02-2019-0007.

24. Leanne Bowler, "The Self-Regulation of Curiosity and Interest during the Information Search Process," *Journal of the American Society for Information Science and Technology* 61, no. 8 (2010): 1341, https://doi.org/10.1002/asi.21334.

25. Anne-Marie Deitering and Hannah Gascho Rempel, "Sparking Curiosity: Librarians' Role in Encouraging Exploration," *In the Library with the Lead Pipe* (Feb. 2017), available online at www.inthelibrarywiththeleadpipe.org/2017/sparking-curiosity/ [accessed 18 December 2020].

26. Sarah H. Mabee and Sarah E. Fancher, "Curiosity Is a Luxury of the Financially Secure: The Affective Thresholds of Information Literacy," *Library Trends* 68, no. 3 (2020): 482–505, https://doi.org/10.1353/lib.2020.0002.

27. Khalid Mahmood, "Reliability and Validity of Self-Efficacy Scales Assessing Students' Information Literacy Skills: A Systematic Review," *The Electronic Library* 35, no. 5 (2017): 1035–51, https://doi.org/10.1108/EL-03-2016-0056.

28. Serap Kurbanoglu, "Self-Efficacy: An Alternative Approach to the Evaluation of Information Literacy," in *Qualitative and Quantitative Methods in Libraries: Theory and Applications*, eds. Anthi Katsirikou and Christos H Skiadas (Singapore: World Scientific, 2010), 323–28, https://doi.org/10.1142/9789814299701_0040.

29. Melissa Gross and Don Latham, "What's Skill Got to Do with It? Information Literacy Skills and Self-Views of Ability among First-Year College Students," *Journal of the American Society for Information Science and Technology* 63, no. 3 (2012): 574–83, https://doi.org/10.1002/asi.21681.

30. Litman, "Interest and Deprivation Factors of Epistemic Curiosity," 1585–95.

31. Serap Kurbanoglu, Akkoyunlu, and Umay, "Developing the Information Literacy Self-Efficacy Scale," 730–43.

32. *Information Literacy VALUE Rubric*, Association of American Colleges and Universities (AAC&U) (2009), available online at https://www.aacu.org/value/rubrics/information-literacy [accessed 18 December 2020].

33. Greg Guest, Kathleen MacQueen, and Emily Namey, *Applied Thematic Analysis* (Thousand Oaks, CA: SAGE Publications, Inc., 2012), https://doi.org/10.4135/9781483384436.

34. Litman, "Interest and Deprivation Factors of Epistemic Curiosity," 1585–95.

35. Serap Kurbanoglu, Akkoyunlu, and Umay, "Developing the Information Literacy Self-Efficacy Scale," 730–43.

36. *Information Literacy VALUE Rubric*, Association of American Colleges and Universities (AAC&U) (2009), available online at https://www.aacu.org/value/rubrics/information-literacy [accessed 18 December 2020].

37. Guest, MacQueen, and Namey, *Applied Thematic Analysis*.

38. Kocevar-Weidinger et al., "On Their Own Terms," 169–92.

39. Mabee and Fancher, "Curiosity Is a Luxury of the Financially Secure," 482–505.

40. Deitering and Rempel, "Sparking Curiosity."

Diving Deep into Dissertations: Analyzing Graduate Students' Methodological and Data Practices to Inform Research Data Services and Subject Liaison Librarian Support

Mandy Swygart-Hobaugh, Raeda Anderson, Denise George, and Joel Glogowski

We present findings from an exploratory quantitative content analysis case study of 156 doctoral dissertations from Georgia State University that investigates doctoral student researchers' methodology practices (used quantitative, qualitative, or mixed methods) and data practices (used primary data, secondary data, or both). We discuss the implications of our findings for provision of data support services provided by the Georgia State University Library's Research Data Services (RDS) Team and subject liaison librarians in the areas of instructional services, data software support and licensing advocacy, collection development, marketing/outreach, and professional development/expansion.

Introduction

The Georgia State University Library identifies "support of faculty, graduate students, and undergraduates throughout the research life cycle" as a strategic intention, including focus on "build[ing] our capacities to support data services" and "develop[ing] a cutting-edge approach to academic library support of graduate students."[1] The Georgia State University Library's Research Data Services (RDS) Team was formed in 2016 specifically to address these strategic intentions; prior to its formation, no other campus entity existed to provide cross-campus data services support. The RDS Team offers data support services across the entire research lifecycle, including support for finding existing data and statistics, original data collection, data analysis tools and methods, mapping and data visualization, and data cleaning and management.[2] This support primarily takes the form of individual and group consultations, open workshops, and course-embedded sessions, with data analysis and visualization support representing the largest proportion of workshop offerings and consultation topics.[3] In addition, Georgia State

*Mandy Swygart-Hobaugh is Head of Research Data Services at Georgia State University; email: aswygarthobaugh@gsu.edu. Raeda Anderson is a Research Scientist at Shepherd Center Crawford Research Institute; email: Raeda.Anderson@shepherd.org. Denise George is Education Librarian at Georgia State University; email: denisegeorge@gsu.edu. Joel Glogowski is Nursing and Health Professions and Data Services Librarian at Georgia State University; email: jglogowski@gsu.edu.

University Library's subject liaison librarians offer data-related support to campus researchers, such as assistance in finding existing data and statistics and identifying existing surveys/instruments for original data collection, and building print and digital collections to support relevant research methodologies and data analysis software/tools.

Library-Provided Data Services Support for Graduate Students: Is There a Need?

Data on our Research Data Services (RDS) workshop attendance, consultations, and course-embedded instruction sessions point to a substantive need among our university's graduate students for additional data support outside of what they receive within their respective academic departments:

- **2018:** Graduate students accounted for 70 percent of our data consultations and upward of 45 percent of workshop attendees; RDS team members had 15 course-embedded sessions with graduate-level classes.
- **2019:** Graduate students accounted for 56 percent of our data consultations and upward of 59 percent of workshop attendees; RDS team members had 21 course-embedded sessions with graduate-level classes.
- **2020:** Graduate students accounted for 56 percent of our data consultations and upward of 59 percent of workshop attendees; RDS team members had 34 course-embedded sessions with graduate-level classes.[4]

Closer thematic assessments from our inaugural year's data consultations revealed that graduate students needed substantial assistance with specific data analysis tools, with NVivo for qualitative data analysis and SPSS for statistical analysis predominating.[5]

In our fourth year offering data services support, our RDS team completed a series of focus groups with graduate students and faculty to assess the data needs of graduate students, concluding that extradepartmental research data services support is needed to help fill gaps in departmental academic resources. Faculty members noted that incoming students often need additional support with research methods and data analysis; however, faculty noted time and resource constraints that prohibited them from adequately assisting students with their data needs. Consequently, many graduate students must acquire data analysis skills on their own, from other academic departments, and from the library's RDS team. These findings reaffirmed the need for our library to offer research data services and gave insights for future growth areas for support.[6]

Library-Provided Data Services Support for Graduate Students: What Is the Nature of the Need?

These assessments suggest there is a substantive need for extradepartmental data services support among our graduate students and that they see the Georgia State University Library's data support services as a valid place to seek that support. Moreover, these assessments have prompted questions to explore regarding the *nature* of those needs. For example, what can we infer from the comparative popularity of certain quantitative software workshops over others, as gauged from workshop attendance data? Per insights gleaned from our focus group study, should we incorporate more research methodology instruction in our existing workshops or create new workshops solely focused on methodology;

if so, on which methodologies should we focus? How might we use insights from these assessments to guide collection development on research methods topics, or digital data resources, or other areas?

In the spirit of triangulation, we embarked on this present study to collect and examine a third source of data "to provide multiple lines of sight and multiple contexts to enrich the understanding of [our] research question[s]."[7] We employ an exploratory research design because, at this juncture, we are interested in delving into graduate student research practices and their potential for informing data services provision rather than exploring predictive relationships between library services and graduate student success as would be the aim of an explanatory research design. This exploratory case study, via a quantitative content analysis of dissertations produced by our university's doctoral-level graduate students, seeks insights to the following research objective and specific research questions:

> ***RESEARCH OBJECTIVE:*** To illuminate and explore the patterns of graduate students' data and methodology practices within their dissertation research, from which we draw insights for our provision of data support services in the areas of instructional services, data software support and licensing advocacy, collection development, marketing/outreach, and professional development/expansion.
>
> ***Research Question 1:*** What method types (qualitative, quantitative, mixed methods), data types (primary, secondary, both), and analysis software/coding language types (qualitative, quantitative, other, not identified) do graduate students employ in their dissertation research? And what is the distribution of doctoral degree types (PhD, EdD, EDB)?
>
> ***Research Question 2:*** When broken down by academic field and department, what distribution patterns emerge across method type and data type, and are there statistically significant associations between academic field and method type and data type?

Review of Relevant Literature

Library-Provided Data Services Support for Graduate Students: Beyond Data Management

The establishment of data services across academic libraries is increasing and evolving alongside the changing research needs of universities, and the body of published literature on the topic grows in tandem. That said, research literature that focuses specifically on data services for graduate students and evaluative pieces of said services remains scant; herein we review the handful of noted exceptions.

Recognizing the need for "data information literacy" support at academic libraries—and particularly among graduate students—several higher education institutions collaborated on the Data Information Literacy (DIL) Project, funded by an Institute of Museum and Library Services grant.[8] The following publications and outcomes stemmed from this project:

- Drawing from interviews with faculty and graduate students regarding graduate stu-

dents' data management needs, Carlson et al. identified 12 competencies for a Data Information Literacy (DIL) curriculum. While this project and the resulting competencies focused primarily on data management literacy aspects of the curation, preservation, and dissemination of data, two competencies branch beyond data management to include data analysis and visualization.[9]

- Carlson and Stowell-Bracke, in their work creating a Data Curation Profile Toolkit, drew on in-depth interviews with graduate students to explore the challenges they encounter when being charged with managing and sharing data on faculty-led projects.[10]
- Johnston and Jeffryes describe their case study with engineering graduate students and the insights gleaned from in-depth interviews regarding their data management skills needs.[11]
- The DIL Project culminated with an edited volume that compiles the DIL Project's case studies, offers extended discussion of the DIL competencies, and includes a DIL Toolkit to aid librarians in developing DIL programs.[12]

As this landmark project illustrates, data management has traditionally been the primary focus of research data support programs offered within academic libraries. However, support is increasingly branching out into areas of data analysis and visualization.

Witnessing this need for support beyond data management among all levels of researchers, university libraries are increasingly implementing data services support that spans the entire research lifecycle. Many libraries offer a suite of data services supported by both librarians and other experts within or outside the library that particularly appeal to graduate students. For example, the University of Arizona Libraries (UAL) librarians offer workshops on statistical software and support for GIS products, and also workshops branded under "reproducible science" that focus on verifying the research process, data management, and open data and access; UAL also partners with specialists across the university to host workshops on big data analysis.[13] Similarly, New York University Health Sciences Library established a data services team consisting of full-time staff and librarians who split their roles between data services and liaison duties and partner with other nonlibrary campus entities to provide workshops on not only data management but also data visualization, qualitative data analysis, data wrangling, big data analysis, and data capture.[14] Likewise, the Data Services division of the Research Commons within New York University's main Bobst Library offers a "studio" model of support for survey, statistical, GIS, and qualitative analysis software and finding existing data sources, in addition to data management support.[15] For additional examples of academic libraries with data services support going beyond data management, see the following: Duke University Libraries Center for Data and Visualization Sciences; University of North Carolina Libraries Davis Library Research Hub; North Carolina State University Libraries Data & Visualization Services; University of Cincinnati Libraries Research & Data Services; University of Michigan Library Data Services.[16]

Literature going beyond describing data support services to include evaluation of existing services for insights to inform further development of such services remains limited, perhaps due in part to the relative newness of data services support in academic libraries. One exception we found in the literature was an assessment by the Rutgers University Library: after offering extensive services across a variety of data services categories, Rutgers University's Dana Library assessed their services and gauged a demand for data computing workshops; they continue to offer workshops on statistical and qualitative data analysis software alongside workshops on data management.[17]

Dissertation Studies to Inform Library Services: Beyond Citation Analysis and Collection Development

The library science literature abounds with citation analyses of graduate student theses and dissertations. Searching ProQuest's Library Science Database (formerly LISA) and the Library, Information Science & Technology Abstracts (LISTA) database, we discovered that, since the year 2010, about 100 published studies examined citation patterns in graduate theses or dissertations. The primary aim of such studies is to gauge what types of secondary library resources graduate students are using to support their original research and to discuss the implications for collection development and management. While a thorough review of these citation studies is not warranted to contextualize our own study (as we are not employing citation analysis), we point to the prevalence of dissertation content analysis methodology within the library science literature as precedent for using findings from such analyses to inform library services provision in the areas of collection development and management. Thus, it is a natural extension to expand the methodology to inform library services in the data support area, encompassing not only collection development but also instructional services, software technology offerings/support, and marketing/outreach.

A noted exception among the library science literature's dissertation content analyses is a 2015 study by Lowry, which served as a springboard for our own study.[18] Lowry performed content analysis on 32 business master's theses with the stated aim of gauging patterns of research design and data collection methods (primary data use versus secondary data use), including comparison across business subareas/specializations. Lowry found that secondary data use predominated overall (72% of theses) and that this pattern mostly continued when broken down by specializations, apart from the marketing specialization being predominated by primary data use (85% of the specialization's theses). Lowry discusses the findings in terms of insights for support services provided by data specialists and liaison librarians to the university's business school researchers. Namely, Lowry noted that the predominance of "data consumers" (secondary data users) rather than "data producers" (primary data producers) among the business graduate researchers had implications for the nature of data management and reference services (for example, focus on data discovery may need to take precedent over primary data management) and collection development (such as heavier focus on providing access to appropriate secondary data resources).[19]

Researchers primarily outside the library science field have used content analysis of theses and dissertations to get a better understanding of methodology and data practices among graduate students. There has been scholarly interest in method type (quantitative, qualitative, mixed) employed in theses and dissertations, mostly within specific disciplines rather than making cross-disciplinary comparisons as we employ in our study.[20] Other scholars have performed content analysis to assess data use (primary data or secondary data) within specific disciplines.[21] While the extant research studies have generally found varying patterns of primary versus secondary data use, the majority have found that quantitative research methods typically dominates over qualitative or mixed methods. A few studies have compared differences in data practices by degree type. One such study employed tests of statistical difference to compare the use of data between doctor of business administration (DBA) students and doctor of philosophy (PhD) students within the Harvard Business School but found no significant differences between the programs in terms of methodology or research type by degree type.[22] A similar study found statistically significant differences in research design and type of statistics employed when comparing dissertations on special education

topics for those submitted for PhD in education versus doctor of education (EdD) degrees.[23] None of the studies looked at differences in methodology and data practices in dissertations across multiple academic disciplines, and only the few aforementioned studies went beyond providing descriptive statistics to perform tests of statistical difference. Our study expands on these prior studies by exploring differences in methodology and data use across disciplines, employing tests of statistical difference, and discussing implications for library services.

Significance of Our Contribution to the Existing Research Literature

Given the scarcity of relevant literature on data services support targeting graduate students and dissertation studies, we attest that our study is unique and fills a gap in the present literature both in terms of content and methodological approach. First, our study expands assessment of graduate students' needs across the entire research lifecycle, in contrast to the data management needs studies that predominate the literature to date. Second, our dissertation study does not employ the traditional citation analysis approach that pervades the library science literature, but instead delves deeper into the methodology and data practices of graduate students when conducting their dissertation research. Third, our multifaceted exploration of method types (quantitative, qualitative, or mixed methods) and data types (primary or secondary) and differences by academic areas is methodologically original. Last, our discussion of the implications for not just collection development but for instructional services, data software support and licensing advocacy, marketing/outreach, and services development offers a comprehensive analysis yet to be presented by previous researchers.

Methods

The Georgia State University institutional repository contains 193 doctoral dissertations completed by graduate students during the 2017–2018 academic year; we gathered 192 of those dissertations for this study.[24] These included dissertations spanning all of the university schools/colleges that encompass social sciences, physical sciences, professional programs (excluding College of Law), humanities, and arts, and completed for degrees of Doctor of Philosophy (PhD), Doctor of Education (EdD), and Executive Doctorate in Business (EDB). Table 1 delineates our inclusion and exclusion criteria for the study, the determination of which was guided by our aim of identifying potential data support needs.

TABLE 1
Inclusion and Exclusion Criteria for Dissertation Content Analysis

INCLUSION CRITERIA: Dissertations using the following research methodologies:
Qualitative methods—analysis of nonnumeric data, such as: open-ended survey questions; open-ended interviews; analysis of text and audiovisual materials using nonnumeric/nonstatistical content analyses; case studies; ethnographies. Quantitative methods—numeric data subjected to statistical analysis, such as: close-ended survey/measurement scale data collection and analysis; analysis of primary (self-collected) or secondary (previously collected) numeric data. Mixed methods—use of both quantitative and qualitative methods.[25]
EXCLUSION CRITERIA: Dissertations of the following nature:
Historical studies of nondata primary sources; literary criticism; rhetorical studies not employing quantitative or qualitative methodologies; narratives and/or oral histories; theoretical explorations not employing data analysis.

Applying the above criteria, 156 dissertations remained upon which to conduct exploratory quantitative content analysis. Quantitative content analysis entails "categorizing qualitative textual data into clusters of similar entities, or conceptual categories, to identify consistent patterns and relationships between variables" and "producing frequencies of preselected categories or values associated with particular variables" to report as descriptive statistics and/or to examine statistical relationships between the variables.[26] We focused our content analysis on the abstracts, methods, and results/findings sections of dissertations, engaging in close reading of these sections to collect the necessary information for coding methodology and data practices. We also used NVivo to construct and run text search queries across the entire dissertation texts to gauge data analysis software use, examining the text search results in context to verify that the dissertation researcher had used the mentioned software to do their own analyses. We constructed the NVivo text search queries to search for software that the Research Data Services (RDS) Team currently supports, software typically used by researchers, and software names gleaned from our close reading.

We compiled a dataset using Google sheets, within which we coded each of the 156 dissertations. We coded for the following nominal categorical variables, with consensus regarding their application reached through discussions prior to and during the coding process:

1. **Method Type:** Category of methodology: ***qualitative methods***, ***quantitative methods***, or ***mixed methods***.[27]
2. **Data Type:** Category of data type used: ***primary data*** (new data collected by dissertation researcher for their new/original analyses), ***secondary data*** (existing data reused by dissertation researcher for their new/original analyses), or ***primary & secondary data***.[28]
3. **Software Type:** Category of software type: ***qualitative***, ***quantitative***, ***other***, or ***not identified.***[29]
4. **Degree Type:** Category of degree type, as noted in the university institutional repository: Doctor of Philosophy (***PhD***), Doctor of Education (***EdD***), Executive Doctorate in Business (***EDB***).
5. **Department:** Category of academic department, as noted in the university institutional repository.
6. **Academic Field:** Broader academic field to which individual departments aligned and/or are affiliated within the university's college/school structure.

To examine that the independent coders were consistently interpreting and applying the codes, we completed double-blind checks on a random selection of 25 percent of cases of the dissertation data. Coders with no knowledge of how the dissertations had been coded in the first pass of coding were then randomly assigned this subsample of the dissertations to do a second pass of coding. We then compared the coding from the original pass and the second pass to examine if there were major differences between the first and second pass of coding. We found no major differences between the coding; thus, a full interrater reliability check was deemed unnecessary and was not conducted. Upon completing our coding process of the 156 dissertations, we imported the Google sheet data into IBM Statistical Package for the Social Sciences (SPSS) software to generate descriptive statistics and perform statistical analyses.

Results

Table 2 contains percentages allowing exploration of our first research question:

Research Question 1: What method types (qualitative, quantitative, mixed methods), data types (primary, secondary, both), and analysis software/coding language types (qualitative, quantitative, other, not identified) do graduate students employ in their dissertation research? And what is the distribution of doctoral degree types (PhD, EdD, EDB)?

TABLE 2
Distribution of Dissertations by Method Type, Data Type, Degree Type, and Software Type (N = 156)

METHOD TYPE		DATA TYPE	
Qualitative Methods	27.6%	Primary Data	60.3%
Quantitative Methods	61.5%	Secondary Data	28.2%
Mixed Methods	10.9%	Primary & Secondary Data	11.5%
DEGREE TYPE		**SOFTWARE TYPE[a]**	
PhD (Doctor of Philosophy)	87.8%	Qualitative	14.7%
EdD (Doctor of Education)	5.1%	Quantitative	47.4%
EDB (Executive Doctorate in Business)	7.1%	Other	19.2%,
		Not identified	30.8%

[a] Individual dissertations could report multiple software types; thus, these percentages do not total to 100%.

Degree type was overwhelmingly PhD (87.8%) with fewer EDB (7.1%) and EdD (5.1%). Of all dissertations, most used quantitative methods (61.5%), slightly more than a quarter used qualitative methods (27.6%), and a smaller percentage (10.9%) used mixed methods. Doctoral students largely used primary data in their dissertations (60.3%); however, a substantive number of students used secondary data (28.2%) and a smaller percent (11.5%) used both primary and secondary data. For software type, 47.4 percent identified using quantitative software and 14.7 percent used qualitative software. Of note, about a fifth (19.2%) identified using other software, such as survey or lab programs, and a large group of students (30.8%) did not identify the type of software used for their analysis.

Of the 108 dissertations that identified software used (69.2% of total 156), the most frequently reported proprietary quantitative software was IBM SPSS (30, 27.8%), followed by Microsoft Excel (14, 13.0%), Stata (13, 12.0%), Mplus (10, 9.3%), SAS (5, 4.6%), and MATLAB (5, 4.6%). Reported use of open-source quantitative software was minimal, with R (9, 8.3%) reported slightly more frequently than Python (6, 5.6%). For reported use of qualitative software, NVivo (15, 13.9%) was mentioned most frequently, followed by Dedoose (9, 8.3%) and ATLAS.ti (2, 1.9%), all of which are proprietary. Only 14 (13.0%) reported using the Qualtrics survey platform to collect survey data.

Tables 3, 4, and 5 contain statistics allowing exploration of our second research question:

Research Question 2: When broken down by academic field and department, what distribution patterns emerge across method type and data type, and are there statistically significant associations between academic field and method type and data type?[30]

TABLE 3
Distributions of Method Type and Data Type by Academic Field and Department (N = 156)

ACADEMIC FIELD & DEPARTMENT	METHOD TYPE			DATA TYPE		
	Qualitative Methods (n = 43)	Quantitative Methods (n = 96)	Mixed Methods (n = 17)	Primary Data (n = 94)	Secondary Data (n = 44)	Primary & Secondary (n = 18)
Business (n = 22, 14.1% of total)	**22.7%[a]**	**63.6%[b]**	**13.6%[c]**	**54.5%[d]**	**40.9%[e]**	**4.5%[f]**
Business Administration (n = 11)	36.4%	45.5%	18.2%	54.5%	45.5%	0.0%
Computer Information Systems[g] (n = 3)	33.3%	66.7%	0.0%	33.3%	33.3%	33.3%
Finance (n = 1)	0.0%	100.0%	0.0%	0.0%	100.0%	0.0%
Managerial Sciences (n = 2)	0.0%	50.0%	50.0%	100.0%	0.0%	0.0%
Marketing (n = 4)	0.0%	100.0%	0.0%	75.0%	25.0%	0.0%
Risk Management & Insurance (n = 1)	0.0%	100.0%	0.0%	0.0%	100.0%	0.0%
Physical Sciences & Math/Statistics (n = 42, 26.9% of total)	**9.5%**	**88.1%**	**2.4%**	**85.7%**	**4.8%**	**9.5%**
Biology (n = 14)	14.3%	85.7%	0.0%	100.0%	0.0%	0.0%
Chemistry (n = 9)	0.0%	100.0%	0.0%	77.8%	0.0%	22.2%
Computer Science (n = 5)	20.0%	60.0%	20.0%	40.0%	20.0%	40.0%
Mathematics & Statistics (n = 5)	20.0%	80.0%	0.0%	80.0%	20.0%	0.0%
Neuroscience (n = 5)	0.0%	100.0%	0.0%	100.0%	0.0%	0.0%
Physics & Astronomy (n = 4)	0.0%	100.0%	0.0%	100.0%	0.0%	0.0%
Education (n = 34, 21.8% of total)	**61.8%**	**29.4%**	**8.8%**	**76.5%**	**2.9%**	**20.6%**
Counseling & Psychological Services (n = 1)	0.0%	100.0%	0.0%	100.0%	0.0%	0.0%
Early Childhood & Elementary (n = 5)	40.0%	40.0%	20.0%	80.0%	0.0%	20.0%
Educational Psychology (n = 2)	0.0%	50.0%	50.0%	100.0%	0.0%	0.0%
Educational Policy Studies (n = 9)	66.7%	22.2%	11.1%	22.2%	11.1%	66.7%
Kinesiology[h] (n =3)	0.0%	100.0%	0.0%	100.0%	0.0%	0.0%
Middle & Secondary Education (n = 14)	92.9%	7.1%	0.0%	100.0%	0.0%	0.0%

TABLE 3
Distributions of Method Type and Data Type by Academic Field and Department (N = 156)

ACADEMIC FIELD & DEPARTMENT	METHOD TYPE			DATA TYPE		
	Qualitative Methods (n = 43)	Quantitative Methods (n = 96)	Mixed Methods (n = 17)	Primary Data (n = 94)	Secondary Data (n = 44)	Primary & Secondary (n = 18)
Health Sciences (n = 8, 5.1% of total)	**0.0%**	**100.0%**	**0.0%**	**50.0%**	**50.0%**	**0.0%**
Nursing (n = 3)	0.0%	100.0%	0.0%	100.0%	0.0%	0.0%
Public Health (n = 5)	0.0%	100.0%	0.0%	20.0%	80.0%	0.0%
Social Sciences (n = 46, 29.5% of total)	**23.9%**	**58.7%**	**17.4%**	**28.3%**	**58.7%**	**13.0%**
Applied Linguistics & ESL (n = 6)	16.7%	33.3%	50.0%	83.3%	16.7%	0.0%
Communication (n = 4)	100.0%	0.0%	0.0%	25.0%	75.0%	0.0%
Criminal Justice (n = 3)	0.0%	100.0%	0.0%	0.0%	100.0%	0.0%
Economics (n = 7)	0.0%	100.0%	0.0%	0.0%	85.7%	14.3%
Political Science (n = 5)	40.0%	0.0%	60.0%	20.0%	40.0%	40.0%
Psychology (n = 7)	0.0%	85.7%	14.3%	42.9%	42.9%	14.3%
Public Management & Policy (n = 6)	0.0%	100.0%	0.0%	0.0%	83.3%	16.7%
Sociology (n = 8)	50.0%	37.5%	12.5%	37.5%	50.0%	12.5%
Humanities (n = 4, 2.6% of total)	**50.0%**	**0.0%**	**50.0%**	**75.0%**	**25.0%**	**0.0%**
English (n = 1)	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%
Film, Media, & Theater (n = 1)	100.0%	0.0%	0.0%	100.0%	0.0%	0.0%
History (n = 2)	50.0%	0.0%	50.0%	50.0%	50.0%	0.0%

[a] Percent of dissertations within the field that used qualitative methods. [b] Percent of dissertations within the field that used quantitative methods. [c] Percent of dissertations within the field that used mixed methods. [d] Percent of dissertations within the field that used primary data. [e] Percent of dissertations within the field that used secondary data. [f] Percent of dissertations within the field that used both primary and secondary data. [g] We include the Computer Information Systems department in the Business field because that is where it resides at our institution; we recognize that its method type and data type patterns may skew the aggregate Business field pattern due to its not representing a traditional "business" subarea. [h] We include the Kinesiology department in the Education field because that is where it resides at our institution; we recognize that its method type and data type patterns may skew the aggregate Education field pattern due to its not representing a traditional "education" subarea.

Method Type: Academic Field and Department Comparisons

Echoing the aggregate pattern, quantitative methods predominated the dissertations in the fields of business (63.6%), physical sciences and math/statistics (88.1%), health sciences (100%), and social sciences (58.7%). However, the field of education veered from this pattern, with 61.8 percent of the dissertations within this field employing qualitative methods, reflecting a propensity for education doctoral students to complete qualitative case studies in real-life education settings. The humanities field had an interesting split, with 50 percent employing

qualitative methods and 50 percent employing mixed methods, somewhat surprising given a presumption that humanities doctoral students generally might be more inclined toward qualitative inquiry over quantitative.

Looking within the academic fields at individual departments, the communication, political science, and sociology departments had comparatively larger proportions of qualitative methods, whereas quantitative methods predominated the criminal justice, economics, psychology, and public management and policy departments. Some of these department-specific patterns within the social sciences were not altogether surprising, given that some disciplines are traditionally predominated by certain methodologies. However, some point to the importance of not taking for granted that an institution's department mirrors overall disciplinary trends (for instance, quantitative researchers traditionally predominate the overall sociology discipline within the United States, yet our analysis reveals that our institution's sociology department has a large qualitative contingent among its doctoral students).

Data Type: Academic Field and Department Comparisons

The aggregate pattern of primary data predominance continued for the fields of business (54.5%), physical sciences and math/statistics (85.7%), education (76.5%), and humanities (75.0%). In contrast, the health sciences had a 50%/50% split between primary and secondary data use, and the social sciences field was predominated by secondary data use (58.7%).

Looking within academic fields at individual departments, diverging patterns often emerged, some of which are readily explained by methodological approaches characteristic of the specific disciplines. For example, among the business departments, primary data use was more predominant in the managerial sciences (100%) and marketing (75%), and secondary data use in finance (100%) and risk management and insurance (100%), while business administration had a near-even split across primary data use (54.5%) and secondary data use (45.5%) and computer information systems had a 33%/33%/33% split across primary data use, secondary use, and both primary and secondary use. Within the physical sciences and math/statistics field, the computer science department showed 40 percent of dissertations using solely primary data, 20 percent solely secondary data, and 40 percent both primary and secondary data. The divergence between the health sciences departments of nursing (100% primary data use) and public health (20% primary data use, 80% secondary data use) was dramatic yet not surprising, as nursing doctoral students tend to collect primary data in clinical practice settings whereas public health doctoral students gravitate toward using large secondary datasets. Similarly, the majority of the individual education departments were predominated by dissertations using solely primary data (likely tied to the qualitative case-study methodology predominance discussed previously). In contrast, 66.7 percent of the education policy studies dissertations used both primary and secondary data, which reflects this area's focus on looking at the policies themselves as secondary data sources but also often collecting primary data to explore policy-in-practice. Correspondingly, while the social sciences field in aggregate gravitated toward secondary data use, certain disciplines gravitated toward primary data use, such as applied linguistics and English as a Second Language/ESL (83.3% primary data use) and psychology (42.9% primary data use), which again reflect typical patterns of data collection within those disciplines.

Associations between Academic Field and Method Type and Data Type

Tables 4 and 5 contain crosstabulations to examine the association between academic field and method type (see table 4) and academic field and data type (see table 5). For each intersection of the two variables' categories under examination, the table cells display the following:

1. observed count from the data;
2. expected count (in parentheses) if there were no association between the two variables; and
3. standardized residual, which measures the relative strength of the difference between observed and expected counts and allows exploration of which cells are contributing the most/least to the overall chi-square test value. Generally: 1) a standardized residual less than –2.0 indicates that the observed count is notably less than the expected count; and 2) a standardized residual of greater than 2.0 indicates that the observed count is notably greater than the expected count;[31] standardized residuals meeting either of these criteria are indicated with an asterisk (*) in the tables.

Additionally, chi-square tests were performed on the cross-tabulation data to examine associations between the academic type variable and the method type and data type variables, respectively. Due to not meeting the Pearson chi-square test assumption that 80 percent or more of the expected count values must be greater than 5, we report the likelihood-ratio chi-square test statistic (G).[32] We also report the Cramer's V effect size value to examine the strength of association between the variables. The Cramer's V measure is appropriate for crosstabulation tables larger than 2 rows by 2 columns and is interpreted as follows: 1) a value less than 0.2 ≈ a weak association; 2) a value between 0.2 and 0.6 ≈ a moderate association; and 3) a value greater than 0.6 ≈ a strong association.[33]

TABLE 4
Cross-tabulation of Method Type by Academic Field (N = 156)

METHOD TYPE	ACADEMIC FIELD					
	Business	Physical Sciences and Math/Statistics	Education	Health Science	Social Sciences	Humanities
Qualitative Methods	5[a] (6.1)[b] –0.4[c]	4 (11.6) –2.2*	21 (9.4) 3.8*	0 (2.2) –1.5	11 (12.7) –0.5	2 (1.1) 0.9
Quantitative Methods	14 (13.5) 0.1	37 (25.8) 2.2*	10 (20.9) –2.4*	8 (4.9) 1.4	27 (28.3) –0.2	0 (2.5) –1.6
Mixed Methods	3 (2.4) 0.4	1 (4.6) –1.7	3 (3.7) –0.4	0 (0.9) –0.9	8 (5.0) 1.3	2 (0.4) 2.4*

[a] Observed count. [b] Expected count if no association between the two variables. [c] Standardized residuals. Asterisk (*) indicates standardized residual meets one of the following criteria: 1) standardized residual < –2.0, observed count is notably less than the expected count; 2) a standardized residual > 2.0, observed count is notably greater than the expected count.

A likelihood-ratio chi-square test [G (10, N = 156) = 51.256, $p < 0.001$] indicated a statistically significant relationship between academic field and method type, and a Cramer's V effect size of 0.397 ($p < 0.001$) indicated a moderately strong association between the variables. The standardized residuals indicate that 1) the physical sciences and math/statistics dissertations were comparatively more likely to use quantitative and less likely to use qualitative methods;

2) the education dissertations were comparatively more likely to use qualitative and less likely to use quantitative methods; and 3) the humanities dissertations were comparatively more likely to use mixed methods.

TABLE 5
Cross-tabulation of Data Type by Academic Field (N = 156)

DATA TYPE	ACADEMIC FIELD					
	Business	Physical Sciences and Math/Statistics	Education	Health Science	Social Sciences	Humanities
Primary Data	12[a] (13.3)[b] –0.3[c]	36 (25.3) 2.1*	26 (20.5) 1.2	4 (4.8) –0.4	13 (27.7) –2.8*	3 (2.4) 0.4
Secondary Data	9 (6.2) 1.1	2 (11.8) –2.9*	1 (9.6) –2.8*	4 (2.3) 1.2	27 (13.0) 3.9*	1 (1.1) –0.1
Primary and Secondary Data	1 (2.5) –1.0	4 (4.8) –0.4	7 (3.9) 1.6	0 (0.9) –1.0	6 (5.3) 0.3	0 (0.5) –0.7

[a] Observed count. [b] Expected count if no association between the two variables. [c] Standardized residuals. Asterisk (*) indicates standardized residual meets one of the following criteria: 1) standardized residual < –2.0, observed count is notably less than the expected count; 2) a standardized residual > 2.0, observed count is notably greater than the expected count.

A likelihood-ratio chi-square test [G (10, N = 156) = 60.660, $p < 0.001$] indicated a statistically significant relationship between academic field and data type, and a Cramer's V effect size of 0.412 ($p < 0.001$) indicated a moderately strong association between the variables. The standardized residuals indicate that 1) the physical sciences and math/statistics dissertations were comparatively more likely to use primary data only and less likely to use secondary data only; 2) the education dissertations were comparatively less likely to use secondary data only; and 3) the social sciences dissertations were comparatively less likely to use primary data only and more likely to use secondary data only.

Discussion and Conclusions

Insights for Research Data Services Support

We dedicate our discussion to two key findings that readily inform provision of data support services by the Georgia State University Library's Research Data Services (RDS) team and the subject liaison librarians in the areas of instructional services, data software support and licensing advocacy, collection development, marketing/outreach, and professional development/expansion.

> ***Key Finding 1:*** Quantitative methods predominated overall in the investigated dissertations, but there was a substantive qualitative methods contingent, particularly among certain academic fields/departments.

This finding echoes what many extant content analyses of theses and dissertations have found: domination of quantitative methods.[34] Given this finding, the Library's RDS team should continue offering proportionally more services (such as workshops and consultations

support) and resources (like software guides) to support quantitative methods. Similarly, subject liaison librarians should consider focusing collection development efforts on procuring software manuals, methods books, dataset resources, and other material that would benefit quantitative researchers. To better serve the needs of doctoral students, the library should also invest in building particularly the quantitative skills of the RDS team; this could come in the form of supporting training efforts among the current team members in the areas of data analysis and visualization or by hiring additional members with these skills.

Although dissertation authors were less likely to use qualitative methods overall, the RDS team should continue to offer services and resources, and subject liaison librarians should continue to devote collection development efforts toward supporting qualitative methods. Since qualitative methods were used more heavily in certain academic fields (Education) and specific departments (like Middle & Secondary Education, Educational Policy Studies, Communication, and Sociology), the RDS team and the respective subject liaison librarians should target their efforts for qualitative methods and data analysis software support to those specific fields and/or departments.

It would benefit graduate student researchers across disciplines and methodologies if they had easy access to quantitative and qualitative data analysis software. The RDS team and subject liaison librarians are well positioned to advocate for free off-campus access to proprietary software (particularly relevant during the COVID-19 pandemic when university operations went fully online) and for on-campus access to proprietary and open-source analysis software in library and other campus computer labs.

> ***Key Finding 2:*** Primary data use predominated overall in the investigated dissertations and across all method types, but there was a substantive secondary data use contingent, particularly among certain academic fields/departments.

In contrast to Lowry's finding that business researchers were predominantly "data consumers" (secondary data users), we found that "data producers" (primary data users) predominated our doctoral dissertators when looked at in aggregate.[35] This finding suggests that RDS services should primarily focus on data collection topics such as survey design and administration, use of data collection tools such as the Qualtrics survey platform, qualitative interview methodologies, and web scraping and other primary data collection methods. Offering these services may entail building additional skills such as survey design methodology training among current RDS team members or hiring additional staff with these skills. Subject liaison librarians' collection development efforts should focus on primary data collection resources including books on topics such as survey design, primary data collection in the physical sciences, qualitative interview techniques, and qualitative case study methodologies. Similarly, increased outreach to promote tools and resources for finding existing measurement instruments/surveys may be warranted for relevant academic departments.

The use of secondary data was substantive, particularly among certain fields or departments. This finding suggests that the RDS team should continue offering services related to secondary data collection and perhaps target specific fields (such as Social Sciences) or departments (like Public Health) for those services. Additional collection development efforts should include secondary data resources such as subscriptions to secondary dataset resources for quantitative analysis and textual and archival resources for qualitative analysis.

In addition, the predominance of primary data collection methods may indicate a need for additional outreach for the use of secondary data. Secondary data use can be less time consuming and may be more practical in some situations (for instance, during the COVID-19 pandemic). Investigating and securing subscriptions to secondary dataset resources may be one way to assist researchers in choosing this option and in marketing library services. That said, department-specific practices must inform efforts to push secondary data use among their graduate students. For example, our Dean of the Graduate School noted that "some programs/mentors require primary data collection" of their graduate students because of the "important lessons about the steps involved in those processes," and that faculty-led research projects with which graduate students assist often involve primary data collection from which students "then use portions of those data in their own projects."[36]

Limitations and Implications for Future Research

While our study afforded us meaningful insights for provision of data services at Georgia State University Library, as with all research studies, we recognize its limitations. Analyzing doctoral dissertations from only one academic year gave us a limited snapshot of graduate-level research at our institution that did not allow exploring patterns over time; however, as an initial exploratory study in which we were implementing a unique methodology, restricting our analysis to one year was justified. Similarly, the resulting sample size may have limited the statistical power of chi-square tests, and tempers making broad generalizations about our findings to entire departmental practices. In addition, while an exploratory research design allowed us to examine general patterns and relationships that inform data services provision, it did not afford us the ability to predict the effect of library services on graduate student success, as would be the aim in an explanatory research design. Likewise, as this was a single-university case study, the findings should not be generalized directly to experiences at all institutions.

Our future research could build on these findings by including multiple years of dissertations, which might garner enough data to speculate whether our growing data support services manifest observable long-term impacts on graduate-level research practice, to increase the power of our statistical analyses, and to make broader generalizations about departmental practices. Likewise, inclusion of master's theses in future content analyses could afford interesting comparative data to explore (for example: are master's theses more or less likely than doctoral dissertations to employ secondary data use over primary, certain methodologies over others, and so on). Other institutions could replicate and/or extend our methodological approach to gain deeper insights into the data and methodology practices among their graduate students to generate possibilities for data services provision that fit their institutional context, and they could extend our work through cross-institutional comparisons.

Conclusions

Our content analyses of doctoral dissertations afforded us unique insights into the methodology and data practices of our university's doctoral students that we have used and will continue to use to drive the future development of data support services within the Georgia State University Library. As such, the study benefited us directly. Furthermore, this study benefits other researchers and practitioners in academic libraries who provide data support services. First, we have expanded the published literature on data support services for graduate

students beyond the predominant data management focus to include other key phases of the research lifecycle. Second, our dissertation study may serve as a model for future researchers to expand dissertation and theses content analyses beyond the typical citation analysis to delve more deeply into the methodology and data practices of graduate students and even faculty researchers (such as using our methodology to examine faculty publications). And third, our discussion of the implications for a wide range of data support services and across multiple roles within the academic library reflects the diverse and growing possibilities for data support services in academic libraries.

Acknowledgment

The authors gratefully acknowledge our former colleague Jeremy Walker for assistance with the statistical analyses reported in this article.

Notes

1. Georgia State University Library, "Strategic Intentions" (September 5, 2021), https://library.gsu.edu/about/strategic/.
2. Georgia State University Library, Research Data Services (RDS) Team, "Research Data Services @ Georgia State University Library" (September 5, 2021), https://library.gsu.edu/data.
3. Mandy J. Swygart-Hobaugh, "Data Services: Where're We Going? Where've We Been? Where're the Lifeboats?" (poster presentation, Association of College & Research Libraries Conference, Cleveland, OH, April 11, 2019), https://works.bepress.com/amanda_swygart-hobaugh/48/.
4. Data cited for years 2018–2020 are from internal unpublished reports.
5. Mandy Swygart-Hobaugh, "Less Naked and Less Afraid, or Giving Graduate Students the Clothes and Confidence for Data Success," in *Transforming Libraries to Serve Graduate Students*, eds. Crystal Renfro and Cheryl Stiles (Chicago, IL: Association of College and Research Libraries, 2018), 281–300, https://works.bepress.com/amanda_swygart-hobaugh/44/.
6. Mandy J. Swygart-Hobaugh et al., "Where Have We Been, and Where Should We Be Going? A Needs Assessment Study of Graduate Students' Data Needs" (poster presentation, Georgia Libraries Conference [GLC], Online/Virtual, October 7, 2020), https://works.bepress.com/amanda_swygart-hobaugh/50/; Joel Gloglowski et al., "Where Have We Been, and Where Should We Be Going? An Assessment of Graduate Students' Data Needs" (short talk presentation, Southeast Data Librarian Symposium [SEDLS], Online/Virtual, October 8, 2020), https://works.bepress.com/amanda_swygart-hobaugh/52/.
7. Sarah L. Hastings, "Triangulation," in *Encyclopedia of Research Design*, ed. Neil J. Salkind (Thousand Oaks, CA: SAGE Publications, 2010), 1538.
8. Jake Carlson et al., "Data Information Literacy," Data Information Literacy (DIL) Project, www.datainfolit.org/.
9. Jacob Carlson et al., "Determining Data Information Literacy Needs: A Study of Students and Research Faculty," *portal: Libraries and the Academy* 11, no. 2 (2011): 629–57.
10. Jake Carlson and Marianne Stowell-Bracke, "Data Management and Sharing from the Perspective of Graduate Students: An Examination of the Culture and Practice at the Water Quality Field Station," *portal: Libraries & the Academy* 13, no. 4 (2013): 343–61.
11. Lisa Johnston and Jon Jeffryes, "Data Management Skills Needed by Structural Engineering Students: Case Study at the University of Minnesota," *Journal of Professional Issues in Engineering Education and Practice* 140, no. 2 (2014): 05013002.
12. *Data Information Literacy: Librarians, Data, and the Education of a New Generation of Researchers*, eds. Jake Carlson and Lisa Johnston (West Lafayette, IN: Purdue University Press, 2015).
13. Jeffrey C. Oliver et al., "Data Science Support at the Academic Library," *Journal of Library Administration* 59, no. 3 (2019): 241–57.
14. Alisa Surkis et al., "Data Day to Day: Building a Community of Expertise to Address Data Skills Gaps in an Academic Medical Center," *Journal of the Medical Library Association* 105, no. 2 (2017): 185–91.
15. Samantha Guss, "A Studio Model for Academic Data Services," in *Databrarianship: The Academic Data Librarian in Theory and Practice*, eds. Lynda Kellam and Kristi Thompson (Chicago, IL: Association of College and Research Libraries, 2016), 9–24.

16. Duke University Libraries, "Center for Data and Visualization Sciences" [accessed 15 August 2020], https://library.duke.edu/data; North Carolina State University Libraries, "Data & Visualization Services" [accessed 15 August 2020], https://www.lib.ncsu.edu/department/data-visualization-services; University of Michigan Library, "Data Services" [accessed 15 August 2020], https://www.lib.umich.edu/research-and-scholarship/data-services; University of North Carolina Chapel Hill Libraries, "Davis Library Research Hub" [accessed 15 August 2020], https://library.unc.edu/data/; University of Cincinnati, "Research & Data Services" [accessed 15 August 2020], https://libraries.uc.edu/research-teaching-support/research-data-services.html.

17. Minglu Wang, "Supporting the Research Process through Expanded Library Data Services," *Program: Electronic Library and Information Systems* 47, no. 3 (2013): 282–303.

18. Linda Lowry, "Bridging the Business Data Divide: Insights into Primary and Secondary Data Use by Business Researchers," *IASSIST Quarterly* 39, no. 2 (2015): 14–25.

19. Lowry, "Bridging the Business Data Divide," 19.

20. Miyase Akcay et al., "An Overview of Postgraduate Thesis on Mainstreaming Education in Turkey," *Cypriot Journal of Educational Sciences* 14, no. 4 (2019): 641–51; Mecit Aslan and Mustafa Saglam, "Methodological Investigation of the Curriculum Evaluation Theses Completed between the Years 2006–2015 in Turkey," *Universal Journal of Educational Research* 5, no. 9 (2017): 1468–78; Ahmet Atalay, "Research Models Used in Doctoral Theses on Sport Management in Turkey: A Content Analysis," *Universal Journal of Educational Research* 6, no. 3 (2018): 541–55; Gurhan Durak et al., "A Content Analysis of Dissertations in the Field of Educational Technology: The Case of Turkey," *Turkish Online Journal of Distance Education* 19, no. 2 (2018): 128–48; Justus Randolph et al., "Page Length and Methodological Characteristics of Recently Published Doctoral Dissertations in Education," *Georgia Educational Researcher* 11, no. 2 (2014): 46–68; David W. Rothwell et al., "Patterns and Trends of Canadian Social Work Doctoral Dissertations," *Journal of Teaching in Social Work* 35, no. 1/2 (2015): 46–64.

21. Shawn W. Nicholson and Terrence B. Bennett, "Transparent Practices: Primary and Secondary Data in Business Ethics Dissertations," *Journal of Business Ethics* 84, no. 3 (2009): 417–25; Rothwell et al., "Patterns and Trends of Canadian Social Work Doctoral Dissertations"; Timothy N. Tansey, Brian N. Phillips, and Stephen A. Zanskas, "Doctoral Dissertation Research in Rehabilitation Counseling: 2008–2010," *Rehabilitation Counseling Bulletin* 55, no. 4 (2012): 232–52; Judith Richards, Cass Dykeman, and Sara Bender, "Historical Trends in Counsellor Education Dissertations," *British Journal of Guidance & Counselling* 44, no. 5 (2016): 550–61; Peter John Miller and Roslyn Cameron, "Mixed Method Research Designs: A Case Study of Their Adoption in a Doctor of Business Administration Program," *International Journal of Multiple Research Approaches* 5, no. 3 (2011): 387–402; Helen MacLennan, Anthony Piña, and Sean Gibbons, "Content Analysis of DBA and PhD Dissertations in Business," *Journal of Education for Business* 93, no. 4 (2018): 149–54.

22. MacLennan, Piña, and Gibbons, "Content Analysis of DBA and PhD Dissertations in Business."

23. David W. Walker and Shannon Haley-Mize, "Content Analysis of PhD and EdD Dissertations in Special Education," *Teacher Education and Special Education* 35, no. 3 (August 1, 2012): 202–11.

24. One dissertation file was missing, resulting in our collection of 192 of the total 193 dissertations completed in the 2017–2018 academic year.

25. For expanded discussions of the distinctions between these methodologies, see: Rogério M. Pinto, "Mixed Methods Design," in Encyclopedia of Research Design, ed. Neil J. Salkind (Thousand Oaks, CA: SAGE Publications, 2010); Karen M. Staller, "Qualitative Research," in Encyclopedia of Research Design, ed. Neil J. Salkind (Thousand Oaks, CA: SAGE Publications, 2010); Marie Kraska, "Quantitative Research," in Encyclopedia of Research Design, ed. Neil J. Salkind (Thousand Oaks, CA: SAGE Publications, 2010).

26. Heidi Julien, "Content Analysis," in *The SAGE Encyclopedia of Qualitative Research Methods*, ed. Lisa M. Given (Thousand Oaks, CA: SAGE Publications, 2008), 120, 121, Gale eBooks.

27. We also recorded the specific analytical methods (like specific quantitative/statistical analysis method, such as linear regression, structural equation modeling, and the like; specific qualitative analysis method, such as case study, textual analysis, and so on) and analysis instruments (like survey instrument, individual or group interviews, and the like). However, we did not report on these distributions in this article.

28. For expanded discussions of the distinctions between these data types, see: Nadini Persaud, "Primary Data Source," in *Encyclopedia of Research Design*, ed. Neil J. Salkind (Thousand Oaks, CA: SAGE Publications, 2010); Michelle K. McGinn, "Secondary Data," in *The SAGE Encyclopedia of Qualitative Research Methods*, ed. Lisa M. Given (Thousand Oaks, CA: SAGE Publications, 2008), Gale eBooks.

29. When software was identified, we recorded the specific software used (examples being SPSS, NVivo, Stata, R, and the like), and then determined at which software type it should be coded by drawing from personal familiarity with the software or investigating the purpose of software for which we had no familiarity.

30. The small number of dissertations for individual departments prohibited within- and between-department statistical comparisons.

31. Stephanie Glen, "Standardized Residuals in Statistics: What Are They?" Statistics How To: Elementary Statistics for the rest of us! (December 10, 2013), https://www.statisticshowto.com/what-is-a-standardized-residuals/.

32. Mary L. McHugh, "The Chi-Square Test of Independence," *Biochemia Medica* 23, no. 2 (2013): 143–49.

33. Jeff Connor-Linton, "Chi-Square Test," in *Encyclopedia of Research Design*, vol. 1, ed. Neil Salkind (Thousand Oaks, CA: SAGE Publications, 2010), 145–49; IBM Corporation, "Cramér's V" (May 18, 2021), https://www.ibm.com/docs/en/cognos-analytics/11.1.0?topic=terms-cramrs-v.

34. Akcay et al., "An Overview of Postgraduate Thesis on Mainstreaming Education in Turkey"; Suleyman Arslantas and Ahmet Kurnaz, "Classifying Master's and PhD Theses Whose Titles Contain Concept of 'Critical Thinking' by Different Variables," *International Journal of Modern Education Studies* 1, no. 1 (2017), 58–68; Aslan and Saglam, "Methodological Investigation of the Curriculum Evaluation Theses Completed between the Years 2006–2015 in Turkey"; Adnan Baki et al., "Trends in Turkish Mathematics Education Research: From 1998 to 2007," *H.U. Journal of Education* 40 (2011): 57–68; Melek Demirel et al., "Examining Graduate Dissertations in the Field of Critical Thinking: A Case from Turkey," Eurasian *Journal of Educational Research* 17, no. 67 (2017): 141–59; Mukaddes Demirok et al., "A Content Analysis of the Postgraduate Thesis Written on Special Education in Turkey Based on Various Variables (2009–2014)," *Procedia: Social and Behavioral Sciences* 197 (2015): 2459–67; Fatih Karip, "Analyzing the Dissertations about Differentiated Instruction in Terms of Their Contents in Turkey," *Educational Research and Reviews* 11, no. 16 (2016): 1590–97; Soner Yavuz, "A Content Analysis Related to Theses in Environmental Education: The Case of Turkey (2011–2015)," *Journal of Education and Training Studies* 4, no. 10 (2016): 118–25; Nihal Yurtseven and Mehtap Bademcioglu, "Teachers' Professional Development: A Content Analysis about the Tendencies in Studies," *Journal of Education and Training Studies* 4, no. 6 (2016): 214–33; Tansey, Phillips, and Zanskas, "Doctoral Dissertation Research in Rehabilitation Counseling: 2008–2010"; Richards, Dykeman, and Bender, "Historical Trends in Counsellor Education Dissertations."

35. Lowry, "Bridging the Business Data Divide," 19.

36. Email message to a co-author, July 25, 2020.

Preparing College Students for a Digital Age: A Survey of Instructional Approaches to Spotting Misinformation

Nadav Ziv and Emma Bene

Misinformation has become a regular feature of the Internet. Research suggests that everyone, including young people who have grown up with digital devices, struggles to differentiate fact from fiction online because they read closely rather than turning to external sources. We analyzed the resources students find when they seek advice offered by college or university websites on evaluating the credibility of online information. A random sample of 50 universities indicated that, for nearly all institutions, students are advised to engage in close reading to determine credibility. We conclude by recommending that institutions overhaul how they teach students to evaluate online sources.

Introduction

Today's college students are often referred to as digital natives: their fluency in operating devices is also assumed to imply fluency in sorting through the information these devices provide.[1] The truth is more complicated.[2] Studies have shown that college students struggle to search for and evaluate the credibility of online information. In a study of 1,060 first-year college students, Hargittai demonstrated that digitally wired students are less than digitally savvy.[3] They use the order of search results to determine trustworthiness, unaware that Google's algorithm does not always elevate credible sources to the top of the Search Engine Results Page (SERP).[4]

After selecting a website, college students are often unable to effectively evaluate it. When assessing credibility, they rarely consider the source of the website or scrutinize the author's credentials.[5] Students typically rely on heuristics such as site design and relevance to search needs to decide whether to trust a website.[6] A study of 7,804 middle school, high school, and college students showed that they evaluate websites using superficial features such as site design, logos, a dot-org top-level domain, and whether a website has references—even if those references are to sources that do not support the claims being made.[7]

Colleges and universities are designed, in part, to help students meet the challenges they will encounter beyond graduation. The internet's centrality in modern life has added a new role for colleges and universities: how to provide students with the tools needed to safely navigate the web and reach sound decisions. With this in mind, we set out to examine the instructional

*Nadav Ziv and Emma Bene are part of the Stanford History Education Group in the Graduate School of Education at Stanford University; emails: nadavziv@stanford.edu and ebene@stanford.edu.

resources students find when seeking guidance from their college and university websites on how to evaluate online information.

Conceptual Background

Most web users, including college students, employ heuristics to assess a website's credibility.[8] Two early theories suggested that the prominence of information on a website is the primary factor in a user's evaluation. Information-foraging theory argued that internet users choose information based on what they notice and its relevance to their search.[9] B.J. Fogg's prominence-interpretation theory further posited that prominence, defined as the likelihood that information on a website will be observed by users, directly affected how people judged that information.[10]

People mainly employ surface features such as length, references, and writing style to quickly evaluate whether a website is professional.[11] In typical web evaluations, users remain on the website they are investigating to determine credibility and often rely on their background knowledge to assess whether a website should be trusted.[12] In sum, people often trust their ability to spot misleading information through a website's surface-level features and their preexisting knowledge. They also evaluate credibility based on the relevance of a given site to their search needs.

Popular news and media literacy approaches designed to support students in becoming better fact-checkers are consistent with the strategies that college students use. One such digital literacy approach roots itself in propaganda inoculation developed in response to print texts. It asks readers to analyze a page's content to determine the author's purpose and biases.[13] This kind of close reading carries over to how people currently approach web evaluation.[14]

The Checklist Approach

College librarians have employed numerous checklists designed to help students evaluate content on the internet. These resources often incorporate advice originally conceived for print sources. The CRAAP test, an acronym that stands for Currency, Relevance, Authority, Accuracy, and Purpose, was developed at California State University, Chico and has been adopted by librarians across the country.[15] Mike Caulfield, a research scientist at the University of Washington, traces the ubiquitous CRAAP checklist to 1978, where it was initially developed as a tool to select library materials.[16]

Checklists largely focus on a website's internal features. These include the presence or absence of a contact person, whether a website has references with working links, and the grammatical correctness of a website, among other criteria. The underlying assumption checklists share is that students can judge credibility by carefully inspecting the target site they are investigating.[17] Checklist approaches ask students to determine whether a website is trustworthy after they have spent considerable time on it.

Signaling theory describes how signals mediate a relationship between signaler and receiver: "Signals are any observable features of an agent which are intentionally displayed for the purpose of raising the probability the receiver assigns to a certain state of affairs."[18] In other words, a signaler intentionally presents a signal to increase the likelihood that the receiver of that signal will act in a certain way. On the internet, the signaler is the website creator and the receiver is the user. The internet user benefits if and only if they find credible information. The website creator benefits by gaining support, votes, adherence, or (in the case

of Russian disinformation) confusion. Thus, website creators have an incentive to signal to users that their website is credible, whether or not this is the case.

In the early days of the internet, signals such as banner ads, misspellings, and amateurish graphics indicated unprofessionalism and cast doubt on a website's reliability. Lower barriers to the production of information have democratized the internet and empowered marginalized voices. But they have also made it easier to spread misleading information. With little effort, website creators can intentionally infuse weak signals of credibility to increase the likelihood that a user will spend more time on their website and trust it.[19]

The website of the Employment Policies Institute, or EPI (epionline.org), illustrates the ease with which signalers can manipulate weak signals to deceive users. The website is designed to seem professional and unbiased: it has a dot-org domain, a heading that supposedly answers research questions with evidence, and an About page that describes the organization's managing director as an esteemed researcher who worked for the Bureau of Labor Statistics and has been published by *Forbes* and *The Washington Post*. In reality, EPI is funded by the restaurant industry. It offers misleading information about the risks of raising the minimum wage. But in one study, 90 percent of students were unable to identify EPI's source of funding and why it might be problematic, even though such information could be found with a quick Google search.[20] The students who struggled were the ones who stayed on the webpage and evaluated its internal signals carefully. Meola argues that this kind of approach, which he identifies as common to checklists, "rests on faulty assumptions about the nature of information available through the Web."[21]

The Networked Approach

The networked approach to determining a website's credibility begins with different assumptions from the checklist approach. The checklist approach is in many ways a carryover from traditional analog-based vetting of texts, designed when sources were scarce, and therefore each had to be carefully mined and checked.[22] In contrast, the networked approach was designed in our current age of the internet: Sources today are abundant and, in many cases, overabundant. Each source is part of a network of information. To understand a single node in the network, one must place it in the context of other networked sources. On the internet, an individual website—a node—is best understood in relation to what other internet sources have to say about it. To uncover the connection one node has to others on the web, a user enters keywords from the website, such as the name of its sponsor, into a search engine. The resulting SERP reveals the node in context: how other nodes relate to it and, thus, how it can be best understood. Therefore, the networked approach harnesses the power of the web to help internet users evaluate the credibility of a given website.

The Checklist and Networked Approaches Compared

Checklist and networked approaches mainly differ in how they approach the moment when a web user decides whether to engage with a website. The networked approach separates assessments of credibility into two decisions. First, is the website worth further examination? Second, if so, how should one interpret the information on the site? The networked approach recognizes that it is not worthwhile, and in fact actively harmful, to engage with information prior to determining that a site is worthy of further examination. For example, spending time on a misleading website may result in indoctrination into conspiracy theories.[23] On the other

hand, the checklist approach considers credibility assessments as a continuous process: One determines trustworthiness through close reading rather than making an intentional choice about whether such attention is warranted.

Simon argues that "a wealth of information creates a poverty of attention" and necessitates decisions about how to allocate that attention among numerous sources.[24] Such decisions are especially important in today's saturated information environment. Kozyreva et al. say that, "to manage information overload, one must ignore a large amount of incoming material and separate useful information from noise, false news, or harmful advice."[25] Therefore, in the context of the modern-day internet, a user makes a critical decision when they determine whether a website is sufficiently trustworthy to merit further consideration. A networked approach focuses on this moment of engagement.

Research has shown that a networked approach leads to substantially different web evaluation strategies and outcomes. Wineburg and McGrew found that professional fact-checkers unanimously came to the right answer on tasks with which students struggled.[26] What did they do differently? They turned to the broader web. Instead of remaining on the website they were investigating for a prolonged period of time, fact-checkers opened up new tabs at the moment of engagement to determine whether the original site should be trusted. Only after determining the credibility of a website did fact-checkers return to the original site to glean information from it, a strategy called "lateral reading." Educational interventions teaching students to read laterally have yielded positive results.[27]

To illustrate, the background of the Employment Policies Institute (EPI) can be ascertained quickly through the networked approach. Using lateral reading, a web user would open up a new tab and search "Employment Policies Institute." Skipping the first link on the SERP, which is often to the organization being investigated, one would find multiple sources flagging EPI's bias as a front group for the restaurant lobby, a group with a vested interest in keeping the minimum wage low. In other words, by harnessing the power of the internet, the user can map the way this particular node—epionline.org—connects to many other nodes, thus revealing its character. Checklists, on the other hand, prompt the user to undertake a careful examination of the website to determine credibility. As mentioned above, students who carefully examined EPI were also the ones who came to the wrong conclusion.

Among advice offered by librarians, checklists appear more frequently than suggestions to read laterally.[28] Lim's recent investigation found that, in a largely purposive sample of academic library guides, checklists were the most common tool librarians used to address fake news.[29] The ubiquity of checklists, along with the increasing evidence that a networked approach is more effective in an era of information overabundance, prompted us to examine the prevalence of checklist versus networked approaches when students search for advice from their institution on how to evaluate online sources.

Lim distinguishes checklists by their purpose such as evaluating academic resources versus evaluating news sources. We classify guides by their general approach to initial assessments of credibility on the web. Thus, we focus on the distinction between internal evaluation of a website's signals and external evaluation via situating a website in a broader matrix of information. As suggested earlier, recent studies point to internal versus external evaluation as determinative of student success in evaluating online information. Students who stay on a webpage struggle.[30] Students who leave that webpage, open a new tab, and see what other, credible sources have to say arrive at better answers in a fraction of the time. Our study,

therefore, prioritizes process-oriented aspects of information literacy such as turning toward external sources prior to close reading.

Having tools to interpret information, such as data analysis skills or an ability to spot bias, is critical. But it is important to know when and where to apply those tools. Just as one must choose a restaurant to dine at before the skill of using utensils becomes relevant, so too must one choose a source of information to consume before interpretive information literacy becomes valuable. We are concerned with this initial choice of consumption or whether a source of information deserves further interpretation. Wherever we use the phrase "evaluate content" we specifically refer to this kind of initial determination of credibility rather than the more comprehensive view of credibility, which includes information interpretation and deeper analysis. The process of turning to external sources to evaluate credibility is consistent across social media, traditional webpages, and more. We therefore treat these subcategories as united under the umbrella of "online information." For the purposes of this paper, online information can be thought of as any piece of information a student encounters on the internet in any medium of whose veracity a student is unsure.

Overall, given what the research suggests about the difference in effectiveness of networked and checklist approaches, we asked the following research question: When students try to find advice from their academic institution on how to approach information on the internet, to what extent do they find networked versus checklist approaches? We then analyzed the distribution of networked versus checklist approaches in light of universities' role in preparing students for an increasingly digital age.

Methodology

Sampling Strategy

This study sampled the websites of 50 leading colleges and universities in the United States, equally dividing our sample between 25 private and 25 public institutions. We restricted the sample to public student-facing resources, excluding advice about web credibility specifically aimed at college instructors.

We only included institutions that provided web credibility advice on a library dedicated page, general university guide, or integrated advice in a course guide easily accessible through Google. In setting these criteria, the guiding principle was the visibility of the resources to students and the relevance of the resources to web credibility. Most of the sample consists of libraries' websites. However, we did not preclude other sources of advice because our aim was to examine the prevalence of networked versus checklist approaches among institutions rather than solely among libraries. Harvard University, for example, was included in the sample even though the guide came from the college's writing program. We made this choice because this advice was the most visible resource students would find when searching for guidance on the open web. Overall, our sample indicates that librarians are the ones who most frequently provide advice on evaluating information. However, this was not exclusively the case.

Generating the Sample

We generated the sample by copying into an Excel spreadsheet the names of the top 100 ranked private and top 100 ranked public universities from the Times Higher Education/Wall Street Journal (2019) rankings.[31] We applied a randomization algorithm to choose data points from the list and repeated the process until we had 25 unique private and 25 unique public institu-

tions (see table 1 for the final list of institutions and the appendix for links to their resources). If we were unable to find that an institution included information specifically for evaluating internet sources, it was excluded. For example, while Williams College offered an "Evaluating Sources Page" with advice on "what to think about when assessing your sources," there was no indication that this guide applied to evaluating web sources.[32] It was thus excluded.

We used a large random sample to gain a broader picture of the advice students find from their academic institution when they seek guidance for how to evaluate online information. The size of our sample (n = 50) and method of random sampling make it more likely that our results are representative and free from third-variable influence than smaller samples that are obtained mostly purposively. In addition, we focus on the kind of advice students most easily find from their institution rather than trying to catalogue the entirety of that university's resources.

We used multiple strategies to find what information an institution provided students about web credibility. We first searched the name of the institution with the key phrase "source evaluation." Often these keywords returned relevant search results with links from the given

TABLE 1
Institutions Included in Final Data Sample

Private Colleges	Public Colleges
Yale University	Rutgers University
Carleton College	Stony Brook University
Brandeis University	Pennsylvania State University
Washington University in St. Louis	Stockton University
University of Richmond	Binghamton University, State University of New York
Boston College	University of Delaware
Northwestern University	Virginia Commonwealth University
Cornell University	Indiana University (Bloomington)
Drexel University	The College of New Jersey
Dickinson College	University of Colorado Denver
Stanford University	University of Texas at Austin
Wesleyan University	University of Washington—Bothell
University of Notre Dame	Rowan University
Creighton University	University of Pittsburgh
University of Denver	University of Wisconsin
Grinnell College	San Diego State University
Middlebury College	Miami University
Bucknell University	United States Military Academy (West Point)
Massachusetts Institute of Technology	Temple University
Saint Louis University	George Mason University
Hamilton College	University of California, San Diego
Duke University	Oregon State University
Santa Clara University	University of Tennessee
Princeton University	University of California Santa Barbara
Harvard University	University of Cincinnati

college or university about online source evaluation. However, we varied terms as needed when there were no relevant search results, replacing *source evaluation* with *fake news*, *how to evaluate sources,* or *source credibility.* In the cases where keyword manipulation still did not lead us to relevant resources, we went directly to the university's library website and navigated within the site itself. Out of the sample of 50 institutions, 43 were provided by libraries as general guides, four were integrated into course guides, and three were published by the English or Composition departments of an institution.

Our focus on student-facing guides meant we did not reach out to any institution to request resources. It is possible that, in at least some cases, we did not find what an institution would describe as its best or what is objectively the most recent advice it gives on web credibility. However, resources that are not easily surfaced via Google or the institution's web page are also less likely to be seen and used by students: Research shows that internet users tend to look at the first link on the Google SERP.[33] We mainly conceived of visibility as the highest link on the SERP that provided an institution's advice on evaluating online sources. When we navigated within an institution's web page to find a guide, visibility meant choosing the highest relevant link from an internal site search or accessing resources that were prominently displayed on the library homepage. Our prioritization of visibility and accessibility to students in such cases does not discount the potentially great resources offered by institutions elsewhere. Rather, it recognizes that students cannot be properly guided by advice that they cannot easily find.

Coding Scheme and Reliability Testing

After an initial survey of the institutions, we developed a coding scheme that focused on internal versus external evaluation via an adaption of open coding.[34] Any kind of advice that directed students to look at a website's internal features prior to external examination would qualify as "internal evaluation." This included but was not limited to: advice to evaluate a website's design, domain, About page, or links and references. External evaluation was any kind of advice that directed students to leave the website they were evaluating to ascertain its credibility. This included but was not limited to: advice to see what other sources have to say about the organization being investigated, advice to investigate the author's reputation, as well as advice to search for more information on the specific claims being made. We also coded for common resources. All institutions were evaluated between May 2019 and April 2020. As such, our study offers a snapshot of the resources students would find in this period of time. Backups of institutions' advice can be found through Internet Archive or via screenshots taken by the authors.

In the process of developing a coding scheme, two coders underwent two practice rounds of coding to test reliability, sharpen coding criteria, and discuss border cases. One round involved five institutions from within the sample of 50. Another round involved five institutions that were chosen randomly and not included in the final sample of the study. Following these two practice coding rounds, two coders independently evaluated 20 percent (n = 10) of the sample for a formal reliability test, reaching 100 percent agreement on characterizing the type of web credibility and its consistency or inconsistency.

Results

Nearly every institution (48/50, or 96%) featured checklist approaches either on their landing page or in links to other sites. Checklist approaches shared a common orientation toward the

nature of online information and web credibility, namely an emphasis on internal evaluation of a website's signals. However, they differed in the amount and types of resources offered.

Our coding scheme focused on the extent to which college and university resources in our sample offered networked and checklist advice for how to initially approach an unfamiliar site. Institutions that featured solely checklist or networked approaches for the moment of engagement were in the minority. Most colleges and universities featured a combination of both approaches. When both networked and checklist advice was present, we examined whether institutions differentiated when to employ which approach.

TABLE 2
Summary of Results Comparing Networked and Checklist Approaches

Category	Percentage of Sample within Category
Consistent Checklist	40%
Inconsistent (Checklist and Networked)	56%
Consistent Networked Approach	4%

Consistent Checklist Approach

Forty percent of college and university websites only provided students with checklist strategies to determine a website's credibility.

For example, Northwestern University's library website presented students with two checklists to use in evaluating sources. The first checklist, ACT UP (Authority, Currency, Truth, Unbiased, Privilege), offered 15 questions a student should consider. These ranged from "who (person, organization, company) created the source?" to "does the point of view appear objective or biased?" and "is there a bibliography?"[35] Northwestern stated that these criteria "work for all formats," including books, websites, articles, and more.

Yale University also adopted a checklist approach. Their checklist, drawing on content from the University of Maryland and University of Dallas, had students check off the domain of the website they were investigating, such as dot-com (a company), dot-edu (academic institution), and dot-org (nonprofit organization). Other criteria directed students to the site's design, the organization of the webpage's features, the frequency of updates, and whether the site provides "any contact information or means of communicating with the author or webmaster." Yale did not provide a rubric to translate the above features into a final credibility assessment.[36]

Consistent checklist institutions generally adopted a similar approach as Northwestern and Yale. While the precise wording of the questions might differ, checklists across institutions emphasized on-the-page evaluation.

Dangers of the Internet

Besides offering checklists for students to evaluate the credibility of information online, some institutions emphasized the dangers of the internet. Harvard University, in a section titled "What's Wrong with Wikipedia?" urged students to be leery of the free encyclopedia because "information on Wikipedia is contributed by anyone who wants to post material," and that instead, "Harvard librarians can point you to specialized encyclopedias in different fields."[37]

Yale, too, exhorted students to use databases and print resources. At the top of their guide on web credibility, Yale contrasted library databases with the open web, pushing students

to rely on the former. Yale suggested that using the internet to search was more trouble than it was worth, leaving a student with "lots of junk to wade through." A database, however, would give students prevetted results, a valuable resource that was available free of charge for the remainder of their time at the institution.[38]

West Point contrasted how print sources "go through an extensive publication process that includes editing and article review," while online, "anyone with a computer and access to the Internet can publish a Web site or electronic document." West Point's "Online Sources" tab did not include specific strategies for determining a particular website's credibility in the kind of information landscape that they warn about.[39] This is similar to Northwestern's ACT UP checklist, which advised students to consider "How accurate is the information?" but did not explain to students how to make this determination on the Web.[40]

Relevance vs. Reliability

Finally, some checklists, such as Northwestern's version of CRAAP, suggested that the relevance of information to a student's research project is a key consideration in determining credibility. Similarly, Wesleyan University provided a list of 29 bulleted questions to help students "evaluate how relevant and reliable [their sources] are."[41] Wesleyan was coded as inconsistent because it offered some networked advice, but the conflation of relevance and reliability fits under the umbrella of the checklist approach.

Inconsistent Approach

The majority of institutions in our sample (56%) provided students with a combination of networked and checklist approaches. Some colleges and universities presented both approaches on their landing pages or within a checklist. For others, the inconsistency was the result of mixed messages provided by advice on their landing page and the resources to which they linked.

Several institutions presented conflicting approaches on the same page. The University of Texas at Austin's landing page explained lateral reading and reminded students that "sometimes you can find out more about a website by leaving the site itself" and that "just because a website looks credible doesn't mean that it is."[42] The librarian provided students with the key points from Wineburg and McGrew's scholarly article.[43] However, below the section on lateral reading, UT Austin's page offered "Evaluation Criteria" containing the CRAAP test.

Some institutions had checklists that contained networked advice within the checklist. Wesleyan University, for example, presented students with a checklist similar to the CRAAP test.[44] The checklist tells students to examine the URL of the page to identify the type of site and thereby make an inference as to its credibility. At the same time, it included two questions that prompted students to leave a website to determine its trustworthiness. Wesleyan's section "Who is the author?" included the following question: "For more information on an author, ask your professor, do an Internet search, or look in the database Contemporary Authors or some other biographical reference source." This question was embedded within a checklist, but it incorporated a networked orientation to the Web. That said, networked questions represented only two of 29 questions in the checklist.

Colleges and universities that were consistent in offering a checklist or a networked approach on their landing page often linked to strategies inconsistent with their chosen approach. The College of New Jersey's landing page coached students to "look at the top-level domain" and the author/About Page to determine a website's credibility.[45] However, they also linked to

a resource from the International Federation of Library Associations (IFLA) that presented a networked approach to web evaluation (see "Other Resources" section). The graphic directed students to navigate away from the initial website to "investigate the site, its mission, and its contact info" as well as to determine the author's credentials.

Another institution, Middlebury College, featured Caulfield's SIFT technique (Stop, Investigate the Source, Find better coverage, Trace claims, quotes, media to original context), a networked approach, at the top of its "Techniques for Evaluating the Web" landing page.[46] But there was also a link to the checklist-style CRAAP Test from CSU Chico. Colleges and universities in this category did not offer guidance on when to use SIFT or lateral reading versus when to use CRAAP.

Consistent Networked Approach

A networked approach gave students strategies on how to leverage the broader web to evaluate credibility. For an institution to be considered consistently networked, it had to provide exclusively networked advice on its landing page and in links to other institutions. Among the sample of 50, only two, Rowan University and the University of Tennessee, Knoxville, offered students consistently networked advice.

Drawing on SIFT and lateral reading, Rowan's guide, created by Andrea Baer and Dan Kipnis, helped students determine if a source was worth their time before they read it carefully.[47] Rowan positioned lateral reading as the necessary precursor to the close, interpretive reading that forms the bulk of traditional information literacy advice. It advised students to investigate an unknown site by checking for previous work, finding the original source of information, reading laterally, and circling back. After giving advice on how to determine if a site is worth their time, Rowan offers students tools to engage with the information that the site provides. Rowan differentiates between information literacy strategies to use when landing on an unfamiliar site versus the ones to use after that site's credibility has been determined externally. UT Knoxville qualified for a consistently networked approach by embedding the IFLA Infographic on its source evaluation page.[48]

Most Used Resources

The diversity and breadth of resources that institutions incorporated demonstrate a couple of facts: 1) universities compiled a mixed bag of resources, both checklist and networked, often without differentiating when to use which; and 2) these resources were often dated.

Mixed Bag

A total of 18 percent of institutions linked to or embedded the IFLA graphic, which offers networked advice and is one-third as long as CSU Chico's CRAAP test. However, the context in which this graphic was presented mattered. For example, some institutions, such as the University of Tennessee, Knoxville, offered IFLA as the primary source of advice for students. Others, such as The College of New Jersey, offered IFLA alongside numerous other sources of information.[49] Nearly one-third (32%) of institutions linked to fact-checking resources such as PolitiFact or Snopes. Rarely, however, were these resources prioritized. For example, Cornell University included links to "Four Reliable News Fact-Checking Sites" under a tab on how to "Be an Active News User." However, this was one of 16 tabs on the landing page, each of which contained multiple links.[50] While CRAAP checklists and the IFLA infographic were

often central to a college or university's instructional approach, fact-checking resources were frequently supplemental.

Outdated Resources

Only 14 percent of institutions in our sample linked to the CRAAP test developed by a librarian at Meriam Library at Cal State University, Chico. CRAAP and CSU Chico's influence are likely greater than our sample revealed. Many colleges and universities featured near-identical checklists without direct attribution. Stockton University, for example, had a modified version of the CRAAP Test without any citations to CSU Chico.[51] Other colleges that were frequently linked include Cornell, Berkeley, and Stony Brook.

This happened with resources other than CRAAP as well. Colleges and universities often embedded sources from other organizations or institutions onto their landing pages, sometimes without attribution. For example, Stony Brook University and the University of Delaware featured an identical screenshot of a webpage with tips on source evaluation that was developed by Indiana University East. But only the University of Delaware had a citation. An absence of citations means the influence of all of the resources in this section may be greater than the percentage discovered in our sample.

Eight percent of our sample included links to or citations of dated research articles from the internet's early days that reinforce a checklist approach. A Princeton University guide to web credibility, for example, cited a 1998 article by Jim Kapoun entitled "Teaching Undergrads WEB Evaluation: A Guide for Library Instruction" as the basis for its suggestions.[52]

Sixteen percent of institutions linked to Melissa Zimdars' "False, Misleading, Clickbait-y, and Satirical 'News' Sources," an effort to develop lists of sites that offer poor-quality information.[53]

Zimdars, a professor of communication and media at Merrimack College, encouraged students to check the URL of the site they are investigating against an extensive—though not necessarily exhaustive—list of fake news sites. She broke down fake news into several categories and gave a table of more than 100 sites of which students should be wary. Last updated in 2016, several of the sites in her list like "abcnews.com.co" or "70news.wordpress.com" are no longer active, which Zimdars acknowledges.

In several cases, such as Binghamton University, Oregon State University, and Hamilton College, links to other resources were broken.[54]

TABLE 3
Summary of Most Used Resources

Name of Resource	Percent of Sample that Links to Resource
IFLA Infographic	18%
Fact-Checking Websites	32%
CRAAP Test from Meriam Library at Cal State University	14%
Dated Research Articles	8%
Melissa Zimdars'"False, Misleading, Clickbaity-y"	16%

Discussion

The internet is an indispensable feature of college life, but ample research shows that many

college students need help distinguishing quality from dubious information.[55] Our results indicate that the web credibility advice students find often does not reflect emerging best practices of turning to external sources before engaging in close reading.

Most institutions in our sample prompted students to determine credibility by evaluating a website internally. However, internal signals such as website domain, contact information, or design can be manipulated. Advice to read a website closely reflects longstanding approaches to evaluating print sources. While many institutions acknowledged the unique dangers of the internet, not all of them offered students specific strategies for navigating those dangers.

Overall, our research suggests that colleges and universities need to do more to help students learn how to evaluate the credibility of online information. In particular, advice about web evaluation should differentiate between initial assessments of credibility via external sources and subsequent close reading. Institutions must ensure the resources they create for students communicate when each approach is warranted. More than half (56%) of institutions included networked approaches. But only 4 percent advised students to look externally *before* close reading.

Internet-Specific Advice

Colleges and universities frequently tried to tailor their advice to unique aspects of the internet. For example, several institutions offered students guidance on the use of Wikipedia. The University of Colorado, Denver told students that "there's no ranking system which lets certain authors edit some pages and not others."[56] In fact, Wikipedia maintains different kinds of protected pages—the most trafficked and subject to vandalism can only be changed by the highest-ranking Wikipedia editors.[57] Professional fact-checkers frequently turn to Wikipedia as a resource to determine the credibility of a particular website or organization.

Students are also taught to imbue trust in dot-org websites. Many institutions suggested students should pay attention to a site's domain. Some, including Harvard University and Yale University, said dot-orgs are nonprofits, which could have the unintended consequence of making students think they are trustworthy. In reality, anyone can acquire a dot-org domain, including 49 percent of hate groups. Nor does nonprofit status guarantee that an organization provides credible information.[58]

Students who internalize that they can trust dot-orgs on faith make mistakes with serious consequences. A recent study asked a nationally representative sample of 3,446 high school students to evaluate co2science.org, a site that denies human-induced climate change and is funded by the fossil fuel industry. Nearly all (96%) of them failed to uncover the site's ties to its corporate sponsors.[59] In many cases, the power of the dot-org domain swayed their decisions. "This page is a reliable source to obtain information from, you see in the URL that it ends in .org as opposed to .com," one student wrote.[60] Other signals that influenced students' decisions were a site's design and graphics, the presence or absence of contact information, and the accuracy of spelling and grammar. In 2021, however, these signals are easily manipulated. Anyone can create a professional looking website that is easy to use and features contact information. Therefore, teaching these signals as a metric for credibility does not help students make good decisions on the internet.

Dated Information

Research has shown that the web demands a new kind of reading that prioritizes external

verification over the internal close reading employed when evaluating traditional print sources. Institutions in our sample did not always convey this new approach. For example, one of the pieces of advice in an extensive guide offered by Massachusetts Institute of Technology was that evaluating the credibility of information online requires close reading skills: "While you may not feel qualified to judge research in areas that are unfamiliar to you, evaluating information involves little more than being critical of what you read and using a little common sense."[61] However, even very smart people can be fooled by dwelling too long on an unfamiliar website.[62] Asked to determine which of two sites gave better advice on adolescent bullying, the nationally recognized American Academy of Pediatrics or the fringe, anti-LGBT American College of Pediatricians, 64 percent of Stanford undergraduates thought the College gave better advice. Fully 40 percent of PhD historians, drawn from five different institutions, equivocated when trying to make a determination. These intelligent people didn't struggle because they failed to read closely. They struggled because they did.[63]

Professional fact-checkers, however, unanimously identified the American Academy of Pediatrics as credible and the American College of Pediatricians as suspicious. Unlike the historians or students, professional fact-checkers turned to the network, leaving the organizations' landing pages and opening new tabs across the horizontal axis of their browser window to see what other trustworthy sites had to say about each group. They leveraged Wikipedia as a resource. And they did not automatically click on the first link on the Google SERP, instead engaging in "click restraint" and making an intentional and intelligent choice about which resources to open first.[64]

Networked interventions using Caulfield's Four Steps, click restraint, lateral reading, and encouraging the use of Wikipedia yielded substantial improvements in students' ability to evaluate the credibility of information online. An experimental curriculum run by the Digital Polarization Initiative resulted in "significant gains in [the use of] fact-checking strategies, including greater use of Wikipedia to verify information" compared to a control group.[65] A study that the Stanford History Education Group ran at San Jose State University, comparing students who were taught a networked approach to a control group, achieved similar gains.[66] In our review of existing research, we were unable to surface any comparable interventions that improved students' online reasoning based on the CRAAP test and other checklist-based approaches.[67]

Instructional Design, the Problem with Checklists, and Librarians' Role

We found that the majority of colleges and universities (56%) combined checklist approaches with networked ones without saying when to use which. When networked advice is presented alongside close reading strategies, it becomes difficult for a student unfamiliar with best practices to know the appropriate time to employ a given approach. The same is true when resources such as fact-checking websites are included among dozens of other links. Instructional design should help students understand the purpose and limitations of the different resources colleges and universities provide.

Limitations and Areas for Future Research

Our study has limitations that constrain the scope of the conclusions drawn. It consisted exclusively of institutions within the United States drawn from the Times Higher Education/Wall Street Journal (2019) rankings of top private and public institutions. Without international

comparisons or a broader sample, it is not possible to conclusively determine whether the same trends apply to colleges and universities writ large. Nor do we have data on the usage of these web-based materials or the extent to which college students internalize advice if and when they interact with them. Finally, by limiting our study to student-facing resources available on the open web, we leave out other curriculum interventions students may receive on evaluating the credibility of information on the internet, as well as resources that are not easily found through a Google search.

Opportunities for future studies include researching how professionals make decisions about what to include in guides for students, in particular how they adapt to evolving best practices and update their guides over time. In addition, it would be worthwhile to observe how students interact with these online resources, seeing what they pay attention to in the hopes of clarifying how updated content can be combined with effective instructional design to produce useful guides. Finally, updates to the advice students find from institutions suggest it may be valuable to redo a similar study down the line to identify trends in data over time.

Conclusion

By virtue of their inclusion in our sample, all of the colleges and universities we studied made some attempt at preparing students to sort fact from fiction online. But our results suggest that the status quo of web credibility instruction needs to be reimagined.

The internet is where students turn for the information they use to make personal, familial, and political decisions. Their ability to evaluate credibility on the web should therefore be a priority—especially as a global pandemic forced an even stronger pivot toward technology in every aspect of students' lives.

It is encouraging that a majority of institutions featured some sort of networked advice, even if that advice was presented in conjunction with checklist-style approaches. Librarians, teaching faculty, and every member of the university community need to collaborate to ensure that the next generation of leaders have the tools they need to be effective consumers of online information. To this end, there are several immediate steps that institutions and librarians might take to help students better discern fact from fiction online.

First, institutions should remove advice that is either incorrect or no longer applies to the internet of 2022. Suggesting that a dot-org domain indicates social good is not sound advice. Nor is it wise to examine a site's design in an age when it is easy to produce a good-looking website. These kinds of directives must be removed to avoid misleading students.

Second, institutions should follow the example of Rowan University and sequence networked and checklist approaches. Institutions should make clear that initial, external evaluation of a website's credibility must precede internal, close-reading evaluation. Both approaches—external evaluation and close reading—are important. But they are only effective when properly sequenced.

Lateral reading, the key mechanism of external evaluation, is an effective and flexible heuristic. It does, however, presume that when students conduct an internet search, they know which sources they can trust to triangulate. Therefore, preparing students for a digital age will require instruction on what makes a source credible.

There may also be room for pedagogical experimentation by librarians. We know that the networked approach is superior in terms of outcomes in evaluating information. Recent studies have shown that small interventions in the classroom setting can yield substantial

improvements in students' digital savvy. However, there is less certainty about best practices in teaching the networked approach via online resources as well as the durability of improvements from targeted interventions. Librarians can take up this still-emerging field of research to try different approaches to teaching students the networked approach, adjusting instructional time, format, follow-up, and more. For example, researchers could examine how students interact with and learn from resource guides online. This experimentation may prove crucial in helping bridge a research-based understanding of the networked approach to practical applications in colleges and universities.

Acknowledgments

We would like to express our deep appreciation to Professor Sam Wineburg for his continuous, invaluable mentorship along every step of this paper. We would not have been able to complete this project without him.

APPENDIX. Links to Institutions in Sample

Note on Links: The nature of the internet means data is prone to rapid change. Most of the sites remain the same or nearly the same as when we collected them. However, several are no longer up or have been revised since the time of data collection. Internet Archive WayBack Machine links are provided when possible to illustrate the data included in the sample.

APPENDIX **Links to Institutions Included in Final Data Sample**	
Institution	Link
Yale University	https://web.archive.org/web/20200414172811/https://www.library.yale.edu/researcheducation/pdfs/Searching_Evaluating_Resources.PDF
Carleton College	http://web.archive.org/web/20200407210856/https://gouldguides.carleton.edu/currentevents
Brandeis University	http://web.archive.org/web/20200407210932/https://guides.library.brandeis.edu/evaluatinginfo/web-and-social-media
Washington University in St. Louis	https://libguides.wustl.edu/c.php?g=46980&p=301909
University of Richmond	http://web.archive.org/web/20200407211040/http://libguides.richmond.edu/c.php?g=260944&p=1743264
Boston College	http://web.archive.org/web/20200407211210/https://libguides.bc.edu/c.php?g=44018&p=279570
Northwestern University	http://web.archive.org/web/20200407211523/https://libguides.northwestern.edu/evaluatingsources
Cornell University	http://web.archive.org/web/20200318124050/http://guides.library.cornell.edu/c.php?g=32334&p=203767; http://web.archive.org/web/20200422112431/http://guides.library.cornell.edu/evaluate_news/fakenews; http://web.archive.org/web/20200418084251/http://guides.library.cornell.edu/critically_analyzing
Drexel University	http://web.archive.org/web/20200407211732/https://libguides.library.drexel.edu/fake_news
Dickinson College	http://web.archive.org/web/20200407211806/http://libguides.dickinson.edu/researchprocess/websiteeval
Stanford University	http://web.archive.org/web/20200407211827/https://www.youtube.com/watch?v=bZ122WakNDY
Wesleyan University	http://web.archive.org/web/20200407211937/https://libguides.wesleyan.edu/c.php?g=393439&p=2672641
University of Notre Dame	http://web.archive.org/web/20200407212100/https://potofgold.library.nd.edu/evaluating/
Creighton University	http://web.archive.org/web/20200407212125/http://www.creighton.edu/reinert/researchtoolbox/tutorialsandguides/thefivews/
University of Denver	http://web.archive.org/web/20200408003843/http://libguides.du.edu/c.php?g=622586&p=4336814

APPENDIX Links to Institutions Included in Final Data Sample	
Institution	Link
Grinnell College	https://www.grinnell.edu/academics/libraries/students/doing-research?v2node
Middlebury College	https://middlebury.libguides.com/internet/techniques-web
Bucknell University	http://web.archive.org/web/20200408004115/https://researchbysubject.bucknell.edu/evaluatingnews
Massachusetts Institute of Technology	http://web.archive.org/web/20200408004317/https://libguides.mit.edu/c.php?g=382302&p=2590435
Saint Louis University	https://libguides.slu.edu/c.php?g=185593&p=1227639
Hamilton College	http://web.archive.org/web/20200408005148/http://libguides.hamilton.edu/c.php?g=622975&p=4339597; http://web.archive.org/web/20200414184027/https://libguides.hamilton.edu/c.php?g=622975&p=4339599
Duke University	https://guides.library.duke.edu/c.php?g=902788&p=6497823
Santa Clara University	http://web.archive.org/web/20200408004520/https://scufactchecking.wixsite.com/home
Princeton University	http://web.archive.org/web/20200408004728/https://libguides.princeton.edu/c.php?g=84018&p=664970
Harvard University	http://web.archive.org/web/20200408004752/https://usingsources.fas.harvard.edu/evaluating-web-sources
Rutgers University	http://web.archive.org/web/20200408005513/https://libguides.rutgers.edu/fake_news
Stony Brook University	http://web.archive.org/web/20200408005552/https://guides.library.stonybrook.edu/fakenews/resources
Pennsylvania State University	http://web.archive.org/web/20200408005722/https://libraries.psu.edu/services/research-help/evaluating-information
Stockton University	http://web.archive.org/web/20200408005740/https://library.stockton.edu/c.php?g=830109&p=5926889
Binghamton University, State University of New York	http://web.archive.org/web/20200408005847/https://www.binghamton.edu/libraries/research/guides/web-page-checklist.html
University of Delaware	http://web.archive.org/web/20200408005722/https://libraries.psu.edu/services/research-help/evaluating-information
Virginia Commonwealth University	http://web.archive.org/web/20200408010127/https://guides.library.vcu.edu/evaluate
Indiana University (Bloomington)	http://web.archive.org/web/20200408010132/https://iupui.libguides.com/howtoresearch/evaluate-sources
The College of New Jersey	http://web.archive.org/web/20200408010156/https://libguides.tcnj.edu/evaluate
University of Colorado Denver	http://web.archive.org/web/20200408010415/https://guides.auraria.edu/evaluatingsources

APPENDIX Links to Institutions Included in Final Data Sample	
Institution	Link
University of Texas at Austin	http://web.archive.org/web/20200408010441/https://guides.lib.utexas.edu/c.php?g=539372&p=6876271
University of Washington—Bothell	http://web.archive.org/web/20200408010545/https://guides.lib.uw.edu/bothell/evaluatingsources
Rowan University	http://web.archive.org/web/20200408010600/https://libguides.rowan.edu/c.php?g=942045&p=6792400
University of Pittsburgh	http://web.archive.org/web/20200408010623/https://www.library.pitt.edu/evaluating-web-resources
University of Wisconsin	http://web.archive.org/web/20200408010847/https://cms.library.wisc.edu/www/wp-content/uploads/sites/2/2020/03/Evaluation_Tip_Sheet.pdf; http://web.archive.org/web/20200408010901/https://mediaspace.wisc.edu/media/Identifying+Fake+News/1_30oihj1f/26292342; https://web.archive.org/web/20200816232706/https://researchguides.library.wisc.edu/c.php?g=640444&p=4485002
San Diego State University	http://web.archive.org/web/20200408010959/https://library.sdsu.edu/research-services/news/evaluate-your-sources
Miami University	http://web.archive.org/web/20200408011001/https://www.ham.miamioh.edu/library/start-researching/research-tips/evaluating-websites/
United States Military Academy (West Point)	http://web.archive.org/web/20200408011030/https://usma.libguides.com/workingwithsources/evaluatesources
Temple University	http://web.archive.org/web/20200408011036/https://guides.temple.edu/c.php?g=646455&p=4534968
George Mason University	http://web.archive.org/web/20200408011133/https://vle.credoreference.com/george-mason/evaluating-sources
University of California, San Diego	http://web.archive.org/web/20200408011153/https://ucsd.libguides.com/preuss/webeval
Oregon State University	http://web.archive.org/web/20200408011222/https://guides.library.oregonstate.edu/c.php?g=286081&p=1904942
University of Tennessee	http://web.archive.org/web/20200408011353/https://libguides.utk.edu/c.php?g=988050&p=7156151
University of California Santa Barbara	http://web.archive.org/web/20200408011459/http://transcriptions-2008.english.ucsb.edu//resources/guides/learning/evaluating_citing.asp
University of Cincinnati	http://web.archive.org/web/20200408015625/https://guides.libraries.uc.edu/engl1001/evaluate; http://web.archive.org/web/20200408015654/https://guides.libraries.uc.edu/c.php?g=222564&p=1472911

Notes

1. Marc Prensky, "Digital Natives, Digital Immigrants Part 1," *On the Horizon* (2001), https://doi.org/10.1108/10748120110424816.

2. Sarah McGrew et al., "Can Students Evaluate Online Sources? Learning from Assessments of Civic Online Reasoning," *Theory and Research in Social Education* (2018), https://doi.org/10.1080/00933104.2017.1416320; Urs Gasser et al., "Youth and Digital Media: From Credibility to Information Quality," *SSRN Electronic Journal* (2012), https://doi.org/10.2139/ssrn.2005272.

3. Eszter Hargittai, "Digital Na(t)Ives? Variation in Internet Skills and Uses among Members of the 'Net Generation,'" *Sociological Inquiry* (2010), https://doi.org/10.1111/j.1475-682X.2009.00317.x.

4. Axel Westerwick, "Effects of Sponsorship, Web Site Design, and Google Ranking on the Credibility of Online Information," *Journal of Computer-Mediated Communication* (2013), https://doi.org/10.1111/jcc4.12006; Kristin Yates et al., "Trust Online: Young Adults' Evaluation of Web Content," *International Journal of Communication* 4, no. 1 (2010): 468–94.

5. Jamie Bartlett and Carl Miller, "Truth, Lies, and the Internet: A Report into Young People's Digital Fluency," *Demos* (2011); Sarit Barzilai and Anat Zohar, "Epistemic Thinking in Action: Evaluating and Integrating Online Sources," *Cognition and Instruction* (2012), https://doi.org/10.1080/07370008.2011.636495; Miriam J. Metzger, Andrew J. Flanagin, and Ryan B. Medders, "Social and Heuristic Approaches to Credibility Evaluation Online," *Journal of Communication* (2010), https://doi.org/10.1111/j.1460-2466.2010.01488.x; Amber Walraven, Saskia Brand-Gruwel, and Henny P.A. Boshuizen, "How Students Evaluate Information and Sources When Searching the World Wide Web for Information," *Computers and Education* (2009), https://doi.org/10.1016/j.compedu.2008.08.003; Yates et al., "Trust Online.

6. Denise E. Agosto, "A Model of Young People's Decision-Making in Using the Web," *Library and Information Science Research* (2002), https://doi.org/10.1016/S0740-8188(02)00131-7; Barzilai and Zohar, "Epistemic Thinking in Action"; Marie K. Iding et al., "Web Site Credibility: Why Do People Believe What They Believe?" *Instructional Science* (2009), https://doi.org/10.1007/s11251-008-9080-7; Heidi Julien and Susan Barker, "How High-School Students Find and Evaluate Scientific Information: A Basis for Information Literacy Skills Development," *Library and Information Science Research* (2009), https://doi.org/10.1016/j.lisr.2008.10.008; Walraven, Brand-Gruwel, and Boshuizen, "How Students Evaluate Information and Sources When Searching the World Wide Web for Information.

7. Stanford History Education Group et al., "Evaluating Information: The Cornerstone of Civic Online Reasoning," *Stanford Digital Repository* (2016); McGrew et al., "Can Students Evaluate Online Sources?"

8. Andrew J. Flanagin and Miriam J. Metzger, "The Role of Site Features, User Attributes, and Information Verification Behaviors on the Perceived Credibility of Web-Based Information," *New Media and Society* (2007), https://doi.org/10.1177/1461444807075015; B.J. Fogg, *Persuasive Technology: Using Computers to Change What We Think and Do* (2003), https://doi.org/10.1016/B978-1-55860-643-2.X5000-8; Peter Pirolli and Stuart Card, "Information Foraging in Information Access Environments," in *Conference on Human Factors in Computing Systems: Proceedings* (1995), https://doi.org/10.1145/223904.223911.

9. Flanagin and Metzger, "The Role of Site Features, User Attributes, and Information Verification Behaviors on the Perceived Credibility of Web-Based Information"; Fogg, *Persuasive Technology*; Pirolli and Card, "Information Foraging in Information Access Environments."

10. B.J. Fogg, *Persuasive Technology.*

11. Teun Lucassen and Jan Maarten Schraagen, "Factual Accuracy and Trust in Information: The Role of Expertise," *Journal of the American Society for Information Science and Technology* (2011), https://doi.org/10.1002/asi.21545.

12. Renee Hobbs and Richard Frost, "Measuring the Acquisition of Media-Literacy Skills," *Reading Research Quarterly* (2003), https://doi.org/10.1598/rrq.38.3.2; Seth Ashley, Adam Maksl, and Stephanie Craft, "Developing a News Media Literacy Scale," *Journalism and Mass Communication Educator* (2013), https://doi.org/10.1177/1077695812469802.

13. Hobbs and Frost, "Measuring the Acquisition of Media-Literacy Skills"; Ashley, Maksl, and Craft, "Developing a News Media Literacy Scale."

14. Sam Wineburg and Sarah McGrew, "Lateral Reading and the Nature of Expertise: Reading Less and Learning More When Evaluating Digital Information," *Teachers College Record* (2019).

15. Sarah Blakeslee, "The CRAAP Test," *LOEX Quarterly* (2004).

16. Mike Caulfield, "A Short History of CRAAP," Hapgood (December 17, 2019), https://hapgood.us/2018/09/14/a-short-history-of-craap/.

17. "Latest News from The Media Education Lab," Welcome | Media Education Lab (March 2, 2021), https://mediaeducationlab.com/.

18. Diego Gambetta, "Signaling," in *The Oxford Handbook of Analytical Sociology* (2017), 170, https://doi.org/10.1093/oxfordhb/9780199215362.013.8.

19. Laura Sbaffi and Jennifer Rowley, "Trust and Credibility in Web-Based Health Information: A Review and Agenda for Future Research," *Journal of Medical Internet Research* (2017), https://doi.org/10.2196/jmir.7579; J. Breakstone et al., "Students' Civic Online Reasoning: A National Portrait," *Stanford History Education Group & Gibson Consulting* (2019).

20. Sam Wineburg et al., "Educating for Misunderstanding: How Approaches to Teaching Digital Literacy Make Students Susceptible to Scammers, Rogues, Bad Actors, and Hate Mongers" (Working Paper A-21322, Stanford History Education Group, Stanford University, Stanford, CA, 2020), https://purl.stanford.edu/mf412bt5333.

21. Marc Meola, "Chucking the Checklist: A Contextual Approach to Teaching Undergraduates Web-Site Evaluation," *portal* (2004), 331, https://doi.org/10.1353/pla.2004.0055.

22. Mike Caulfield, "Yes, Digital Literacy. But Which One?" Hapgood (December 22, 2016), https://hapgood.us/2016/12/19/yes-digital-literacy-but-which-one/.

23. Charlie Warzel "Don't Go Down the Rabbit Hole," *The New York Times* (2021), https://www.nytimes.com/2021/02/18/opinion/fake-news-media-attention.html.

24. Herbert Simon, "Designing Organizations for an Information-rich World," in *Computers, Communications, and the Public Interest*, ed. M. Greenberger (Baltimore, MD: Johns Hopkins University Press, 1971), 40–41.

25. Anastasi Kozyreva et al., "Citizens versus the Internet: Confronting Digital Challenges with Cognitive Tools," *Psychological Science in the Public Interest* (2020), 135, https://doi.org/10.1177/1529100620946707.

26. Wineburg and McGrew, "Lateral Reading and the Nature of Expertise."

27. Sarah McGrew, "Learning to Evaluate: An Intervention in Civic Online Reasoning," *Computers and Education* (2020), https://doi.org/10.1016/j.compedu.2019.103711; Angela M. Kohnen, Gillian E. Mertens, and Shelby M. Boehm, "Can Middle Schoolers Learn to Read the Web like Experts? Possibilities and Limits of a Strategy-Based Intervention," *Journal of Media Literacy Education* (2020), https://doi.org/10.23860/jmle-2020-12-2-6; Mike Caulfield, "Web Literacy for Student Fact-Checkers," *Pressbooks* (2017).; Sam Wineburg et al., "Preparing Students for Civic Life in a Digital Age: A Curriculum Intervention in High School Classrooms" (Working Paper A-202101, Stanford History Education Group, Stanford University, Stanford, CA, 2021), https://ssrn.com/abstract=3936112.

28. Sook Lim, "Academic Library Guides for Tackling Fake News: A Content Analysis," *Journal of Academic Librarianship* 46, no. 5 (2020): 102–95, https://doi.org/10.1016/j.acalib.2020.102195.

29. Lim, "Academic Library Guides for Tackling Fake News."

30. Breakstone et al., "Students' Civic Online Reasoning: A National Portrait."

31. "Wall Street Journal/Times Higher Education College Rankings 2019," Times Higher Education (THE) (August 1, 2019), https://www.timeshighereducation.com/rankings/united-states/2019#!/page/0/length/25/sort_by/rank/sort_order/asc/cols/scores.

32. "Evaluating Sources: Overview," Research Guides (October 1, 2020), https://libguides.williams.edu/evaluating-sources.

33. Matt Southern. "Over 25% of People Click the First Google Search Result," *Search Engine Journal* (2020), https://www.searchenginejournal.com/google-first-page-clicks/374516/.

34. Kathy Charmaz, *Constructing Grounded Theory: A Practical Guide through Qualitative Analysis* (Thousand Oaks, CA: SAGE Publications, 2006).

35. "Evaluating Sources (Archive): Getting Started," Research Guides (April 16, 2020), https://libguides.northwestern.edu/evaluatingsources.

36. "Searching and Evaluating Resources," https://www.library.yale.edu/researcheducation/pdfs/Searching_Evaluating_Resources.pdf.

37. "What's Wrong with Wikipedia?" Harvard Guide to Using Sources, https://usingsources.fas.harvard.edu/whats-wrong-wikipedia [accessed 20 August 2020].

38. "Searching and Evaluating Resources," https://www.library.yale.edu/researcheducation/pdfs/Searching_Evaluating_Resources.pdf [accessed 24 April 2020].

39. "Working with Sources," in https://usma.libguides.com/workingwithsources/evaluatesources [accessed 20 August 2019].

40. "Evaluating Sources (Archive): Getting Started," Research Guides (April 16, 2020), https://libguides.northwestern.edu/evaluatingsources/gettingstarted.

41. "How to Find and Evaluate Sources: Evaluating What You Find," How to Find and Evaluate Sources (October 20, 2020), https://libguides.wesleyan.edu/c.php?g=393439&p=2672641.

42. "Evaluate Sources: Lateral Reading," Lateral Reading (August 5, 2020), https://guides.lib.utexas.edu/c.php?g=539372&p=6876271.

43. Wineburg and McGrew, "Lateral Reading and the Nature of Expertise."
44. "How to Find and Evaluate Sources: Evaluating What You Find," How to Find and Evaluate Sources (October 20, 2020), https://libguides.wesleyan.edu/c.php?g=393439&p=2672641.
45. "Website Evaluation: Purpose," Website Evaluation: Purpose (December 6, 2020), https://libguides.tcnj.edu/c.php?g=351730&p=2371780.
46. "Website Evaluation: Purpose," Website Evaluation: Purpose (December 6, 2020), https://libguides.tcnj.edu/c.php?g=351730&p=2371780; Mike Caulfield, "Web Literacy for Student Fact-Checkers," *Pressbooks* (2017).
47. "Evaluating Online Sources: A Toolkit: Evaluating Online Sources: Initial Moves," Research Guides (December 2, 2020), https://libguides.rowan.edu/c.php?g=942045&p=6790649.
48. "Consumer Literacy and Responsible Consumption: Evaluating Source Credibility," Research Guides (July 20, 2020), https://libguides.utk.edu/c.php?g=988050&p=7156151 [site discontinued].
49. "Website Evaluation: Purpose," Website Evaluation: Purpose (December 6, 2020), https://libguides.tcnj.edu/c.php?g=351730&p=2371780.
50. "Fake News, Propaganda, and Misinformation: Learning to Critically Evaluate Media Sources: What Is Fake News?" (December 9, 2020), https://guides.library.cornell.edu/evaluate_news/fakenews.
51. "Student Resources: Evaluating Information," Richard E. Bjork Library, https://library.stockton.edu/c.php?g=830109&p=5926889 [accessed 14 May 2019].
52. "Evaluating Websites: Philosophy: Research Guides at Princeton University," Princeton University (The Trustees of Princeton University, October 9, 2020), https://libguides.princeton.edu/c.php?g=84018&p=664970.
53. Melissa Zimdars, "False, Misleading, Clickbait-y, and/or Satirical 'News' Sources" (2016), https://d279m997dpfwgl.cloudfront.net/wp/2016/11/Resource-False-Misleading-Clickbait-y-and-Satirical-%E2%80%9CNews%E2%80%9D-Sources-1.pdf.
54. "Webpage Checklist," Accessed May 14, 2019, https://www.binghamton.edu/libraries/research/guides/web-page-checklist.html [site discontinued]; "LibGuides: PS 300: Research Design: Evaluating Sources," Evaluating Sources—PS 300: Research Design—LibGuides at Oregon State University (December 10, 2020), https://guides.library.oregonstate.edu/c.php?g=286081&p=1904942; "Help With ~ Evaluating Sources: Fake News," Guides (November 2, 2020), https://libguides.hamilton.edu/c.php?g=622975&p=4339599.
55. Sam Wineburg and Nadav Ziv, "Op-Ed: Why Can't a Generation That Grew Up Online Spot the Misinformation in Front of Them?" *Los Angeles Times* (November 6, 2020), https://www.latimes.com/opinion/story/2020-11-06/colleges-students-recognize-misinformation; Wineburg et al., "Educating for Misunderstanding."
56. "Evaluating Sources: Wikipedia vs. Google vs. Databases," Research Guides (October 2, 2019), https://guides.auraria.edu/evaluatingsources/google.
57. "Protection Policy," Wikipedia (Wikimedia Foundation, January 7, 2021), https://en.wikipedia.org/wiki/Wikipedia:Protection_policy.
58. Sam Wineburg and Nadav Ziv, "The Meaninglessness of the .Org Domain," *The New York Times* (December 5, 2019), https://www.nytimes.com/2019/12/05/opinion/dot-org-domain.html.
59. Jay Mathews, "Perspective | You Can't Believe Everything You Read Online. Many Students Don't Seem to Know That," *The Washington Post* (WP Company, November 19, 2019), https://www.washingtonpost.com/local/education/you-cant-believe-everything-you-read-online-many-students-dont-seem-to-know-that/2019/11/17/06a171f2-0670-11ea-ac12-3325d49eacaa_story.html.
60. Wineburg and Ziv, "The Meaninglessness of the .Org Domain."
61. "6.UAR: Undergraduate Research: Evaluate Information," Evaluate Information, https://libguides.mit.edu/c.php?g=382302&p=2590435 [accessed 14 May 2019].
62. Katy Steinmetz, "How Your Brain Tricks You into Believing Fake News," *Time* (August 9, 2018), https://time.com/5362183/the-real-fake-news-crisis/.
63. Wineburg and McGrew, "Lateral Reading and the Nature of Expertise."
64. Wineburg and McGrew, "Lateral Reading and the Nature of Expertise."
65. Jessica E. Brodsky et al., (2019, October 3–5). "Teaching College Students the Four Moves of Expert Fact-Checkers" [Paper presentation], Technology, Mind, & Society, an American Psychological Association Conference, Washington, DC, United States.
66. Sarah McGrew et al., "Improving University Students' Web Savvy: An Intervention Study," *British Journal of Educational Psychology* 89, no. 3 (2019): 485–500, https://doi.org/10.1111/bjep.12279.
67. Sarah McGrew and Virginia L. Byrne, "Who Is behind This? Preparing High School Students to Evaluate Online Content," *Journal of Research on Technology in Education* (2020), https://doi.org/10.1080/15391523.2020.1795956; McGrew, "Learning to Evaluate"; Kohnen, Mertens, and Boehm, "Can Middle Schoolers Learn to Read the Web like Experts?"

Invisible Labor, Invisible Value: Unpacking Traditional Assessment of Academic Library Value

Rachel Ivy Clarke, Katerina Lynn Stanton, Alexandra Grimm, and Bo Zhang

Academic libraries face mounting pressure to demonstrate their value to stakeholders, yet traditional assessments of their financial value ignore the work of librarians and library staff in producing usable collections and services for patrons. Through a survey of US academic library workers, we examine the range, scope, and financial value of labor performed in US academic libraries. Our findings reveal ways in which traditional assessment mechanisms render this labor invisible to stakeholders. We argue that making this labor more visible will help better communicate the value of academic libraries and ignite conversations about reducing workload and stress for library workers.

Introduction

The value of the academic library has long been held unquestioned as the "heart of the university."[1] However, as higher education funding increasingly faces threat, academic libraries have faced further pressure to actively demonstrate their value to a variety of stakeholders: the government, their own institutions, users, and librarians.[2] As libraries are pressured to demonstrate value, one predominant tactic is to develop quantifiable measures that demonstrate the value of libraries in financial terms as well as other measurable factors that correlate positive outcomes with library collections and services.

Library collections and services are products produced and supplied by academic librarians and library workers. They would not be present and usable without the labor of library staff performing a diverse variety of tasks. Yet few calculations of library value consider the labor necessary to design, facilitate, supply, and provide these products to library users, essentially rendering library labor invisible. To explore this missing aspect of value assessment in academic libraries, we investigated the range and scope of labor performed in US academic libraries, the financial value of that labor, and what, if any, aspects of that labor are invisible.

*Rachel Ivy Clarke is Associate Professor at Syracuse University School of Information Studies; email: rclark01@syr.edu. Katerina Lynn Stanton is a PhD Student at Syracuse University School of Information Studies; email: klstanto@syr.edu. Alexandra Grimm is a recent MSLIS with school media specialization graduate at Syracuse University School of Information Studies; email: agrimm01@syr.edu. Bo Zhang is a PhD student at Syracuse University School of Information Studies; email: bzhang49@syr.edu.

Through this investigation we aim to surface previously ignored aspects of value calculations that can ultimately help academic libraries communicate value in more effective ways.

Literature Review

Value in the academic library community can be measured in many ways, depending on the context of the community and the stakeholders to which said value is being communicated. Discussions of library value have strong roots in economics. The original motto of the American Library Association—"*The best reading, for the largest number, at the least cost*"—explicitly connects economic value to the mission of libraries. Since demonstrating economic value has historically been directly connected to receiving funding, many library assessment schemes are foundationally quantitative and economics-based. Oakleaf defends these choices as knowing what metrics will resonate with external stakeholders, because "financial realities take precedence," thus economic and impact assessment is "proactive, rather than defensive" in demonstrating library value.[3] However, in a typical library value assessment framework, library labor is missing.

Library Assessment Frameworks

Starting with ACRL's *Value of Academic Libraries* (VAL) in 2010, academic library assessment focused on two specific valuations: financial value, such as return on investment (ROI), and impact value, such as correlation with student success.[4] ACRL's follow-up systematic review of library assessment in 2017, named *Academic Library Impact* (ALI), finds four types of valuations: static measurements, such as collection and budget; usage measurements, such as circulation statistics; outsider perceptions, including user satisfaction and ROI studies; and user-centered outcomes, measuring the impact on student success and on information literacy.[5]

Most static measurements, such as collection size, circulation, and budget, are useful for peer comparison, but those counts have diminished as services like electronic resources have grown and funding has been cut, leading to perceived loss in valuation. The only instance of labor in these measurements is the portion of the library budget allocated to salary costs. User satisfaction, such as LIBQUAL+ measurements, evaluates customer service satisfaction in services and spaces[6] without the library work behind the scenes.

In financial valuation, such as in the Lib Value project, scholars used four surrogates for value (collection size, usage statistics, faculty grant income, and contingent valuation survey results) to establish an ROI of 4.43:1 for Syracuse University Library.[7] Thus financial value of the library is calculated based on the value of resources and services—that is, the products provided to library users and related stakeholders. For example, in the Lib Value ROI study, the value of time spent using library services was measured in the average hourly value of time of faculty and student users, not library salaries or expertise.[8] None of these surrogates for value quantitatively considers the value inherent in the labor necessary to provide those resources and services and make them available.

Typical measurements of academic impact and user-centered success were correlation between library usage and retention, GPA, degree attainment, information literacy skills, and graduation rates.[9] As evidenced in recommendations for future research in both VAL and ALI, these types of measurements are becoming more closely entrenched with learning analytics, for example, which evaluates the rise and fall of individual GPAs correlated with library information literacy instruction.[10] These measurements have seen an increase in the

literature in recent years[11] and help begin to advocate for the role of librarians in such areas as collaboration and instruction.[12]

While these existing techniques for communicating the value of libraries and librarianship have been useful, they are not without issues. For example, although learning analytics is supported by external administration, Jones demonstrates how it is mired in ethical quandaries in library practice, especially over the conflict between patron privacy and sensitive data practices.[13] Kingma and McClure make clear that ROI calculations are only economic and do not include environmental or social values, which could substantially elevate the value of the academic library.[14] Doucette calls for examining how assessment is uncritical and non–self-reflective in practice, without concern for the personal relationships librarians develop as practitioners within the community.[15] In interviews, Cheng and Hoffman found some librarians are skeptical of library assessment research in general, calling it "businessification" and deeming it "mostly superficial."[16] Magnus et al., in examining the power structures inherent in assessment, suggest that we ask how our research identities shape the way that we assess and who decides what to assess: what are these systems of measurement and how do they reflect our value as practitioners?[17] It is with this very call to action in mind that we draw attention to a missing aspect of library valuation: library labor.

Valuing Labor

Labor, in economic terms, is defined as the physical, mental, and social effort used to produce goods and services in an economy. Visible work is that which is readily available and recognized by patrons, management, and library workers; is paid and profit-generating; and occurs in the public sphere.[18] This visible work is easily measured and analyzed, as discussed above: How many books does the library own? How many people have visited the library this year? How many reference questions has our service point answered? However, financial and impact measurements, such as GPA increases or number of reference questions answered, assess the change in patron outcomes without including the library labor involved in achieving those outcomes. If we want to value library workers as active members in the academic community and diminish passive stereotyping, why aren't the library workers and their labor included in valuation? Instead, these studies reduce or eliminate the visibility of the labor that maintains library services and information access.

The idea of invisible labor refers to work that frequently receives little or no recognition or monetary reward.[19] The concept emerged from feminist scholarship in the 1980s to bring attention to underpaid, unrecognized, and undervalued work, often performed by women, such as household work.[20] Here we draw attention to the distinction between unpaid domestic work and invisible work. Invisible work is labor that is tied to formal, paid employment and performed in order to fulfill requirements; it is crucial to "generate income, to obtain or retain [one's] job, and to further [one's] career, yet [is] often overlooked, ignored, and/or devalued."[21] Some of this labor can be fully unpaid, such as that done in preparation for work or outside of paid hours; some is underpaid due to workers, employers, and consumers taking it for granted or not seeing/perceiving all tasks performed.[22] Further explorations revealed that invisible work was not limited by gender or setting.[23] Rather, it is more clearly related to power dynamics: the greater the compensation for labor, the greater the visibility of that labor.[24]

Invisible work has been differentiated in various ways in the social sciences. In a discussion about visible and invisible labor, Star and Strauss assert that no work can be deemed

solely visible or invisible.[25] For example, physical work may be inherently more materially present, whereas networking may appear to be effortless but disguises intellectual labor. They use this perspective to tease apart the layers that exist in any given organization. Work and labor are often treated as synonymous terms. However, for Star and Strauss, work does not exist a priori but is defined by the situation: what is required of one to perform the job, be it exerting extreme physical labor or working on retainer. Invisible work may include intellectual work, affective or emotional work, and articulation work. Intellectual work—which constitutes much of professional library work—often remains unseen and therefore unrecognized, placing it under the umbrella of invisible labor.[26] For example, Galvan explains how technical services is responsible for "the largest pieces of the budget; our jobs translate into the first and sometimes only experience our patrons have with the library," yet technical services is "underresourced with high turnover."[27]

Additionally, invisible labor may include work that is unrecognized because it involves emotional work.[28] Emotional labor, or the effort required to manage one's emotions to meet organizational expectations,[29] is especially prevalent in professional library work such as reference services.[30] Articulation work is a "supra-type" of work carried out both simultaneously and sequentially with standard work tasks that includes the meshing and coordination of tasks, efforts of unit workers (such as individuals and departments), and meshing of actors with their various types of work and implicated tasks.[31] That is to say, it is the complexity and intricacy involved in coordinating cooperative work, and is "work that gets things back 'on track' in the face of the unexpected, and modifies action to accommodate unanticipated contingencies."[32] Think of the student supervisor at a circulation desk: they are responsible for the coordination and management of staffing the service point at all times, then the subsequent handling of disruptions from sick or absent employees. Articulation work is rendered less visible if the desk is staffed seamlessly. In fact, the higher the quality of the work, the less visible it becomes to those who benefit from it.[33] To that end, many professional library services that are labor intensive and done well remain invisible.

Research Questions

Current measurements of the financial value of academic libraries, such as ROI and contingency valuation, contain library labor only as a passive part of the library budget. Without this fundamental consideration, librarianship will always lack successful communication of true calculation of value—one that may lead to increased understanding of the full range of what libraries offer. Given this significant gap in the considerations of library value, we investigated the following research questions:

- What is the range and scope of labor performed in US academic libraries?
- What is the financial value of that labor?
- What, if any, aspects of that labor are invisible?

Methods

To surface the value of labor and invisible labor in academic library work, we created a questionnaire intended to solicit information regarding job tasks both on and off the clock and the time spent on these tasks in an average week. To estimate value, we also asked about salary information. Since the onset of the COVID-19 pandemic potentially affected many academic librarians' job tasks and time allotments, we asked participants to share information about

their average work week in 2019. It should be noted that the work reported here is part of a larger research project about invisible labor in librarianship overall; however, we report here only on the data relevant to the above research questions. The questionnaire (see appendix) was approved by the Syracuse University Institutional Review Board (IRB), implemented using Qualtrics, and was open for responses for approximately six weeks from August 1 through September 15, 2020.

Our goal was to survey as broad an audience of library workers as possible. Therefore, we did not ask for job titles, formal job descriptions, or whether a participant was titled "librarian" or not. Such delineations do not accurately correspond to work tasks or exempt status for the purpose of salaries; furthermore, we believe these delineations further contribute to class segregation in library work. Participants were people 18 years or older who self-identified as employed in a library in the United States in 2019 and were able to complete a questionnaire in the English language. Invitations to participate were posted to various social media sites and library listservs and distributed to any known library associates. Our data is self-reported, voluntary, and anonymous. Additionally, the findings are limited by convenience sampling and participation bias; thus, our findings are presented as averages and percentages and are exploratory in nature.

We received 2,095 responses to the questionnaire; however, 1,067 of those responses were incomplete. To compare consistent data, we performed a complete-case analysis (also known as listwise deletion) that excluded all incomplete surveys from analysis.[34] Although this approach can induce bias in statistical analysis, since this is a descriptive survey rather than an explanatory survey it does not lend itself to more sophisticated statistical analysis, nor is that its purpose.[35] Of the completed responses, we filtered to focus on respondents who identified as working in an academic library in 2019. The findings presented below are based on these 355 responses. We performed descriptive quantitative analysis to ascertain the average financial value of academic library work overall, by task division and visibility, and what, if any, patterns or differences emerged. We also reviewed and taxonomized the open-ended responses for additional context.

Findings

Of 355 participants who identified as working in an academic library in 2019, 81 percent (287) identified as a woman, 14 percent (51) as a man, 2 percent (8) as nonbinary, with 4 respondents who preferred not to disclose and 2 self-identifying. This spread overall reflects a similar distribution to the 2017 ALA Demographic Study, with 81 percent female and 19 percent male.[36] While we collected data on ethnic/racial identity, due to the sensitive nature of these topics, these results were voluntary and not enough data was collected to be significant.

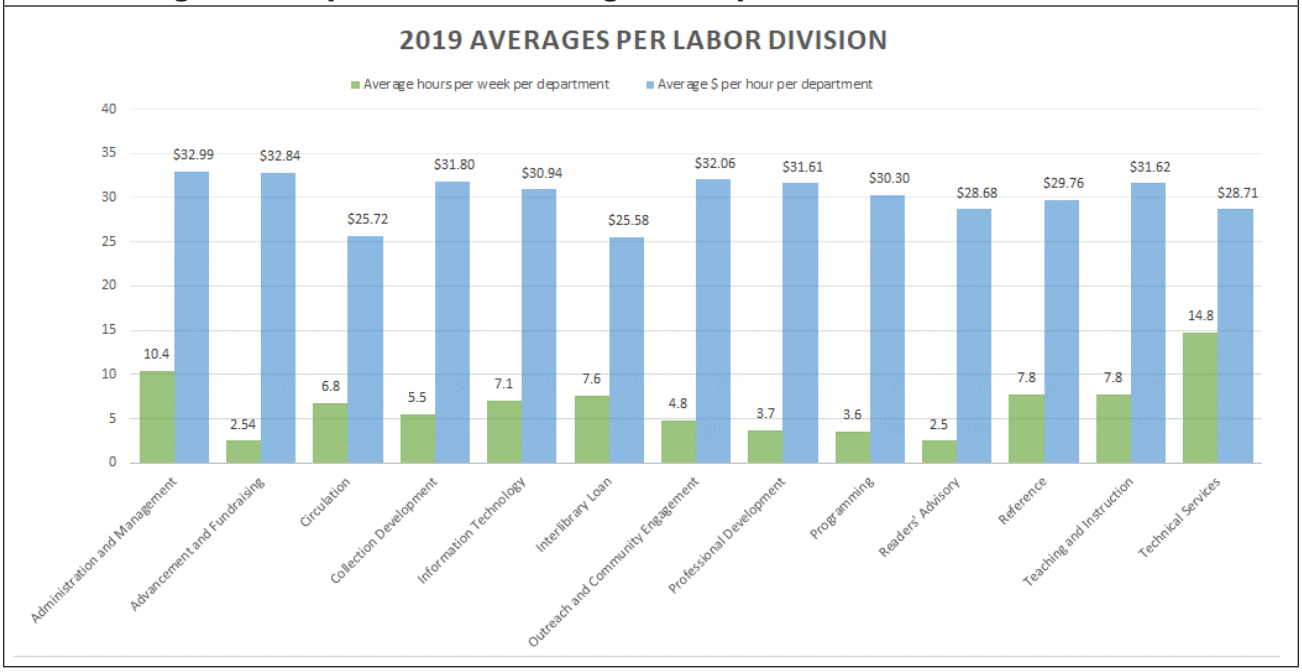
Paid Labor

In 2019, the average respondent worked 38.02 hours per week, with 92 percent reporting full-time work, defined by the Bureau of Labor Statistics as 35 or more hours per week. While income was reported in hourly, biweekly, and salary increments, all was converted to hourly payments using self-reported hours worked. Taking this into account, the average library worker pay of respondents in 2019 was $30.27 per hour.

Our labor divisions take into consideration a wide range of services and tasks that any individual worker could perform during a given week. We determined 13 total categories

of labor divisions based on several rounds of pilot testing with library workers (see the appendix for the list of categories of labor divisions as they appeared to survey respondents). These divisions are meant to cover as much of library services as possible; they may correspond to official departments, but the categories here represent types of labor. Thus, very few respondents worked solely in one division of labor. Respondents divided hours worked among the categories, with the total equaling self-reported hours worked. Technical services tasks amassed the largest number of hours worked at 14.8; readers' advisory the smallest, at 2.5. Administration and management is the highest paid on average at $32.99 per hour, and interlibrary loan and circulation are the lowest, at $25.58 and $25.72, respectively.

FIGURE 1
Average Income per Hour and Average Hours per Week, for Each Labor Division



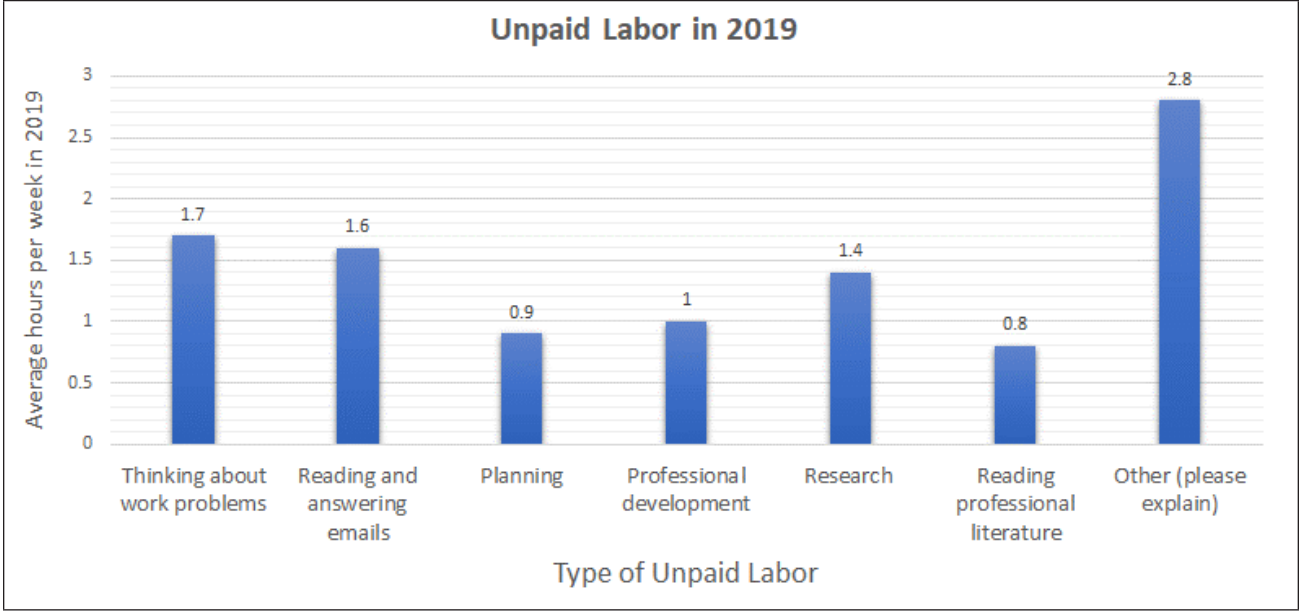
Additionally, technical services reported the lowest number of different tasks weekly, with an average of 5.75 out of 13 task groups we provided. On the other hand, respondents who reported readers' advisory as a part of their weekly tasks reported an average of 8.78 different tasks per week. Technical services also presented with the highest number of respondents spending more than 30 hours per week on technical tasks alone, at 16 percent, whereas advancement, outreach, programming, and readers' advisory had zero respondents reporting more than 30 hours per week on the respective task. This suggests that technical services labor is highly siloed, separated more from other task divisions. For example, 70 percent (170 out 242) of respondents who selected reference work also input teaching and instruction, whereas only one third of those in technical services also provided instruction.

Unpaid Labor

Sixty-four percent (226 out of 355) of respondents reported working outside of paid hours in 2019. Of those 226 who reported unpaid labor, the average was 5.79 hours per week. There was no discernable pattern between salary levels and unpaid labor. Similar to paid labor, we

broke down unpaid labor tasks into six categories, reflecting typical behavior such as "thinking about work," "reading and answering emails," and including a free-text option for "other: please explain." Thinking about work problems took an average of 1.77 hours per week, while reading professional literature was only 0.8 hours per week.

FIGURE 2
Average Time Spent per Week on Various Types of Unpaid Labor



Ninety-seven of 226 respondents selected "Other" and provided a vast array of descriptions of unpaid labor. We reviewed these open-text responses to develop inductive categories reflecting the types of work tasks described. Many respondents replied that work outside of paid hours constituted the same types of tasks as their typical work duties. For example, one respondent stated, "Work beyond my required 40 hours was not qualitatively different from work performed within my required 40 hours." In addition to standard work duties, respondents also reported a wide variety of tasks undertaken outside of paid hours, including IT issues and troubleshooting; planning and attending events that occur in off-hours; and preparing and teaching classes and instruction sessions. A variety of administrative tasks were also mentioned, ranging from basic clerical tasks like answering phones and unlocking doors, to high-level situations like resolving HR/personnel problems and preparing impact reports for university stakeholders such as presidents and deans. A number of respondents also mentioned supporting other library workers during this unpaid time, such as covering shifts for colleagues or assisting student workers. Despite options for professional development and reading professional literature appearing in the multiple-choice selections, several respondents specifically cited these tasks when asked to explain additional work. A handful of people mentioned continuing education, such as working on an MLIS or other graduate degree. One person listed business travel, and one person mentioned the emotional labor of "stressing about work situations that seem beyond my control but bother me immensely." A collaborative qualitative coding process was used to identify themes across the types of work tasks described in the open-ended responses. We then organized the themes into a taxonomy of work tasks based on type. See table 1 for the full taxonomy.

TABLE 1
Taxonomy of Types of Responses Received Describing Additional Types of Unpaid Labor

Top-level Categories	Subcategories	Tertiary Categories
Standard work duties *"Work beyond my required 40 hours was not qualitatively different from work performed within my required 40 hours."*	**Collection development and management** *"Collection development and acquisitions"*	
	Cataloging and related technical services *"Primary job tasks such as cataloging, processing, etc."*	
	Archival services and processing *"Rehousing and reorganizing the Archives and Records Management department"*	
	Administration and management *"Administrative tasks"*	**Human resources** *"Resolving emerging employee problems"*
		Reports and documentation *"Working on reports and analysis at the request of university administrators or the Senate Library Committee"*
	General/clerical work *"Opening the library before scheduled hours (unlocking doors, turning on computers, etc.)"*	
	Patron queries *"Catching up with patron queries"*	**Reference interactions** *"Answering reference questions from faculty, administrators, students, and peers"*
	Instruction *"Information literacy instruction"*	**Planning and instructional design** *"Preparing teaching materials"*
		Preparing research guides and tutorials "Developing libguides [sic]"
	Outreach *"Outreach"*	
Finishing standard work not completed during time at work *"Finishing larger projects that required focus, because it was the only quiet time in the library when I wasn't on call for other services."*		

TABLE 1
Taxonomy of Types of Responses Received Describing Additional Types of Unpaid Labor

Top-level Categories	Subcategories	Tertiary Categories
After-hours duties [no general responses regarding after-hours duties]	**IT troubleshooting** *"Troubleshooting technical issues on weekends and nights as necessary"*	
	Events and programming *"Attending university events to promote the libraries"*	
Supporting the work of other library workers *"Covering shifts for others"*	**Supporting colleagues** *"Helping other librarians with their work"*	**Supporting subordinates** *"Being a Student Worker Supervisor, I would stay late to talk to students that did not have time during the day/ work hours to meet with me"*
Continuing education *"Second Masters [sic] Degree, required for my position to reach tenure"*		
Professional service *"Volunteer committee work for professional associations"*		
Travel *"Business travel"*		
Emotional labor *"Stressing about work situations that seem beyond my control but bother[s] me immensely"*		

Discussion

Not All Labor Manifests Equally

Our findings reveal that library labor includes a wide variety of tasks requiring various levels and aspects of physical, mental, and/or social effort. Of official work duties, we found that technical services work, such as cataloging, classification, acquisitions, physical processing, and other duties, averaged the highest number of hours per week at 14.8. This is almost 4.5 hours higher than the next highest average (administration/management tasks such as budgeting and finance, human resources, committees, staff scheduling, facilities, and other such tasks) and nearly twice as high as many other tasks including circulation, IT, ILL, reference, and instruction.

This potentially factors into Galvan's findings that technical services comprise a bulk of library budgets, especially considering that the average salary for technical services work is within a $1–$2 range of most other task categories.[37] As more library collections become digital, such as electronic journal subscriptions, the volume of technical services labor has risen. Additionally, technical services departments are infinitely expandable (aside from budgetary constraints), whereas service points are limited by physicality and the volume of patrons. It is also possible that technical services work such as original cataloging requires more time

to ensure quality and accuracy of description and data entry—a long-documented tension in cataloging work.[38] Reference, instruction, and other front-facing academic library work tasks are bounded by time in ways that technical services are not. For example, shifts at a reference desk may be bounded by specific start and end times and instruction sessions are usually of consistent lengths (for example, 90-minute "one shot" sessions), whereas technical services work does not include any inherent time boundaries, only prescribed deadlines that can be shifted. Additionally, tasks within technical services are often less multifaceted than in other areas of the library. A worker may be both reference and circulation at any given time while working at one service point, whereas a worker in technical services may be doing a number of different tasks that all lie under "technical services." This is consistent with our findings that technical services reported the lowest number of different tasks weekly.

While there were some categories of work tasks with lower reported hours, such as outreach and community engagement, professional development, programming, readers' advisory, and advancement and fundraising, most of these findings make sense in the context of academic libraries. Work such as outreach and community engagement, programming, and readers' advisory seem like tasks more likely to occur in other types of libraries, such as public libraries. In US university settings, advancement and fundraising may be its own department, either internal (within a library) or external (serving the university at large), or some combination thereof. It is somewhat surprising to see a low reporting of professional development tasks considering that many academic librarians are required to engage in professional development as part of their work and to achieve tenure status. However, not all academic librarian positions are considered faculty or tenure-track, and not all respondents to the survey worked in professional librarian positions. Those working in positions that do not require professional development components would likely spend less time on those types of tasks. However, it may also be possible that workers in positions requiring professional development for tenure and promotion face barriers such as time or competing priorities that lead them to spend their time on other tasks, which could ultimately impact their ability to succeed long-term.

Not All Labor Is Paid

In addition to the range of tasks reported as part of a library worker's paid work, an even wider range of tasks is performed outside of paid work hours. Almost two-thirds of respondents reported working an average of almost six hours of unpaid work per week. With the average hourly wage reported by respondents in 2019 averaging $30.27, this amounts to just over $9,000 worth of unpaid labor for the year per person. This does not include costs of direct or indirect benefits, such as sick leave, vacation time, retirement contributions, and/or medical benefits that are paid by the employer. There are 26,606 academic librarians and 59,145 academic library staff in the United States.[39] This effort totals $781,508,031.19 worth of academic library labor unpaid in 2019 and would add up to much more if benefits were included.

Some work will always need to be completed outside of regularly scheduled work time due to the nature of the work, without necessarily qualifying as unpaid labor. For example, people working in IT must be on call and available to respond to technology breakdowns. People working on events and programming may need to attend those events whenever they happen, be they during regular working hours or not. However, people working in these types of positions (often classified as exempt) generally understand the expectations, responsibilities,

and scheduling associated with these roles, and typically payment is structured accordingly, through salary structures or task-based contract work. It seems instead that some respondents may not fully understand how time, compensation, and pay function based on role or contract. A few responses, such as the person who said "when working part-time, late night and weekend staff are at work" or the person who mentioned receiving comp time for after-hours work, give the impression that people may not fully understand compensation and pay, and what constitutes unpaid labor. A few responses also indicate increasingly blurred lines about what actually constitutes work. For example, one respondent reported taking MLIS courses as part of their unpaid work. There was not enough information from this respondent to know whether or not completing the degree was a condition of the job and therefore could be considered part of one's work duties. However, given that most professional librarian positions require the MLIS or equivalent graduate degree, and some organizations offer financial support or tuition remuneration, it is possible that such activities could fall under the purview of employment, especially professional development work.

In our questionnaire, we specifically asked people about unpaid work (as opposed to scheduled hours). Of significant note is the high frequency of respondents reporting performing the same tasks during unpaid hours as performed during paid work hours. Many respondents mentioned that they undertook this typical work due to a need to finish specific tasks or to "catch up performing regular duties that did not get done in [an] ordinary work week." Others mentioned becoming so involved with work that they worked through their lunch breaks or beyond their scheduled hours. Ironically, multiple respondents mentioned completing impact reports during unpaid after-hours time. Respondents specifically mentioned not recording these overages on timecards and other examples of not reporting the time.

Although such focus and dedication may be considered admirable in some respects, it raises questions about work pressures and expectations. At a basic level, work completed should be compensated fairly, or stricter boundaries need to be enacted by both staff and management to ensure that unpaid work overages do not occur. Working beyond paid hours may not meet the US legal standards of wage theft, since the employer is not explicitly requesting the employee to work off the clock, but we must question whether there is implicit pressure shaping these employees' decisions to work without pay. For example, for the many respondents who reported needing to finish a task or catch up with regular duties, what is so critical about these library tasks that they cannot be finished the next day, or the next week? Some tasks certainly have deadlines, such as planning for a scheduled instruction session, answering a reference question via email, or other time-constrained commitments. But others do not necessarily have such time-based constraints, so we must question the source of the pressure to finish these tasks. One of the respondents mentioned that they worked beyond paid hours "because it was the only quiet time in the library when I wasn't on call for other services." Yet if an employee is on call for services, those services are clearly the work priority of the organization and other projects must be deprioritized, leaving them to take longer to complete rather than completing them on unpaid time. Another respondent mentioned spending unpaid time "finishing tasks [formerly] done by vacant positions." Again, if these tasks are so critical to complete, then those vacant positions need to be filled rather than employers or staff themselves expecting them to be completed. Lack of prioritization—be it from the employer or the employee—leads to the understanding that all tasks are at the same level of critical importance and all must be completed. We recognize that federal and state wage

regulations as well as some union contracts require appropriate compensation for overtime work from non-salaried employees, but this necessitates adequate reporting of overtime work, rigid boundaries for the end of a workday, and job security when faced with tasks unfinished within established work times. Our data is self-reported, voluntary, and anonymous and, as such, may indicate that some legal regulations are not always accurately followed. Even if it does not officially constitute wage theft, library staff working beyond paid hours certainly contributes to overwork and an erosion of boundaries that shifts expectations over time.

This erosion of boundaries is a major contributing factor to the perpetuation of vocational awe—the idea that libraries are so important to society that library workers martyr themselves to support this social good.[40] Ettarh specifically calls out undercompensation as one of the ways vocational awe negatively impacts library workers, showing how the "heroic narrative" of librarianship leads to reduced or even free labor.[41] Job creep, another negative impact of vocational awe, can also be seen in this unpaid labor. While Ettarh discusses job creep in terms of scope (mentioning the ever-expanding range of tasks falling under the purview of library workers), our example here shows how job tasks—even the regular ones—creep into unpaid time simply because people want to show diligence and quality work through task completion.[42]

Rendering Labor Invisible as Part of Library Value

Based on previous definitions of invisible work that include unpaid labor performed to fulfill requirements, retain employment, and further one's career, our data clearly shows a great deal of invisible work occurring in academic librarianship. Star and Strauss discuss a continuum of additional indicators beyond un- and underpaid work that function to render labor invisible.[43] The continuum involves: creating a nonperson; disembedding background work; and the abstracting and manipulation of indicators. In creating a nonperson, the employee is rendered invisible by the power dynamic between the employer and employee. For example, the domestic worker is quite literally present, but consciously ignored by the employer, and the legitimacy of their work is determined solely by the employer. The outcome is assessed without reference to the labor involved: how clean is the house? On the other hand, by disembedding background work, the opposite is true: we acknowledge the librarians staffing the reference desk but cannot see or recognize the labor the reference worker is performing. This carries into the third category, the abstracting and manipulating of indicators, which renders invisible both the work and the person. In this situation, the parameters by which work is measured are both rendered abstract from the workplace and used to make decisions about the workplace. Alternatively, the products are created in one place and purchased far away, abstracting the work and worker involved in the production.

Library workers are susceptible to both disembedded background work and the abstraction of indicators. The language of assessment and value, especially the economic language of ROI, typically focuses on the outputs of the library. Even when labor measures are included in the overall total valuation of library services, they do not account for the time and pay of library workers on various tasks. For instance, Kingma and McClure's value calculation of an electronic resources collection is based only on the cost of subscription from the vendor—it does not include the costs of establishing and maintaining the information technology and infrastructure required to access the resources, nor the labor of the workers who negotiate and acquire the electronic resources and/or manage the IT infrastructure.[44] In contrast, our

data demonstrates that library workers engage in a diverse range of tasks: everything from physical work such as unlocking doors and shelving materials, to intellectual work such as metadata and research, to emotional labor and stress management. Collapsing these various tasks into an overarching category of general labor is a prime example of disembedding background work since it essentially hides the diverse variety of tasks performed as well as the training, knowledge, and expertise needed to perform those tasks.

ROI also functions as an abstracted indicator of value. ROI is intended to present a rough valuation of the overall investment versus income gained; it is not a robust overarching measure of all of the services provided by libraries to the patrons. Yet it is regularly used to make decisions about funding and resource allotment by administrators and stakeholders. Disembedding background work through the homogenization of diverse library work not only makes the financial differences among various tasks invisible, but essentially eliminates the ability to communicate the diversity of library work to stakeholders. Presenting an overall line item for salaries without describing the variety of work being performed can unintentionally lead stakeholders to believe that library work is homogenous and that all library work and workers are equal and interchangeable. It neglects the variety of expertise required for some aspects of library work (such as instruction experience or specialized cataloging knowledge). It potentially contributes to confusion among administrators and other stakeholders who may not understand why a graduate degree is required for some library positions, since the functions and expertise performed by people in those positions is not presented, just folded into a larger category of labor. Rendering this labor invisible also leads to stakeholders associating libraries with materials and collections, potentially contributing to the long-lamented stereotype of libraries as warehouses for books and librarians as people whose work consists solely of shelving and reading them. In examining the ROI strategy of library valuation, the language used refers to the library as a passive object to be used. Regardless of the economic demands of library valuation, librarians themselves are rendering their own profession invisible by adopting the framework of an economic system that homogenizes various types of labor.

Conclusion

Academic libraries are under constant pressure to demonstrate value to their stakeholders. Outcomes-based approaches, such as financial value and impact value, are typical means of articulating and asserting that value proposition. Despite substantial critiques, many library assessment schemes are foundationally quantitative and economics-based since demonstrating economic value is directly tied to funding and financial considerations that are at the forefront of decision-making. Yet common approaches to financial value, such as contingency valuation and ROI measures, do not capture specifics about the value of academic library labor. The research reported in this article specifically sought to explore this missing aspect of value in academic libraries. We found that the range and scope of labor performed in US academic libraries is diverse. Librarians and library workers perform a wide variety of tasks that may require specialized training, knowledge, and expertise, with financial compensation ranging accordingly. Yet financial representations of this diverse labor are usually collapsed into one homogenous category when reporting value to library stakeholders. Homogenizing library labor has arguably rendered many aspects of the library profession—and thus the value of library labor—invisible.

In addition to a diverse skill set, we found that a significant proportion of academic library workers complete work tasks during nonwork time and without pay, representing another form of invisible labor unaccounted for in calculations of library value. Such occurrences at the very least reflect issues with boundary management, workplace pressure, and unrealistic expectations. Many libraries and organizations may feel compelled to "do more with less," especially due to the framing of value in economic and financial paradigms. However, relying on unpaid work to accomplish tasks and goals is unsustainable at best, if not outright abusive, and will ultimately undermine the library's ability to actually provide the value that it claims.

Although our work focused specifically on labor, it is possible that other aspects of librarianship have also been made invisible in value assessments and calculations. Our responses were dominated by the population majority in LIS, white female respondents. However, Black professionals are often required to conform to normatively white, middle-class workplaces, uphold structural discrimination, spearhead diversity endeavors, and deny or minimize racial inequalities. These activities are known as racial tasks, which are "additional, invisible labor that workers of color are charged with performing."[45] Future work should explore these forms of invisible labor and prevalence in the LIS profession. Another manifestation of invisible labor was voiced by a respondent: "I thought this survey might be about how much librarians give to researchers—we often do a lot of work for them but must be satisfied with a nice acknowledgment that no one really reads. The researcher/writer gets the credit, but we know they couldn't do it without us!" Additionally, emotional labor is a form of invisible labor surfaced by respondents that needs further investigation. Future work collecting more detailed data addressing these aspects, as well as other factors, such as geographic location or library status (for example, ARL membership), and more specific inquiry on time spent on specific tasks could add valuable nuance and insight. Exploring these additional aspects may ultimately help academic libraries communicate value in more effective ways.

Communicating more nuanced articulations of labor as part of library assessment, via financial data or otherwise, has the potential to uncover and even promote aspects of libraries and librarianship that were previously invisible to stakeholders. Showing stakeholders and funders the range of work librarians do can help combat the outdated and incorrect stereotype of libraries as mere collections of resources and help shift the view to libraries as providers of services and experiences, which can in turn garner increased support for academic libraries and the variety of services they offer. Making hidden labor visible, especially unpaid labor, may also spur conversations and concrete actions toward redistribution of work tasks and resources in an effort to reduce workload, stress, and pressure.

APPENDIX

Below are the questions reported on in this article. These questions appeared in a longer questionnaire about invisible labor in librarianship overall. Additional questions not included here cover postpandemic work tasks, emotional labor, and other data that will be reported on in future work.

- Did you work in a library in the United States in 2019?
  - □ Yes
  - □ No [if no, exit survey]
- We understand that some people may work multiple library jobs. For this set of questions, please tell us about the position you considered to be your **primary** library job in 2019. According to your job description, how many hours per week are you expected to work at your **primary** library job in an average week in 2019 (that is, before any disruptions created by COVID-19)?
  - □ [fill in the blank—numeric—max out at 168] hours per week
- You told us you worked X hours in **an average week in 2019**. Of those hours, please tell us how many hours you spent on each of the following types of tasks:

administration and management This includes work such as budgeting and finance, human resources committees, staff scheduling, facilities, etc.	[default set at zero]
advancement This includes work such as fundraising, donor relations, marketing, community outreach, etc.	[default set at zero]
circulation This includes work such as resource check in/out, maintaining patron accounts, working with holds and reserves, shelving materials, etc.	[default set at zero]
collection development and management This includes work such as materials selection, inventory, weeding, etc.	[default set at zero]
information technology (IT) This includes work such as hardware/software support and repair, system administration, ILS management, etc.	[default set at zero]
interlibrary loan This includes work such as resource sharing, cooperative agreements, materials searching, etc.	[default set at zero]
outreach and community engagement This includes work such as tabling and external event attendance, representing the library in the local community, liaising with departments, etc.	[default set at zero]
professional development This includes work such as research, publication, conference attendance, creating materials for promotion or review, attending PD workshops, etc.	[default set at zero]
programming This includes work such as program or event planning, materials preparation, delivering programs such as story times, setup and cleanup, etc.	[default set at zero]
readers' advisory This includes work such as recommending books and other resources, creating book lists and displays, etc.	[default set at zero]

reference This includes work such as staffing shifts at a reference desk, chat reference, answering reference questions either in person or by other means, etc.	[default set at zero]
teaching and instruction This includes work such as leading workshops, teaching one-off courses, lesson planning, teaching full semester courses, etc.	[default set at zero]
technical services This includes work such as cataloging, classification, acquisitions, physical processing, etc.	[default set at zero]
TOTAL	[must add up to the number of hours they said they worked]

- In an average week in 2019, approximately how many hours per week did you work beyond paid hours for your primary library position?
  - □ [open text—numeric]
- What kind of work do you do during this time (for example: planning, answering emails, thinking about work problems, etc.)?
  - □ [open text answer]
- What tasks did you perform during these hours?
  - □ Thinking about work problems
  - □ Reading and answering emails
  - □ Planning (scheduling, events, programs)
  - □ Professional development (seminars, webinars, training sessions like lynda.com, etc.)
  - □ Research (designing studies, writing articles for publication, conducting research programs, etc.)
  - □ Reading professional literature (trade magazines, academic journals, etc.)
  - □ Other (please explain)
- Are there any additional aspects of your work in 2019 that you felt were unrecognized? Please share. [open text answer]
- What type of library is most representative of the library in which you work(ed)?[46]
  - □ Academic library
  - □ Boards, friends groups, foundations
  - □ Consortia/cooperative systems/networks
  - □ Consulting
  - □ Corporations/corporate libraries
  - □ Federal or military libraries
  - □ Public libraries
  - □ School libraries
  - □ Special libraries
  - □ State library agencies
  - □ Other: [fill in the blank]

- Please tell us your gross income for the library position you just described:
  - □ [dropdown with choices for hourly, weekly, yearly, etc.]
  - □ [fill in the blank (numerals) options]
- What is your gender?[47]
  - □ Woman
  - □ Man
  - □ Nonbinary
  - □ Prefer not to disclose
  - □ Prefer to self-describe: [open text]
- Is there anything else you would like to add? Please share.
  - □ [open text field]

Acknowledgement

Thank you very much for your participation in our research project!
Please contact Rachel Ivy Clarke at rclark01@syr.edu if you have any questions.

Notes

1. Beverly P. Lynch et al., "Attitudes of Presidents and Provosts on the University Library," *College & Research Libraries* 68, no. 3 (2007): 213–27, https://doi.org/10.5860/crl.68.3.213.

2. Amos Lakos and Shelley E. Phipps, "Creating a Culture of Assessment: A Catalyst for Organizational Change," *portal: Libraries and the Academy* 4, no. 3 (2004): 345–61, https://doi.org/10.1353/pla.2004.0052.

3. Megan Oakleaf, *The Value of Academic Libraries: A Comprehensive Research Review and Report* (Chicago, IL: Association of College and Research Libraries, 2010), 27.

4. Oakleaf, *The Value of Academic Libraries*, 22.

5. Lynn Silipigni Connaway et al., *Academic Library Impact: Improving Practice and Essential Areas to Research* (Chicago, IL: Association of College and Research Libraries, 2017).

6. Connaway et al., *Academic Library Impact*.

7. Bruce Kingma and Kathleen McClure, "Lib-Value: Values, Outcomes, and Return on Investment of Academic Libraries, Phase III: ROI of the Syracuse University Library," *College & Research Libraries* 76, no. 1 (January 2015): 63–80, https://doi.org/10.5860/crl.76.1.63.

8. Kingma and McClure, "Lib-Value."

9. Oakleaf, *The Value of Academic Libraries*, 29–30; Ashlynn Kogut, "Academic Library Services and Undergraduate Academic Success: Trends in Research Literature," in *Proceedings of the 2016 Library Assessment Conference*, eds. Sue Baughman, Steve Hiller, Katie Monroe, and Angela Pappalardo (Arlington, VA: Association of Research Libraries, 2017), 365–79.

10. Connaway et al., *Academic Library Impact*; Oakleaf, *The Value of Academic Libraries*.

11. Connaway et al., *Academic Library Impact*.

12. M. Lowe, Abby Currier, and Steven Graunke, "Documenting the Value of Librarians in the Classroom: Results from a Mixed-Methods Research Collaboration with Campus Partners," *College & Research Libraries* 81, no. 3 (2020): 492–508, https://doi.org/10.5860/crl.81.3.492; Nick Faulk and Emily Crist, "A Mixed-Methods Study of Library Communication with Online Students and Faculty Members," *College & Research Libraries* 81, no. 3 (2020): 361–77, https://doi.org/10.5860/crl.81.3.361; Katy Kelly, "Collaborative and Co-Curricular: Programming and Academic Library Impact," *College & Research Libraries* 81, no. 3 (2020): 330–44, https://doi.org/10.5860/crl.81.3.330.

13. Kyle M.L. Jones, "'Just Because You Can Doesn't Mean You Should': Practitioner Perceptions of Learning Analytics Ethics," *portal: Libraries and the Academy* 19, no. 3 (2019): 407–28, https://doi.org/10.1353/pla.2019.0025.

14. Kingma and McClure, "Lib-Value."

15. Lise Doucette, "Acknowledging the Political, Economic, and Values-Based Motivators of Assessment Work: An Analysis of Publications on Academic Library Assessment," in *Proceedings of the Library Assessment Conference*, eds. Sue Baughman, Steve Hiller, Katie Monroe, and Angela Pappalardo (Arlington, VA: Association of Research Libraries, 2016), 288–98.

16. James Cheng and Starr Hoffman, "Librarians and Administrators on Academic Library Impact Research:

Characteristics and Perspectives," *College & Research Libraries* 81, no. 3 (2020): 538–69, https://doi.org/10.5860/crl.81.3.538.

17. Ebony Magnus, Maggie Faber, and Jackie Belanger, "A Consideration of Power Structures (and the Tensions They Create) in Library Assessment Activities," in *Proceedings of the 2018 Library Assessment Conference*, eds. Sue Baughman, Steve Hiller, Katie Monroe, and Angela Pappalardo (Houston, TX: Association of Research Libraries, 2019), 600–06.

18. Winifred R. Poster, Marion G. Crain, and Miriam A. Cherry, "Introduction: Conceptualizing Invisible Labor," in *Invisible Labor: Hidden Work in the Contemporary World*, eds. Marion G. Crain, Winifred R. Poster, and Miriam A. Cherry (Oakland, CA: University of California Press, 2016), 3–27, www.jstor.org/stable/10.1525/j.ctv1xxwt7.5.

19. A.D. Weidhaas, "Invisible Labor and Hidden Work," in *The International Encyclopedia of Organizational Communication*, eds. Craig R. Scott et al. (Hoboken, NJ: Wiley, 2017), 1–10, https://doi.org/10.1002/9781118955567.wbieoc095.

20. Marjorie L. DeVault, "Mapping Invisible Work: Conceptual Tools for Social Justice Projects," *Sociological Forum* 29, no. 4 (December 2014): 775–90, https://doi.org/10.1111/socf.12119.

21. Poster, Crain, and Cherry, "Introduction," 6.

22. Poster, Crain, and Cherry, "Introduction."

23. Michel Anteby and Curtis Chan, "Invisible Work," in *Sociology of Work: An Encyclopedia*, ed. Vicki Smith (Thousand Oaks, CA: SAGE Publications, Inc., 2013), 455–56, https://doi.org/10.4135/9781452276199.n166.

24. Anteby and Curtis Chan, "Invisible Work," 455–56.

25. Susan Leigh Star and Anselm Strauss, "Layers of Silence, Arenas of Voice: The Ecology of Visible and Invisible Work," *Computer Supported Cooperative Work (CSCW)* 8, no. 1/2 (March 1999): 9–30, https://doi.org/10.1023/A:1008651105359.

26. Anteby and Chan, "Invisible Work."

27. Scarlet Galvan, "More Than Things," *Serials Review* 45, no. 3 (July 2019): 99–102, https://doi.org/10.1080/00987913.2019.1646080.

28. Miriam A. Cherry, "People Analytics and Invisible Labor," *Saint Louis University Law Journal* 61, no. 1 (July 2017): 1–17.

29. Arlie Russell Hochschild, *The Managed Heart: Commercialization of Human Feeling*, 3rd ed. (Berkeley, CA: University of California Press, 2012).

30. Miriam L. Matteson and Shelly S. Miller, "Emotional Labor in Librarianship: A Research Agenda," *Library & Information Science Research* 34, no. 3 (July 2012): 176–83, https://doi.org/10.1016/j.lisr.2012.02.003.

31. Anselm Strauss, "Work and the Division of Labor," *Sociological Quarterly* 26, no. 1 (March 1985): 1–19, https://doi.org/10.1111/j.1533-8525.1985.tb00212.x.

32. Star and Strauss, "Layers of Silence, Arenas of Voice," 10.

33. Star and Strauss, "Layers of Silence, Arenas of Voice."

34. Susanne Rässler, Donald B. Rubin and Nathaniel Schenker, "Incomplete Data: Diagnosis, Imputation, and Estimation," in *International Handbook of Survey Methodology*, ed. Edith D. de Leeuw (New York, NY: Psychology Press, 2008), 370–86.

35. Alison Jane Pickard, "Chapter 8: Surveys," in *Research Methods in Information* (London, UK: Facet, 2007), 95-102.

36. Kathy Rosa and Kelsey Henke, *2017 ALA Demographic Study* (Chicago, IL: ALA Office for Research and Statistics, 2017), www.ala.org/tools/sites/ala.org.tools/files/content/Draft%20of%20Member%20Demographics%20Survey%2001-11-2017.pdf

37. Galvan, "More Than Things."

38. David Bade, "Rapid Cataloging: Three Models for Addressing Timelines as an Issue of Quality in Library Catalogs," *Cataloging & Classification Quarterly* 45, no. 1 (2007): 87–123, https://doi.org/10.1300/J104v45n01_06.

39. "Number Employed in Libraries: ALA Library Fact Sheet 2," American Library Association, last modified August 2018, www.ala.org/tools/libfactsheets/alalibraryfactsheet02.

40. Fobazi Ettarh, "Vocational Awe and Librarianship: The Lies We Tell Ourselves," *In the Library with the Lead Pipe* (January 10, 2018), www.inthelibrarywiththeleadpipe.org/2018/vocational-awe/.

41. Ettarh, "Vocational Awe and Librarianship."

42. Ettarh, "Vocational Awe and Librarianship."

43. Star and Strauss, "Layers of Silence, Arenas of Voice."

44. Kingma and McClure, "Lib-Value."

45. Adia Harvey Wingfield and Renée Skeete Alston, "Maintaining Hierarchies in Predominantly White Organizations: A Theory of Racial Tasks," in *Invisible Labor: Hidden Work in the Contemporary World*, eds. Marion

G. Crain, Winifred R. Poster, and Miriam A. Cherry (Oakland, CA: University of California Press, 2014), 47–68, http://journals.sagepub.com/doi/10.1177/0002764213503329.

46. Answer choices taken from ALA's membership application, April 2017.

47. Answer choices taken from K. Spiel, O. Haimson, and D. Lottridge, "How to Do Better with Gender on Surveys: A Guide for HCI Researchers," *Interactions* 26, no. 4 (2019): 62–65, https://doi.org/10.1145/3338283.

References

Anteby, Michel, and Curtis Chan. "Invisible Work." In *Sociology of Work: An Encyclopedia*, edited by Vicki Smith, 455–456. Thousand Oaks: SAGE Publications, Inc., 2013. https://doi.org/10.4135/9781452276199.n166.

Bade, David. "Rapid Cataloging: Three Models for Addressing Timelines as an Issue of Quality in Library Catalogs." *Cataloging & Classification Quarterly* 45, no. 1 (2007): 87–123. https://doi.org/10.1300/J104v45n01_06

Cheng, James, and Starr Hoffman. "Librarians and Administrators on Academic Library Impact Research: Characteristics and Perspectives." *College & Research Libraries* 81, no. 3 (2020): 538–569. https://doi.org/10.5860/crl.81.3.538.

Cherry, Miriam A. "People Analytics and Invisible Labor." *Saint Louis University Law Journal* 61, no. 1 (July 2017): 1–17.

Connaway, Lynn Silipigni, William Harvey, Vanessa Kitzie, and Stephanie Mikitish. *Academic Library Impact: Improving Practice and Essential Areas to Research*. Chicago: Association of College and Research Libraries, 2017.

DeVault, Marjorie L. "Mapping Invisible Work: Conceptual Tools for Social Justice Projects." *Sociological Forum* 29, no. 4 (December 2014): 775–90. https://doi.org/10.1111/socf.12119.

Doucette, Lise. "Acknowledging the Political, Economic, and Values-Based Motivators of Assessment Work: An Analysis of Publications on Academic Library Assessment." In *Proceedings of the Library Assessment Conference*, edited by Sue Baughman, Steve Hiller, Katie Monroe, and Angela Pappalardo, 288–298. Arlington: Association of Research Libraries, 2016.

Ettarh, Fobazi. "Vocational Awe and Librarianship: The Lies We Tell Ourselves." *In the Library with the Lead Pipe*, January 10, 2018. http://www.inthelibrarywiththeleadpipe.org/2018/vocational-awe/.

Faulk, Nick, and Emily Crist. "A Mixed-Methods Study of Library Communication with Online Students and Faculty Members." *College & Research Libraries* 81, no. 3 (2020): 361–377. https://doi.org/10.5860/crl.81.3.361.

Galvan, Scarlet. "More Than Things." *Serials Review* 45, no. 3 (July 2019): 99–102. https://doi.org/10.1080/00987913.2019.1646080.

Hochschild, Arlie Russell. *The Managed Heart: Commercialization of Human Feeling*. 3rd edition. Berkeley: University of California Press, 2012.

Jones, Kyle M. L. "'Just Because You Can Doesn't Mean You Should': Practitioner Perceptions of Learning Analytics Ethics." *Portal: Libraries and the Academy* 19, no. 3 (2019): 407–28. https://doi.org/10.1353/pla.2019.0025.

Kelly, Katy. "Collaborative and Co-Curricular: Programming and Academic Library Impact." *College & Research Libraries* 81, no. 3 (2020): 330–344. https://doi.org/10.5860/crl.81.3.330.

Kingma, Bruce, and Kathleen McClure. "Lib-Value: Values, Outcomes, and Return on Investment of Academic Libraries, Phase III: ROI of the Syracuse University Library." *College & Research Libraries* 76, no. 1 (January 2015): 63–80. https://doi.org/10.5860/crl.76.1.63.

Kogut, Ashlynn. "Academic Library Services and Undergraduate Academic Success: Trends in Research Literature." In *Proceedings of the 2016 Library Assessment Conference*, edited by Sue Baughman, Steve Hiller, Katie Monroe, and Angela Pappalardo, 365–379. Arlington: Association of Research Libraries, 2017.

Lakos, Amos, and Shelley E. Phipps. "Creating a Culture of Assessment: A Catalyst for Organizational Change." *Portal: Libraries and the Academy* 4, no. 3 (2004): 345–61. https://doi.org/10.1353/pla.2004.0052.

Lowe, M., Abby Currier, and Steven Graunke. "Documenting the Value of Librarians in the Classroom: Results from a Mixed-Methods Research Collaboration with Campus Partners." *College & Research Libraries* 81, no. 3 (2020): 492–508. https://doi.org/10.5860/crl.81.3.492.

Lynch, Beverly P., Catherine Murray-Rust, Deborah Turner, Diane Parr Walker, C. Wilkinson, and Julia Zimmerman. "Attitudes of Presidents and Provosts on the University Library." *College & Research Libraries* 68, no. 3 (2007): 213–27. https://doi.org/10.5860/crl.68.3.213.

Magnus, Ebony, Maggie Faber, and Jackie Belanger. "A Consideration of Power Structures (and the Tensions They Create) in Library Assessment Activities." In *Proceedings of the 2018 Library Assessment Conference*, edited by Sue Baughman, Steve Hiller, Katie Monroe, and Angela Pappalardo, 600–606. Houston: Association of Research Libraries, 2019.

Matteson, Miriam L., and Shelly S. Miller. "Emotional Labor in Librarianship: A Research Agenda." *Library & Information Science Research* 34, no. 3 (July 2012): 176–83. https://doi.org/10.1016/j.lisr.2012.02.003.

Matthews, Joseph R. "What's the Return on ROI?" *Library Leadership & Management (Online); Chicago* 25, no. 1 (2011): 1–14.

"Number Employed in Libraries: ALA Library Fact Sheet 2." American Library Association. Last modified August 2018. http://www.ala.org/tools/libfactsheets/alalibraryfactsheet02.

Oakleaf, Megan. *The Value of Academic Libraries: A Comprehensive Research Review and Report*. Chicago: Association of College and Research Libraries, 2010.

Pickard, Alison J. *Research Methods in Information*. London: Facet, 2007.

Poster, Winifred R., Marion G. Crain, and Miriam A. Cherry. "Introduction: Conceptualizing Invisible Labor." In *Invisible Labor: Hidden Work in the Contemporary World*, edited by Marion G. Crain, Winifred R. Poster, and Miriam A. Cherry, 3–27. Oakland: University of California Press, 2016. http://www.jstor.org/stable/10.1525/j.ctv1xxwt7.5.

Rässler, Susanna, Donald B. Rubin and Nathaniel Schenker. "Incomplete Data: Diagnosis, Imputation, and Estimation." In *International Handbook of Survey Methodology*, edited by Edith D. de Leeuw, 370-386. New York: Psychology Press, 2008.

Rosa, Kathy, and Kelsey Henke. 2017 ALA Demographic Study. Chicago, IL: ALA Office for Research and Statistics, 2017. http://www.ala.org/tools/sites/ala.org.tools/files/content/Draft%20of%20Member%20Demographics%20Survey%2001-11-2017.pdf

Star, Susan Leigh, and Anselm Strauss. "Layers of Silence, Arenas of Voice: The Ecology of Visible and Invisible Work." *Computer Supported Cooperative Work (CSCW)* 8, no. 1–2 (March 1999): 9–30. https://doi.org/10.1023/A:1008651105359.

Strauss, Anselm. "Work and the Division of Labor." *The Sociological Quarterly* 26, no. 1 (March 1985): 1–19. https://doi.org/10.1111/j.1533-8525.1985.tb00212.x.

Tenopir, Carol. "Building Evidence of the Value and Impact of Library and Information Services: Methods, Metrics and ROI." *Evidence Based Library and Information Practice* 8, no. 2 (June 12, 2013): 270–74. https://doi.org/10.18438/B8VP59.

Weidhaas, A. D. "Invisible Labor and Hidden Work." In *The International Encyclopedia of Organizational Communication*, edited by Craig R. Scott, James R. Barker, Timothy Kuhn, Joann Keyton, Paaige K. Turner, and Laurie K. Lewis. 1–10. Hoboken: Wiley, 2017. https://doi.org/10.1002/9781118955567.wbieoc095.

Wingfield, Adia Harvey, and Renée Skeete Alston. "Maintaining Hierarchies in Predominantly White Organizations: A Theory of Racial Tasks." In *Invisible Labor: Hidden Work in the Contemporary World*, edited by Marion G. Crain, Winifred R. Poster, and Miriam A Cherry, 47–68. Oakland: University of California Press, 2014. http://journals.sagepub.com/doi/10.1177/0002764213503329.

Together, Apart: Communication Dynamics among Academic Librarians during the Covid-19 Pandemic

Maryellen Nash, Barbara Lewis, Jessica Szempruch, Stephanie Jacobs, and Susan Silver

The COVID-19 pandemic forced organizations into rapid transition to virtual workplace settings. Librarians at the University of South Florida conducted a study to discover trends in team communication dynamics among academic librarians working remotely during this period. This study was motivated by a desire to gauge the perceived degree of positive or negative impact on group communication dynamics and connectedness before and after the transition, with attention paid to factors that inform team communication. This study used a quantitative approach employing a cross-sectional survey administered to the population of professional academic librarians in the United States. Survey findings exhibited small shifts in dynamics, opening a path for more nuanced examination. Effects on librarianship due to the pandemic are still being felt; it is a topic with long reach and impact, which merits examination.

Introduction

While remote work practices have increased in recent years, the unprecedented events of 2020 prompted revision of operations for libraries large and small. Prepandemic research documented a rise in job satisfaction among those working at home. This same study also investigated the emotional well-being of individual employees.[1] For purposes of employee well-being and institutional efficacy, virtual teams need to maintain communication, rapport, and trust through effective management and team building designed for a virtual environment.[2] The effect of virtual communication and technology on both job satisfaction and teamwork is investigated by researchers in a variety of fields, naturally, because a wide spectrum of businesses and institutions employ virtual work to varying degrees. Mesmer-Magnus et al. provide findings on team information-sharing practices that suggest that the outcomes of virtual team communication

*Maryellen Nash was Director for Research & Instruction in the USF Tampa campus library at University of South Florida; e-mail: mallen@usf.edu. Barbara Lewis is a Social Sciences Librarian in the USF Tampa campus library at University of South Florida; e-mail: bilewis@usf.edu. Jessica N. Szempruch is campus librarian in the Sarasota-Manatee campus Library at University of South Florida; e-mail: jszempru@usf.edu. Stephanie A. Jacobs is a Blended Instructional Design & Arts Librarian in the USF Tampa campus library at University of South Florida; e-mail: sajacobs@usf.edu. Susan Silver is a retired Social Sciences Librarian in the USF Tampa campus library at University of South Florida; e-mail: ssilver@usf.edu.

can result in varying outcomes, observing that "high-virtuality teams exchange more unique information"[3] while noting that the in-person teams exchanged information more freely, but that this information was not necessarily conducive to more efficient work.

The topic of virtual work is inextricably linked with the issues of team communication as an integral force behind getting things done. The study described here is intended to investigate the challenges faced by and changes to the communication dynamics of library teams after the shift to remote work during the COVID-19 pandemic. A research team of librarians from multiple campuses of the same organization came together to design and implement a survey, which was created to address specific research questions concerning librarians' perceived impact of altered modes of communication on their connectedness, communication dynamics, and teamwork. This paper will share the findings from this survey and analysis of results to discuss the overall impact the abrupt shift to remote work had on team dynamics and communication for a sampling of academic librarians across the profession.

Literature Review

Organizations have slowly been adopting remote work policies for their employees for decades. In some cases, it was economically advantageous. In other cases, it was because an employee had specific at-home responsibilities. Worldwide, organizations also realized the benefits of virtual communication for multinational project teams.[4] As virtual teams and work from home became more prevalent, scholars began studying the impact, benefits, and challenges of remote contact on group development, collaboration, and communication among team members.

A prevalent factor in the success of teams, whether face-to-face or virtual, is the knowledge about and trust in other team members that develop over time as a team becomes integrated. In their review of group development models, Mennecke et al. identify group development as "the degree of maturity and cohesion that a group achieves over time as members interact, learn about one another, and structure relationships and roles within the team."[5] Sarker and Sahay studied four phases of virtual team development over time: initiation, exploration, collaboration, and culmination/dissolution. In their study, collaboration was exemplified by "identity becoming integrated at the team-level," "developing shared meanings and norms," and relying on and trusting in other team members.[6]

Negative aspects of new team functioning are relatively similar between face-to-face and virtual teams; however, the degree to which a team is virtual can compound some of the effects. A meta-analysis of virtual team research indicates various inconsistencies in the results depending on factors such as the type of teams studied (such as student vs. professional, laboratory vs. field, discipline), the amount of time the team exists, and the technology available.[7] However, some findings are significant. The "degree of virtualness,"[8] from *not at all* to *highly virtual*, can affect team functioning, although some negative effects experienced by highly virtual teams, such as less communication frequency and knowledge sharing, may lessen over time, especially for long-term teams. Regarding the use of virtual tools, Mesmer-Magnus et al. concluded that, where teams fall on the "continuum of virtuality," between fully virtual to highly virtual or hybrid, impacts the quantity and quality of information sharing. Their meta-analysis found teams that are fully virtual with high use of synchronous tools, such as videoconferencing, can "closely mimic face-to-face interactions."[9]

An overall review of literature pre- and mid-COVID pandemic indicates that there are many differences between the experiences of those who choose and/or plan to work from home

and those who are under enforced work-from-home situations.[10] The rapid shift to entirely remote working proved to be unprecedented even in the context of virtual team research. Virtual teams have changed as a result of these unprecedented work-from-home edicts, and therefore what is known about how virtual teams function must be reexamined.[11] Ongoing discourse highlights the need to investigate the differing outcomes between voluntary/planned and enforced/unplanned work-from-home situations.

As libraries have been slow to adopt remote work policies, the majority of the literature addressing the topic comes from other industries. As the COVID-19 pandemic is still evolving, library literature has emerged to provide insights and preliminary findings. A segment of that research involves teamwork and group communications during this unprecedented time. Several early reports provided tips for managing remote teams or working remotely, often shaped directly from the actions taken at a specific workplace or within an industry.[12] Early library-related literature from this period reiterated that remote work provides many challenges to workers, especially those who are accustomed to highly collaborative, in-person work environments. At the onset, administrators perceived that public-facing departments, such as reference and instruction or access services, were least suited to remote work assignment.[13]

The ability to work from home successfully during this time is shaped by multiple exterior factors. In most cases, existing face-to-face and co-located teams have tried to recreate their existing work processes in a virtual space through the use of new technologies.[14] This has brought its own set of challenges and opportunities. Hudson-Vitale and Waltz state the consideration of deficiencies in communication, specifically nonverbal cues, as particularly important to library teams navigating work-from-home assignments.[15] Research during this period has found that, for telepresence technology to be most successful in replicating the shared communal feelings of a face-to-face experience, it must be able to replicate nonverbal communication, including handwaving, facial expressions, and other body language.[16]

Issues related to at-home office space and struggles of "boundaryless working" have highlighted inequities among team members that organizations may not have previously had to consider.[17] There is much concern over a lack of work/life balance and separation of workspace/home in discussions regarding these new work-from-home orders. Many workers reported that new technologies designed to facilitate communications among team members contributed to feelings that they could never leave work.[18] This sentiment was particularly strong among nonmanagerial employees who may have seen some of these technologies as a means of surveillance from leadership, especially where the expectations of productivity were not clear.[19]

The effect of working virtually on the communication dynamics and the levels of connectedness of team members is relevant to the success of virtual teams. According to the Pew Research Report by Parker et al., online communication tools are crucial in virtual work, since about 80 percent of remote workers use online meeting software to stay in touch and 65 percent are satisfied with the technological substitute. Despite challenges, findings indicate that many workers found the transition to work from home due to the pandemic relatively simple and would like to continue remote work in the future.[20] Just less than two-thirds of those surveyed by Pew Research (65%) also noted that they found new online tools to be a good substitute for face-to-face interactions to maintain communication with colleagues, with 63 percent feeling comfortable with the amount of time they spend on video calls. Dubey and

Tripathi completed a sentiment analysis of 100,000 Twitter posts from early in the pandemic. They discovered that more than 70 percent of postings continued positive sentiments in regard to working from home.[21] Rysavy and Michalak found that transitioning to working from home was easier for their team because they were already accustomed to collaborating with virtual tools, and team meetings allowed humanizing glimpses into the real lives of their colleagues.[22]

While most remote workers were satisfied with their ability to communicate with fellow team members during the pandemic, the majority also felt they are now less connected to their coworkers, although "seasoned teleworkers" were less likely to feel disconnected (65% vs. 27%, respectively).[23] One factor that is identified with feelings of disconnection is the loss of "side-bar connections that happen in a regular office setting."[24] The decrease in interpersonal interactions with colleagues may be challenging and leave knowledge workers feeling isolated and without social support or engagement.[25] This decreased feeling of connectedness with coworkers could also be exacerbated by the loss of social connectedness with the outside world during the pandemic. As one study showed, engagement with others outside work can have a beneficial effect on job-related positive affective well-being.[26]

Though the literature is still developing, there are glimpses into the long-lasting impact of newly formed virtual teams and remote work. Lessons learned in regard to maintaining work-life balance, creating productive and dedicated workspace in a home office, and communicating openly and often with teams have lasting impact.[27] Some scholars, who discovered previously unconsidered research topics or forged new collaborative relationships they may not have otherwise been able to create, wonder if this experience will continue to shape their practice once working from home is no longer mandated.[28] Libraries, such as those discussed by Ayre and Craner, that have come to rely on virtual collaboration tools to maintain communication with their patrons may wish to continue using those tools to enhance their reach.[29] New positions created by libraries to support distanced patrons may allow for increased availability and viability of work-from-home opportunities postpandemic.[30]

Charalampous et al. found that remote work can prove to be a benefit to knowledge workers because it allows for decreased interruptions and less commute-related stress.[31] When coupled with social support networks and good communication between remote and office-based workers, those working from home may find themselves more confident and have more job satisfaction. Findings by Ortiz de Guinea et al. suggest that, in the longer term, a virtual team's communication should improve to levels more in line with typical face-to-face interactions.[32] Advances in technology are continually improving, which has the possibility of also improving and enhancing virtual team communication.[33] More than ever, it has become apparent how reliant teams are on virtual communication technologies as a means to collaboration. The pandemic has highlighted the previously asserted necessity of formalizing systems and use of specific technology tools across organizations, with input from users to help guide that selection.[34]

Despite current limitations in the literature regarding COVID-specific restrictions within library virtual teams, what exists is significant for understanding the placement of this current study within the scholarly conversation.

Methods

This descriptive, cross-sectional study was conducted to determine to what extent, if any, the shift to remote work after the COVID-19 pandemic had on group communication dynamics for academic librarians. The period of data collection was November 4 through December 4, 2020.

The target population for this research was primarily team members from well-established academic libraries wherein the teams might be considered cohesive and in the collaboration phase prior to the work-from-home edict. Additionally, the impact of the pandemic forced most teams studied to become fully virtual rapidly, although where they started on the virtuality continuum related to the use of synchronous technology varied. Based on our own experiences, the investigators hypothesized that the ubiquity of collaborative software tools combined with the rapid transition to a work-from-home environment would result in an increase in communication and feelings of connectedness among team members. To this end, the investigators sought to answer three research questions:

1. Did the work teams feel more, less, or no change in a feeling of connectedness as a result of the shift to remote work?
2. Did the shift to remote work positively or negatively affect the communication dynamics of teams?
3. Do the members of work teams believe that this shift in communication dynamics will have a lasting impact?

The population for this survey consists of professional academic librarians in the United States. The sample population was derived from academic librarians who responded to calls for participation on professional listservs administered by the Association of College and Research Libraries (ACRL). No attempts were made to determine respondents' specific institutions, nor were protocols put in place to determine if more than one respondent represented a single institution. The total population in 2019 of full-time academic librarians in all institution types, according to the latest available statistics from the National Center for Education Statistics, is approximately 34,000.[35] Using Cochrane's formula, with a confidence level of 90 percent and a margin of error of 5 percent, the ideal sample size for this survey was determined to be 271. Since 373 librarians responded to the survey, this sample population was sufficient to accurately represent the experiences of academic librarians in the United States. Although 373 academic librarians responded to the survey, not all respondents completed each question or completed the entire survey. Seventy-four responses were not included in the regression analysis due to missing or incomplete responses, leaving a sample population of 299, which was still greater than the number required for a 90 percent confidence level.

This study was a descriptive, cross-sectional survey using a set of unmanipulated variables to determine patterns in participant perceptions and if a correlation exists between the transition from on-site to off-site work as a result of the COVID-19 pandemic and the communication dynamics of academic librarians. Data analysis was conducted using simple descriptive and cross-tabulation statistics in Power BI, and multiple regression in SPSS to determine if there was a correlation between independent input and dependent outcome variables.

Power BI was used first to understand the general distribution of survey responses and allow the investigators to identify areas that might warrant further analysis. In addition, the visualization of the survey data in Power BI, combined with the ability to cross-tabulate specific survey responses, such as institution and library type with indicators regarding transition to remote work and reported team qualities, helped the team better understand how the response data broke down among various categories. This analysis showed that survey responses concerning feelings of connectedness before and after, team meeting frequency before and after, perceptions of overall impact, and perceived persistence of impact were very evenly distributed throughout library types, different team sizes, and institutions. Therefore, institu-

tion classification, library type, and team size did not affect other data points in the survey. For the multiple regression analysis, the investigators were able to identify specific independent and dependent variables from the Power BI analysis that could be drawn out and analyzed separately to shed light on the specific research questions, "Did the work teams feel more, less, or no change in a feeling of connectedness as a result of the shift to remote work?"; "Did the shift to remote work positively or negatively affect the overall communication dynamics of teams?"; and "Do the members of work teams believe that this shift in communication dynamics will have lasting impact?" The following independent variables (referred to hereafter as "input variables") were identified from the first phase of the data analysis:

- Reported feelings of connectedness with team
- Perception of communication team dynamic
- Reported team meeting frequency

FIGURE 1
Respondents by Institution Classification (n = 299)

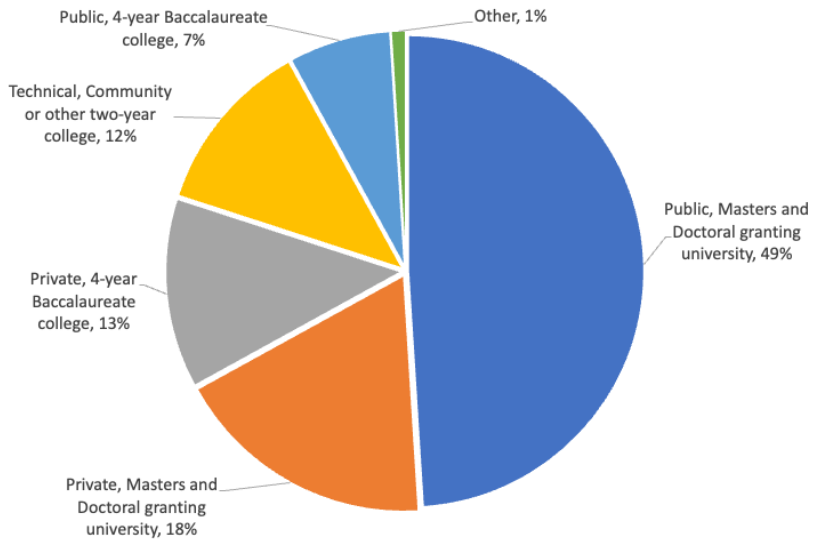
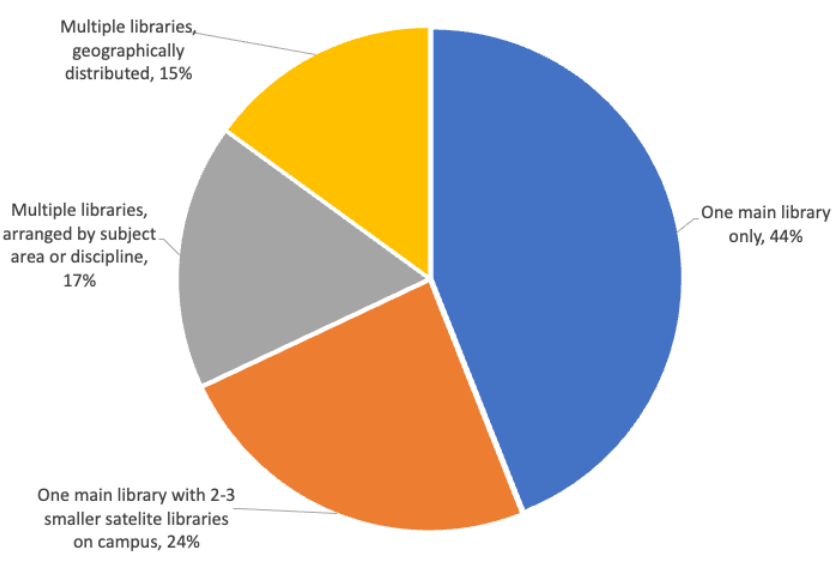


FIGURE 2
Respondents by Library Type (n = 299)



In relation to the investigators' research questions, the following dependent variables (referred to hereafter as "output variables") were identified as: 1) perceived quality of the overall impact of the transition on team dynamics; and 2) the perception of the anticipated duration of the impact.

Respondent Profiles

Institution Classification

Of the 373 academic librarians who responded to the survey, 74 respondents did not complete the survey and were discarded, leaving 299 respondents. Each respondent was asked to identify their institution's classification according to the Basic Classification Descriptions derived from Carnegie Classification of Institutes of Higher Education[36] as well as their libraries by number and geographic distribution. The largest group of participants (48.7%) were associated with public, master's, and

doctoral-granting institutions. This was followed by private master's and doctoral-granting institutions (18.2%) and private, four-year baccalaureate colleges (12.8%). The remainder of respondents represented technical, community, or other two-year colleges (11.8%); public, four-year baccalaureate colleges (7.4%); and "other" (1.1%). The "other" category allowed write-in responses and included public and private universities granting master's degrees.

Library Type

The libraries represented consisted mostly of institutions with "one main library only" (44.3%) followed by "one main library with 2–3 smaller satellite libraries on campus" (23.9%) and "multiple libraries, arranged by subject area" (16.6%), and "multiple libraries, geographically distributed" (15.2%).

FIGURE 3
Team Transition to Remote Work (n = 299)

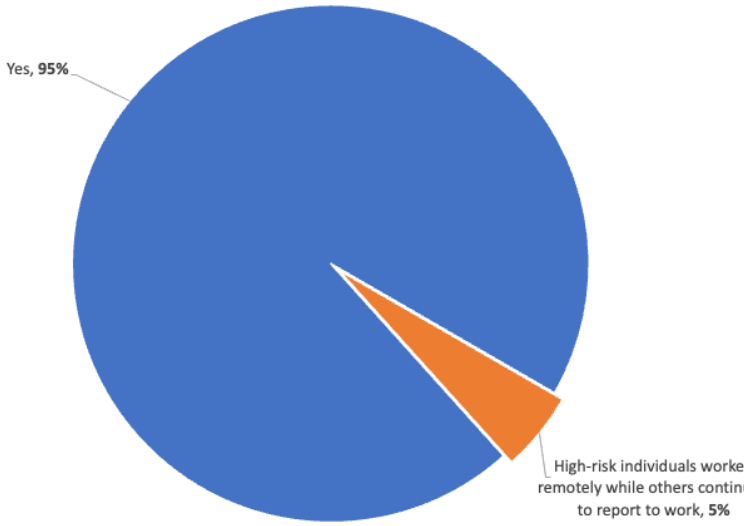
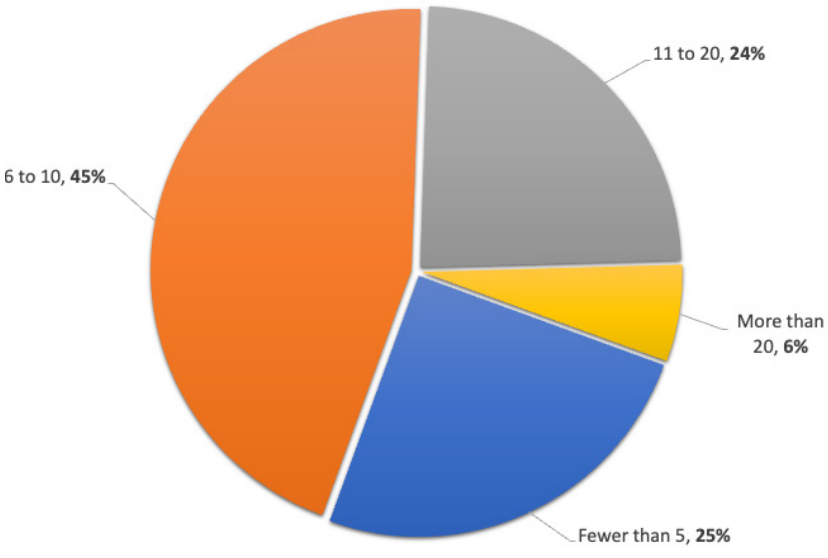


FIGURE 4
Librarian Team Groups by Size (n = 299)



Transition

When queried whether or not they transitioned to a remote work environment as a result of the COVID-19 pandemic, the vast majority (94.9%) affirmed that they did, while 5.1 percent responded that high-risk individuals transitioned while others continued to travel to work. None of the respondents chose the third answer option indicating that their team continued to report to work as usual.

Librarian Teams

In terms of team characteristics, a significant number of respondents reported being members of teams with 6 to 10 members (44.6%). This was followed by respondents who were members of teams with 5 or fewer librarians (24.7%), teams with 10 to 20 members (24.3%), and teams with more than 20 members (6.4%).

The survey contained three sets of paired "before and after" questions employing three variable themes (reported feelings of connectedness

with team, perception of communication team dynamic, and reported team meeting frequency) to understand whether the shift to a remote work environment affected overall perceptions of team communication dynamics and impact duration after the move to remote work. Multiple regression analysis in SPSS was used to examine the survey data to determine the extent to which identified input variables (feelings of connectedness, perception of team communication dynamic, and team meeting frequency) predicted output variables (the perception of the shift as overall positive or negative, and the belief that the transition would/would not have a lasting impact on team dynamics).

For the regression analysis, the investigators proposed the following hypotheses:

1. Survey participant responses regarding their post-transition feelings of team connectedness, team meeting frequency, and perception of team communication dynamic would accurately predict their perceptions of the level of impact (positive, negative, or no change) overall on their team's communication dynamic.
2. Survey participant responses regarding their post-transition feelings of team connectedness, team meeting frequency, and perception of team communication dynamic would accurately predict their perceptions of the duration of impact.

FIGURE 5
Feelings of Connectedness Prior to Transition (n = 299)

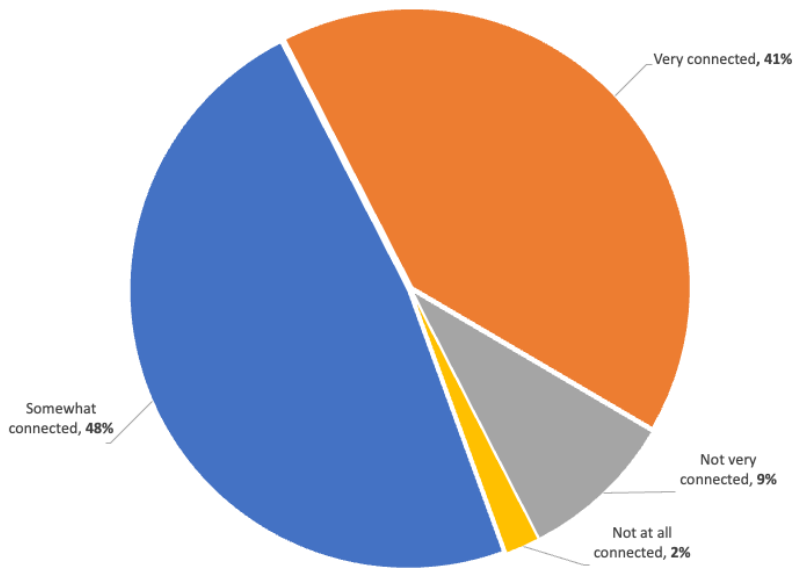
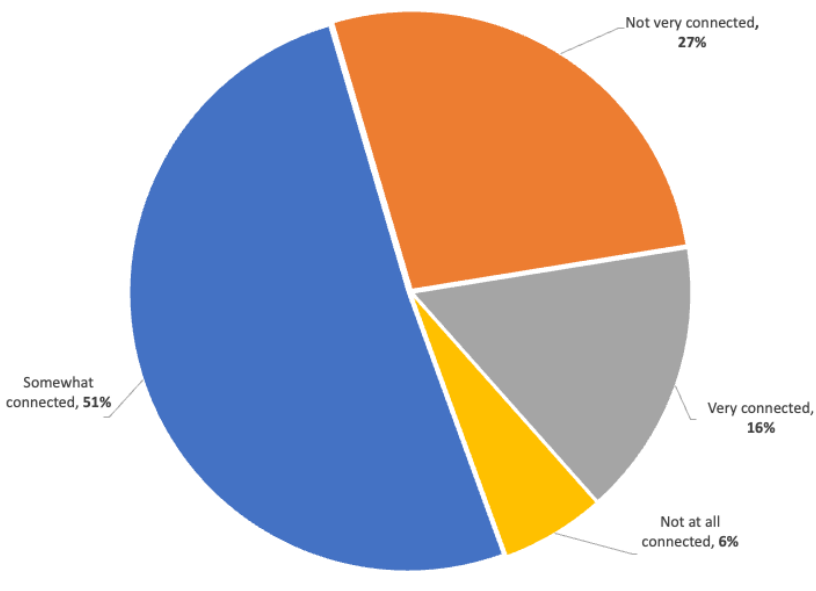


FIGURE 6
Feelings of Connectedness after Transition (n = 299)



Findings

1. Did the work teams feel more, less, or no change in a feeling of connectedness as a result of the shift to remote work?

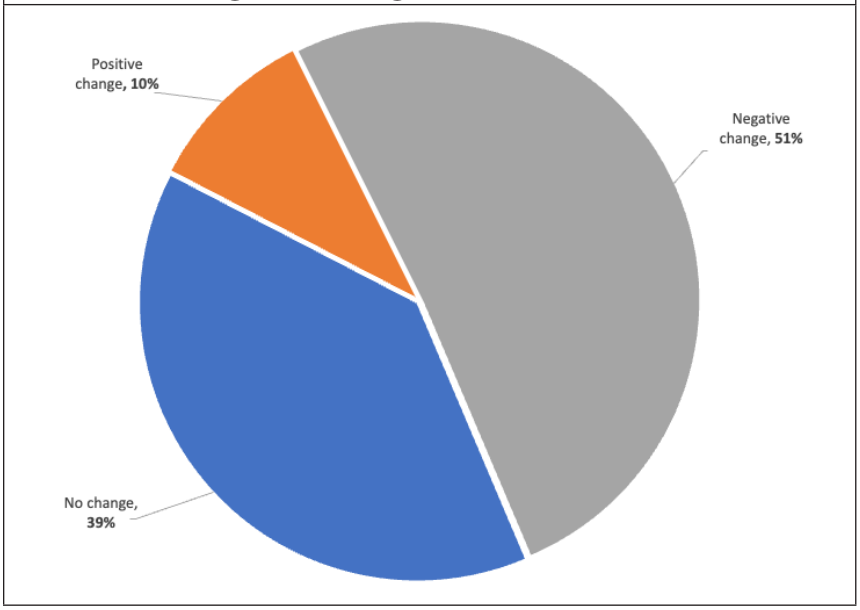
Connectedness

For feelings of connectedness (How connected did you feel to your teammates and colleagues?), the respondents were asked to rate how connected they felt to the other members of their teams both

before and after the transition to remote work. Response options varied from "very connected" to "not at all connected." Prior to the transition to remote work, 41 percent of respondents reported feeling "very connected," while 48 percent reported feeling "somewhat connected." In contrast, the number of respondents feeling "very connected" after the transition declined to 16 percent, while those who reported feeling "somewhat connected" stayed relatively consistent, experiencing a very modest increase to 51 percent. Those who reported feeling "not very" or "not at all" connected jumped from 11 percent prior to the transition to 33 percent after.

The responses for this pair of "before" and "after" variables were additionally analyzed in SPSS to determine the extent to which the variable "before and after" pair experienced a positive change, no change, or a negative change. More than 50 percent (118) of respondents (n = 299) indicated a negative change (that is, that they felt less connected to their colleagues after the transition to remote work), while 39 percent reported there being no perceived change. Ten percent of respondents reported feeling more connected.

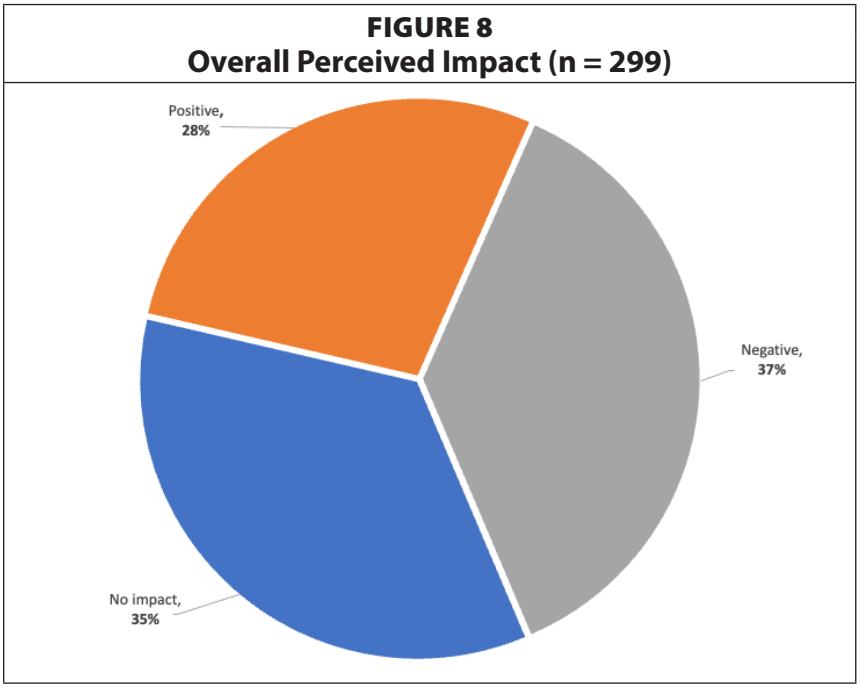
FIGURE 7
Rate of Change in Feelings of Connectedness (n = 299)



Overall, these data indicate that most respondents felt less connected to their team members as a result of the transition to remote work.

2. Did the shift to remote work have an overall positive or negative effect on the communication dynamics of teams?

FIGURE 8
Overall Perceived Impact (n = 299)



Overall Impact

Respondents who answered this question (n = 299) were, overall, evenly split between "positive impact" (28.09%), "negative impact" (37.12%), and "no impact" (34.78%), although slightly more respondents indicated that the transition had a negative impact on their team's communication dynamic.

Regression Analysis

For the dependent variable, "overall impact," the regression included the predictors "feelings of connectedness: after," "team meeting frequency: after," and "perceived team dynamic: after." The analysis revealed that the Adjusted R Squared in the model summary was .191, meaning the input variables accounted for 19.1 percent of the variance in the output variable, showing a possible moderate relationship between the input and output variables.

FIGURE 9
Regression Analysis for Overall Impact

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	38.563	3	12.854	24.356	.000[b]
	Residual	155.168	294	.528		
	Total	193.732	297			

a. Dependent Variable: Overall Impact

b. Predictors: (Constant), Connectedness After, After Meeting Frequency, Team Dynamic After

However, the regression coefficients revealed that, while feelings of connectedness and reported perception of team dynamic after the shift were significantly correlated with overall impact ($p = .000$ and $p = .005$ respectively), meeting frequency was *not* a significant predictor of the degree of overall impact ($p = .356$). Therefore, the first hypothesis was only partially supported.

FIGURE 10
Regression Coefficients for Overall Impact

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.347	.202		1.719	.087	-.050	.745
	After Meeting Frequency	.036	.039	.051	.924	.356	-.041	.113
	Team Dynamic After	.153	.054	.188	2.830	.005	.046	.259
	Connectedness After	.296	.066	.290	4.471	.000	.166	.427

a. Dependent Variable: Overall Impact

The unanticipated result of meeting frequency having no significance prompted an additional examination of this variable.

Impact of Meeting Frequency

Respondents were asked to categorize the frequency of their team meetings before and after the transition to remote work. These categories varied from "we did not meet," indicating that

the team had no team meetings at all, to "more than once a week." Other options included "more than once a month, but less than weekly" to include teams that met on a biweekly basis, as well as "once a month" and "once a week." It was assumed that respondents who chose the "other" category had team meetings that were less frequent than once a month, but the team still met.

After calculating the change between participant responses for "before" and "after," about half of the respondents (n = 299; 48.7%) reported no changes in their team's meeting frequency, while close to 40 percent (38.8%) reported an increase in meeting frequency, and 12.2 percent reported a decline.

FIGURE 11
Change in Meeting Frequency (n = 299)

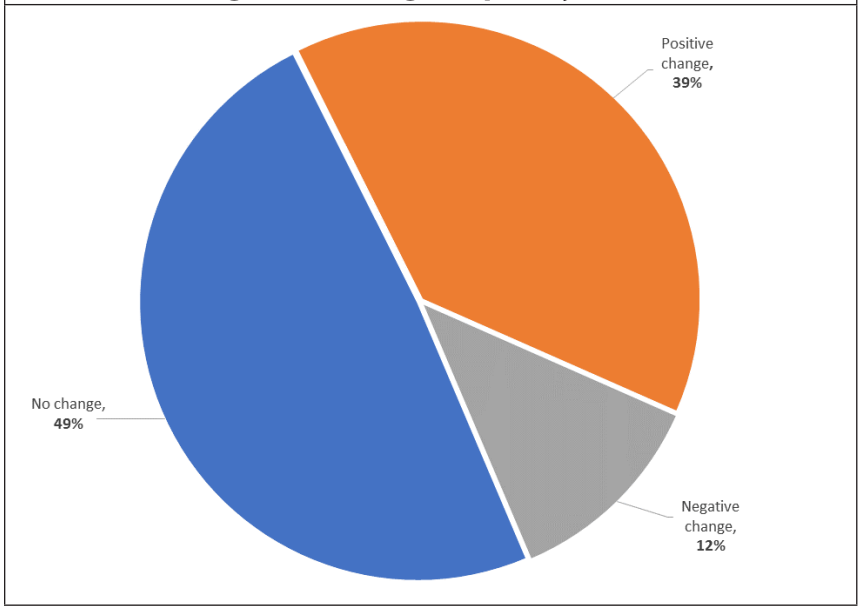
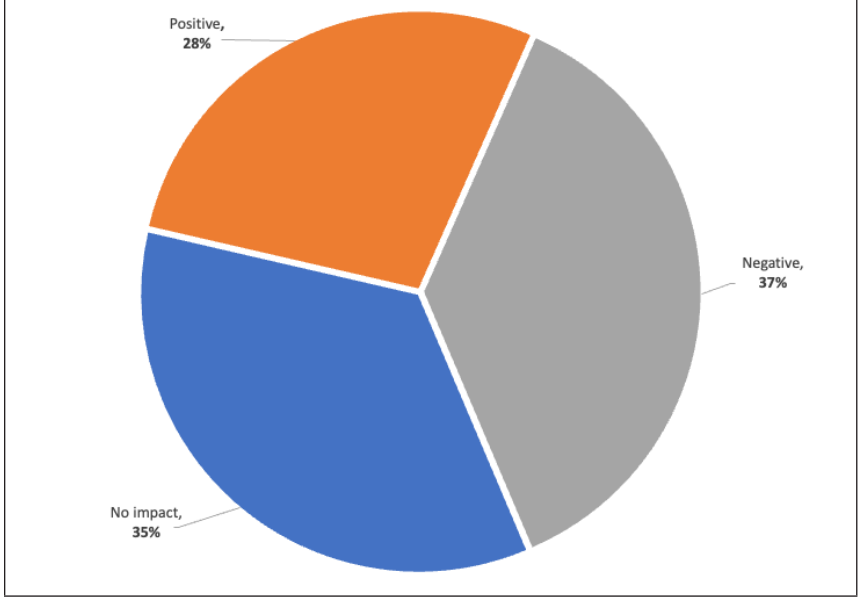


FIGURE 12
Perceived Impact Duration (n = 299)



When comparing these data to team meeting frequency *prior* to the transition as a stand-alone variable, the majority of respondents (63.71%) indicated that their team met more than once a month, weekly, or more than weekly. Therefore, if approximately half of the respondents indicated there was no change in meeting frequency, and declines in meeting frequency accounted for around 13 percent of the teams' experiences, this suggests that more teams were meeting at the same level or more frequently *after* the transition to remote work. This poses an interesting contrast with "feelings of connectedness," which saw a significant decrease, suggesting that, even though teams were meeting more often on average, team members felt more disconnected from their teammates after the transition.

3. Do the members of work teams believe that this shift in communication dynamics will have long-lasting impact?

Impact Duration

When looking at the respon-

dent breakdown for the question regarding the transition to remote work having a lasting impact in team dynamic, the results were not conclusive. This is not surprising, as respondents were quite evenly divided, with 27.3 percent reporting that they believe the transition will have a lasting impact, 30.7 percent reporting a temporary impact, and 28 percent indicating the belief that the return to a normal work environment will see a return to the previous dynamic. Only 14 percent reported that the team dynamic never changed.

FIGURE 13
Regression Analysis for Impact Duration

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.288[a]	.083	.074	.987

a. Predictors: (Constant), Connectedness After, After Meeting Frequency, Team Dynamic After

b. Dependent Variable: Lasting Impact

The analysis would imply that there is no definitive answer to this question, pointing to a need for additional research on the impact of the transition to remote work after more time has passed and teams return to on-site work.

The regression analysis for impact duration employed the same predictor variables as that used in the analysis for overall impact. In terms of lasting impact, the regression analysis revealed a very low level of prediction between the input variables and the perception of the transition having a lasting impact (R = .288). Moreover, the Adjusted R Square shows that the input variables account for only 7.4 percent of the variability of the inputs on the output variable.

When looking at the variable coefficients, both perceived "after" team communication dynamic, and "after" reported feelings of connectedness were statistically significantly correlated with the outcome variable ($p < .005$), while the "after" variable for team meeting frequency was not ($p = .506$).

FIGURE 14
Regression Coefficients for Impact Duration

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1	(Constant)	1.568	.274		5.726	.000	1.029	2.107
	After Meeting Frequency	-.035	.053	-.039	-.666	.506	-.140	.069
	Team Dynamic After	.144	.073	.140	1.975	.049	.000	.288
	Connectedness After	.249	.090	.192	2.767	.006	.072	.425

a. Dependent Variable: Lasting Impact

The small percentage of the adjusted R Square and the lack of significant correlation for "after" team meeting frequency indicates that the second hypothesis was not supported.

Discussion

This study offers a brief snapshot of academic librarians' feelings and attitudes regarding their team's communication dynamic following an unparalleled and rapid shift to a remote work environment as a result of the COVID-19 pandemic.

The findings suggest that there was an even distribution in respondents feeling more connected, less connected, and no change in their feeling of connectedness to their fellow team members. The small amount of shift may also be indicative of more complicated and nuanced communication dynamics already existing in the library workplaces prepandemic. The relatively unchanged perceptions of team communication levels and quality from before the transition to remote work versus after could potentially reveal underlying issues with pre-existing communication structures as a whole. Further, the results indicate that most workers who shifted to remote work did not perceive that any change in connectedness experiences during the COVID-19 shift to remote work would be long-lasting.

Institution classification, library type, and team size did not appear to be influencing factors in how librarians responded to the survey questions. While these data show that many teams reported increases in meeting frequency, this did not appear to translate into higher feelings of connectedness among team members, suggesting that, when working in a remote environment, the number of team meetings alone may not contribute to a more collegial or collaborative communication dynamic. This issue is likely more complex and nuanced than the current study was designed to clarify, indicating the need for further research.

We must also consider and discuss the limitations of the study, as well as the potential for personal difference in respondents' assessment of their team's dynamic. The general homogeneity of the sample population limits the generalizability of the study to wider populations of workers who shifted to remote work. Additionally, while there appeared to be a moderate relationship between reported feelings of team connectedness and individual perceptions of the collaborative nature of their teams with the overall perceived impact and duration of change, the investigators could not conclude whether these variables resulted in a positive or negative shift.

Conclusion

The literature demonstrates that virtual team communication dynamics evolve over time. This study represents a preliminary step in understanding the long-term opportunities and challenges in creating and sustaining virtual library teams. The survey was distributed eight months into what turned out for many to be more than a year of remote work. This was after the initial rush to a remote work environment but was likely not far enough away to allow participants time to evaluate the long-term impact of the shift fully.

As can be expected, this research also generated additional questions for possible future research. For example, there was a positive impact on communication but a negative impact on connectedness, with most reporting that they met the same amount or more and had no loss in collegiality and other factors. Could loss of connectedness be due to the loss of informal personal interaction in the face-to-face environment (visiting offices, lunches, hallway conversations, and the like)? There is also potential for additional research around the data

relative to the demographics. Did younger librarians not feel a loss of connectedness because they were more comfortable with virtual communication? How does the number of virtual communication tools used and an individual's comfort level with those tools affect connectedness and communication dynamics? Were supervisors/managers less comfortable with virtual teams or feel less connected than their employees because they perceived a loss of control?

As the pandemic begins to wane and organizations prepare to return to a normal working environment, many organizations are considering allowing workers to choose a more flexible or hybrid environment of remote and in-person work. More research, such as mentioned above, is needed to gain an understanding of factors that may impact individual and organizational success, such as team communication and connectedness.

APPENDIX. The Survey:

Communication Dynamics Post Covid-19

Start of Block: Block 5

Thank you for accessing our survey. We are conducting this survey to better understand academic librarians' perceptions of their team's communication dynamics in a remote work environment, particularly considering the 2020 COVID-19 pandemic. If you are an academic librarian who has participated in remote work during this timeframe, we would appreciate your responses. This survey will support a peer-reviewed article to be published in a library science journal.

This survey should take approximately 10–15 minutes to complete. The survey is anonymous, and no effort will be made to track respondents' names or email addresses. There are no known risks involved in participating in this study. This study has received IRB approval from the University of South Florida's IRB review board.

The next page provides more information and asks you to accept or reject participation (informed consent) in the survey.

Start of Block: Demographic Information

How would you classify your institution?

- o Public, master's and doctoral-granting university (1)
- o Private, master's and doctoral-granting university (2)
- o Public, 4-year baccalaureate college (3)
- o Private, 4-year baccalaureate college (4)
- o Technical, community, or other two-year college (5)
- o Other (please explain) (6) _____

How would you classify your institution's library/libraries?

- o Multiple libraries, arranged by subject area or discipline (12)
- o One main library with 2–3 smaller satellite libraries on campus (13)
- o Multiple libraries, geographically distributed (14)
- o One main library only (15)

How many librarians are part of the team that you regularly communicate with?

- o Fewer than 5 (1)
- o 6–10 (2)
- o 11–20 (3)
- o More than 20 (4)

End of Block: Demographic Information

Start of Block: Work Environment

As a result of the Covid-19 outbreak, did your team transition to a remote work environment?
- o Yes (1)
- o No, we continued to report to work as usual (2)
- o High-risk individuals worked remotely while others continued to report to work (3)

How would you characterize your work environment prior to the Covid-19 outbreak?
- o 100% on site (1)
- o More than 50% on site (2)
- o 50–50 schedule, evenly split between on-site and remote (3)
- o More than 50% remote work (4)
- o 100% remote work (5)

Prior to the Covid-19 outbreak, did all of the members of your team work in the same physical location?
- o Yes (1)
- o Some members worked at other sites on campus or on another campus (2)
- o No, most of the team was physically distributed (3)

Prior to the Covid-19 outbreak, did the members of your team generally work a uniform weekly schedule (for example, everyone worked M–F, 8–5)?
- o Yes, possibly with some variation to cover early or late hours (1)
- o No, we had shifts to cover a wide range of hours (2)

End of Block: Work Environment

Start of Block: Communications

What kinds of communication software does your library or institution employ? (Select all that apply)
- □ Adobe Connect (195)
- □ Blackboard Collaborate (196)
- □ Google Meet (197)
- □ GoTo Meeting (198)
- □ Microsoft Teams (199)
- □ WebEx (200)
- □ Zoom (201)
- □ Other (202)

How often did your team meet ***prior*** to the Covid-19 outbreak?
- o Once a month (18)
- o More than once a month, but less than weekly (19)
- o Once a week (20)
- o More than once a week (21)
- o We did not meet (22)
- o Other (23)

How often did your team meet ***after*** you transitioned to a remote work environment?
- o Once a month (12)
- o More than once a month, but less than weekly (13)
- o Once a week (14)
- o More than once a week (15)
- o We did not meet (16)
- o Other (17)

End of Block: Communications

Start of Block: Perceptions

How would you characterize your team's communication dynamic ***prior*** to transitioning to a remote work environment?
- o Collaborative, collegial, and frequent (1)
- o Collaborative and collegial, but not frequent (2)
- o Not particularly collaborative (everyone did their own thing), and infrequent (3)
- o Frequent, but not collaborative or collegial (5)
- o We did not communicate (4)

How would you characterize your team's communication dynamic ***after*** transitioning to a remote work environment?
- o Collaborative, collegial, and frequent (1)
- o Collaborative and collegial, but not frequent (2)
- o Not particularly collaborative (everyone did their own thing), and infrequent (3)
- o Frequent, but not collaborative or collegial (5)
- o We did not communicate (4)

Prior to transitioning to a remote work environment, how connected did you feel to your teammates and colleagues?
- o Very connected (1)
- o Somewhat connected (2)
- o Not very connected (3)
- o Not at all connected (4)

After transitioning to a remote work environment, how connected did you feel to your teammates and colleagues?
- o Very connected (1)
- o Somewhat connected (2)
- o Not very connected (3)
- o Not at all connected (4)

Overall, do you feel that the transition to a remote work environment had a positive, negative, or null impact on your team's communication dynamics?

- o Positive (1)
- o Negative (2)
- o No Impact (3)

Overall, do you believe that the change to a remote work environment will have a significant, lasting impact on your team's communication dynamics?

- o Yes, a significant, lasting change (1)
- o Yes, for a while, but I don't see it lasting (2)
- o No, I think when we return to onsite work, we will return to our previous dynamic (3)
- o No, our dynamic never really changed (4)

Are there any additional comments you would like to make concerning your team's communication dynamics in a remote work environment?

_____

_____

_____

_____

_____

Notes

1. Amanda J. Anderson, Seth A. Kaplan, and Ronald P. Vega, "The Impact of Telework on Emotional Experience: When, and for Whom, Does Telework Improve Daily Affective Well-being?" *European Journal of Work and Organizational Psychology* 24, no. 6 (2015): 882–97, https://doi.org/10.1080/1359432X.2014.966086.

2. Judith A. Holton, "Building Trust and Collaboration in a Virtual Team," *Team Performance Management: An International Journal* 7, no. 3/4 (2001): 36–47, https://doi.org/10.1108/13527590110395621.

3. Jessica R. Mesmer-Magnus et al., "A Meta-analytic Investigation of Virtuality and Information Sharing in Teams," *Organizational Behavior and Human Decision Processes* 115, no. 2 (2011): 214–25, https://doi.org/10.1016/j.obhdp.2011.03.002.

4. Brittany H. Martin and Rhiannon MacDonnell, "Is Telework Effective for Organizations? A Meta-Analysis of Empirical Research on Perceptions of Telework and Organizational Outcomes," *Management Research Review* 35, no. 7 (2012): 602–16, https://doi.org/10.1108/01409171211238820.

5. Brian E. Mennecke, Jeffery A. Hoffer, and Bayard E. Wynne, "The Implications of Group Development and History for Group Support System Theory and Practice," *Small Group Research* 23, no. 4 (1992): 524–72, https://doi.org/10.1177/1046496492234005.

6. Suprateek Sarker and Sundeep Sahay, "Understanding Virtual Team Development: An Interpretive Study," *Journal of the Association for Information Systems* 4, no. 1 (2003): 1–36, https://doi.org/10.17705/1jais.00028.

7. Radostina K. Purvanova, "Face-to-face versus Virtual Teams: What Have We Really Learned?" *The Psychologist-Manager Journal* 17, no. 1 (2014): 2–29, https://doi.org/10.1037/mgr0000009.

8. Ana Ortiz de Guinea, Jane Webster, and D. Sandy Staples, "A Meta-analysis of the Consequences of Virtualness on Team Functioning," *Information & Management* 49, no. 6 (2012): 301–08, https://doi.org/10.1016/j.im.2012.08.003.

9. Mesmer-Magnus et al., "A Meta-analytic Investigation of Virtuality and Information Sharing in Teams," 215.

10. Lena Waizenegger et al., "An Affordance Perspective of Team Collaboration and Enforced Working from Home during COVID-19," *European Journal of Information Systems* 29, no. 4 (2020): 429–42, https://doi.org/10.1080/0960085X.2020.1800417.

11. Jennifer Feitosa and Eduardo Salas, "Today's Virtual Teams: Adapting Lessons Learned to the Pandemic Context," *Organizational Dynamics* 50, no. 1 (2020), https://doi.org/10.1016/j.orgdyn.2020.100777.

12. Lori B. Ayre and Jim Craner, "Libraries Are Open; Only the Buildings Are Closed," *Collaborative Librarianship* 12, no. 1 (2020), available online at https://digitalcommons.du.edu/collaborativelibrarianship/vol12/iss1/4 [accessed 13 January 2021]; Bryan Birchmeier et al., "A Compilation of Short Takes on Working from Home," *Journal of Scholarly Publishing* 51, no. 4 (2020): 246–62, https://doi.org/10.3138/jsp.51.4.05; Cynthia Hudson-Vitale and Rebecca Waltz, "Caring for Our Colleagues: Wellness and Support Strategies for Remote Library Teams," *College & Research Libraries News* 81, no. 10 (2020): 494–97, https://doi.org/10.5860/crln.81.10.494; Ian A. Lane, Michelle G. Mullen, and Amanda Costa, "Working from Home during the COVID-19 Pandemic: Tips and Strategies to Maintain Productivity and Connectedness," *Psychiatry Information in Brief* 17, no. 5 (2020), https://doi.org/10.7191/pib.1145; Monica D.T. Rysavy and Russell Michalak, "Working from Home: How We Managed Our Team Remotely with Technology," *Journal of Library Administration* 60, no. 5 (2020): 532–42, https://doi.org/10.1080/01930826.2020.1760569.

13. Rysavy and Michalak, "Working from Home," 536.

14. Mark Frost and Sophia X. Duan, "Rethinking the Role of Technology in Virtual Teams in Light of COVID-19," paper presented at *Australasian Conference on Information Systems, Wellington, NZ, December 4, 2020*, available online at https://arxiv.org/pdf/2011.07303.pdf [accessed 13 January 2021].

15. Hudson-Vitale and Waltz, "Caring for Our Colleagues," 494–97.

16. Jeff Golia, "Exploring Video Collaboration to Improve Virtual Teams: A Case Study in North Carolina" (PhD diss., Colorado Technical University, 2020), ProQuest (2420970817), available online at https://www.proquest.com/dissertations-theses/exploring-video-collaboration-improve-virtual/docview/2420970817/se-2 [accessed 13 January 2021].

17. Darja Reuschke and Alan Felstead, "Changing Workplace Geographies in the COVID-19 Crisis," *Dialogues in Human Geography* 10, no. 2 (2020): 208–12, https://doi.org/10.1177/2043820620934249.

18. Peter Fernandez, "Through the Looking Glass: Envisioning New Library Technologies: Pandemic Response Technologies: Remote Working," *Library Hi Tech News* 37, no. 5 (2020): 21–23, https://doi.org/10.1108/LHTN-04-2020-0039; Rysavy and Michalak, "Working from Home."

19. K.D.V. Prasad et al., "Organizational Climate, Opportunities, Challenges and Psychological Wellbeing of the Remote Working Employees during COVID-19 Pandemic: A General Linear Model Approach with Reference to Information Technology Industry in Hyderabad," *International Journal of Advanced Research in Engineering and Technology* 11, no. 2 (2020), available at https://papers.ssrn.com/abstract=3599799 [accessed 13 January 2021].

20. Kim Parker, Juliana M. Horowitz, and Rachel Minkin, *How Coronavirus Has Changed the Way Americans Work* (Washington, DC: Pew Research Center Social & Demographic Trends Project, 2020), available online at https://www.pewsocialtrends.org/2020/12/09/how-the-coronavirus-outbreak-has-and-hasnt-changed-the-way-americans-work/ [accessed 22 July 2020].

21. Akash D. Dubey and Shreya Tripathi, "Analysing the Sentiments towards Work-From-Home Experience during COVID-19 Pandemic," *Journal of Innovation Management* 8, no. 1 (2020) https://doi.org/10.24840/2183-0606_008.001_0003

22. Rysavy and Michalak, "Working from Home."

23. Parker, Horowitz, and Minkin, *How Coronavirus Has Changed the Way Americans Work*.

24. Holton, "Building Trust and Collaboration in a Virtual Team."

25. Maria Charalampous et al., "Systematically Reviewing Remote E-workers' Well-being at Work: A Multidimensional Approach," *European Journal of Work and Organizational Psychology* 28, no. 1 (2019): 51–73, https://doi.org/10.1080/1359432X.2018.1541886.

26. Anderson, Kaplan, and Vega, "The Impact of Telework on Emotional Experience," 882–97.

27. Lane, Mullen, and Costa, "Working from Home during the COVID-19 Pandemic."

28. Birchmeier et al., "A Compilation of Short Takes on Working from Home," 246–62.

29. Ayre and Craner, "Libraries Are Open: Only the Buildings Are Closed."

30. Rysavy and Michalak, "Working from Home."

31. Charalampous et al., "Systematically Reviewing Remote E-workers' Well-being at Work."

32. Ortiz de Guinea, Webster, and Staples, "A Meta-analysis of the Consequences of Virtualness on Team Functioning."

33. Jennifer Ervin and Joann Keyton, "Group Decision-Making and Collaboration," in *Movements in Organizational Communication Research*, eds. J. McDonald and R. Mitra (Oxfordshire, UK: Routledge, 2019), 175–93, https://doi.org/10.4324/9780203730089-10.

34. Jennifer L. Gibbs, Anu Sivunen, and Maggie Boyraz, "Investigating the Impacts of Team Type and Design on Virtual Team Processes," *Human Resource Management Review* 27, no. 4 (2017): 590–603, https://doi.org/10.1016/j.hrmr.2016.12.006; Yvonne Cleary, Darina M. Slattery, and Madelyn Flammia, "Developing Strategies for Success in a Cross-Disciplinary Global Virtual Team Project: Collaboration Among Student Writers and Translators," *Journal of Technical Writing and Communication* 49, no. 3 (2019), https://doi.org/10.1177/0047281618775908.

35. US Department of Education, National Center for Education Statistics, *Digest of Education Statistics 2019* (Washington, DC: National Center for Education Statistics at IES, 2019), https://nces.ed.gov/pubs2021/2021009.pdf [accessed 6 June 2021].

36. "Basic Classification Description," The Carnegie Classification of Institutions®, based on 2016/2017 data, https://carnegieclassifications.iu.edu/classification_descriptions/basic.php [accessed 6 June 2021].

Scholarly Communication Competencies: An Analysis of Confidence among Australasia Library Staff

Danny Kingsley, Mary Anne Kennan, and Joanna Richardson

Through a nationwide survey of universities and research organizations in Australia and New Zealand, this article investigates the level of confidence that librarians working in scholarly communication have in their current competencies. The results show that, while respondents were generally confident across seven competency areas (institutional repository management, publishing services, research practice, copyright services, open access policies and scholarly communication landscape, data management services, and assessment and impact metrics), the majority combined their scholarly communication tasks with other roles. Challenges across the sector in updating skills and knowledge to keep abreast of current trends and developments were identified, with implications for improving professional development opportunities.

Introduction

The purpose of the academic library in the contemporary digital world continues to be characterized as supporting learning, teaching, and research activities.[1] The complexity of the world in which so many researchers operate is constantly changing, affecting the services libraries need to provide. Whether it is the redevelopment of relevant tools for tackling new avenues of research or innovative digital tools that facilitate communication, collaboration, and data analysis, researchers find themselves having to keep pace with a rapidly changing research lifecycle.[2] As a result, librarians, along with other institutional stakeholders who support research, are also having to adapt and change so they can tailor their services to better meet the needs of researchers across the organization.

Librarians in universities find themselves routinely working with academics in scholarly communication, in many cases providing training and support to both research students and academics on aspects of scholarly communication as diverse as research data management;

*Danny Kingsley is a Visiting Fellow at the Australian National Centre for the Public Awareness of Science ORCID https://orcid.org/0000-0002-3636-5939; email: danny@dannykingsley.com. Mary Anne Kennan is an Adjunct Associate Professor at Charles Sturt University ORCID https://orcid.org/0000-0003-1342-9853; email: maryanne.kennan@gmail.com. Joanna Richardson is a Scholarly Communication Consultant at Griffith University ORCID https://orcid.org/0000-0002-1871-6707; email: jprglobal46@gmail.com.

scholarly publishing; open access, institutional repositories, and other publishing platforms; copyright; and research impact metrics. While there is constant change, much of the work that libraries do in scholarly communication support is directly related to services librarians already offer. For example, research data management includes elements of metadata work, selection and deselection of data for deposit, and providing a catalogue of the institutions' research data:[3] that is, what Andrew Cox has referred to as new work that is similar to existing library work.[4]

Although some librarians, particularly in North America, hold faculty status, many do not, including those in Australia and New Zealand (Australasia). Thus librarians, in addition to needing to keep up with a constantly evolving scholarly communication environment, sometimes have to work with people who do not understand or recognize their expertise in this area. This reality places librarians in the position of having to learn constantly evolving complex scholarly communication skills and provide services to, and sometimes train, highly skilled researchers who may view librarians as less credentialed or capable.[5]

The purpose of this study is to increase understanding of the scholarly communication support work currently undertaken in Australasian universities and other research institutions, particularly in their libraries. For the purposes of this study, we define scholarly communication roles as roles that include: institutional repository management, publishing services, research practice, copyright services, open access policies and the scholarly communication landscape, data management services, and assessment and impact metrics. We focus on the support respondents experience in their roles, the confidence staff have in the knowledge and skills required to work in scholarly communication, the formal qualifications respondents have, and the training and professional development they have undertaken. This understanding will enable the following:

- Identification of areas where confidence is low in scholarly communication competencies;
- Identification of gaps in education and training; and
- Increased understanding of scholarly communication knowledge and skills requirements to inform future education and training provided by employers, trainers, and educators.

Literature Review

Technological advances and changes in social and cultural mores have led to changes in the way research is practiced. Research has become more distributed and collaborative and technological tools are constantly being developed to assist in all phases of the research lifecycle.[6] As the nature of research is evolving, so too is the complexity of the data-intensive world in which many researchers operate. In this context of constant change, tools for tackling new avenues of research or innovative digital tools that facilitate communication, collaboration, and data analysis, researchers find themselves having to keep pace with a rapidly changing research lifecycle. The European Commission Report on the Consultation Workshop Skills and Human Resources for E-Infrastructures within Horizon 2020,[7] for example, has recognized the need for researchers to access not only suitable e-infrastructures but also expertise, given the rapid developments within the research environment. In 2016, Bianca Kramer and Jeroen Bosman[8] undertook an extensive survey of the use of tools by researchers. Of the 20,663 responses, the researchers found that the average number of tools reported per person was 22. Another key finding from their work was that researchers not only used many tools, but they also used them in combination. Wolski, Howard, and Richardson have also highlighted the "sheer number and complexity" of tools used by researchers.[9]

As the nature of research changes, so do the ways in which it is disseminated, hence the importance of scholarly communication. The ACRL 2019 report, *Open and Equitable Scholarly Communications: Creating a More Inclusive Future*,[10] states: "scholarly communications begins with the process of creating the work itself (research, writing, collaboration); continues through production, distribution, and evaluation of that work; and includes its sustainability." Scholarly communication underpins the connectedness among scholars and disciplines.[11]

Library support for research, including scholarly communication, has been well documented in the literature. For example, a 2012 analysis of job announcements identified "Scholarly Communications Librarian" as a new role for health sciences.[12] These library roles in scholarly communication are evolving; so too are how librarians support researchers. Jeremy Atkinson, for example, has reported on ways in which academic libraries support research in the context of the research lifecycle.[13] Corrall, Kennan, and Afzal examined bibliometric and research data services.[14] Subsequently, the literature has tended to examine support specifically for the research data lifecycle, with a focus on research data management and data literacy,[15] and some of the ways such support can be seen to be transforming academic libraries.[16] A recent paper looking at traditional and emerging roles for librarians in Canada found that most librarians were confident in their positions but with most confidence in traditional areas such as supporting teaching and learning and less confidence in emerging areas such as research support and scholarly communication.[17]

Research support and scholarly communication are intertwined. To support research, librarians need to have a good understanding of all the components of scholarly communication. Research has reported on the opportunities for libraries to support scholarly communication—not only generally[18] but also in a targeted manner.[19] In member institutions of the Association of Research Libraries (ARL), Sandy, Millian, and Hudson-Vitale have reported a 49 percent rise in the number of scholarly communication librarians between 2012 and 2017, with aspects of the role reported as currently core, emerging, or auxiliary.[20] They conclude that more needs to be done to communicate the value of these skills and competencies to researchers and librarians moving forward.

Supporting scholarly communication has been accompanied by a significant shift in the skills required of librarians. In 2012, a major report from Research Libraries UK identified skills gaps in nine key areas.[21] A more recent work that focused on transitioning library services to support scholarly communication noted, "To successfully address the current needs of a forward-thinking faculty, the academic library needs to place scholarly communication competencies in the toolkit of every librarian who has a role interacting with subject faculty."[22] Another description of these changing requirements is that of "the librarian with more": that is, one who combines traditional library skills with added knowledge of working with and manipulating data.[23]

There have been numerous attempts to define the competencies required of library staff working within the area of scholarly communication, including bibliometric work,[24] research data management,[25] and scholarly publishing and repository services.[26] More broadly, this area has been addressed through the development of lists of scholarly communication competencies by major library and information science (LIS) organizations: for example, the Association of College and Research Libraries (ACRL),[27] Confederation of Open Access Repositories,[28] and NASIG (formerly the North American Serials Interest Group, Inc.).[29] Australian Library and Information Association (ALIA), in their foundation knowledge and skills recommendations, has only explicitly mentioned scholarly communication since December 2020.[30]

To support research and scholarly communication, librarians need to be equipped with scholarly communication competencies.[31] While it would be useful if an introduction to these were provided as a part of the formal education and training of librarians, a 2017 UK study of the background of people working in scholarly communication showed that most of these skills were obtained on the job.[32] A 2019 literature review by Jaya Raju stated there was "compelling evidence to suggest that LIS schools globally are falling short of meeting academic library knowledge and skills requirements in the fast-evolving area of scholarly communication."[33]

In her survey of impostor phenomenon and skills confidence among scholarly communication librarians in the United States, Erin Owens[34] found that confidence in skills varied across a range of competencies as defined by NASIG.[35] She has suggested that, based on the high negative impact of respondents having too many responsibilities, combined with lack of applied practice, the Library and Information Science (LIS) profession needs to pay more attention to developing opportunities for hands-on applied training.

There have been some initiatives to address this challenge. For example, Craft and Harlow[36] have documented a scholarly communication training program implemented at University of North Carolina Greensboro (UNCG) Libraries that not only delivers information to the research community, including graduate students, but also improves the understanding of scholarly communication among library staff. UNCG has adopted a modular approach, which covers four main topics: open access, research identity management, scholarship metrics, and scholarly communication basics. Other libraries and library affiliate organizations have also developed informal training modules to assist practicing librarians in updating their scholarly communication skills, such as the Australian 23 Research Data Things[37] and the University of Melbourne's 23 Research Things.[38]

Given the perceived current lack of required technical skills in librarians operating in a data-intensive research environment, it has been proposed to employ people in scholarly communication roles who bring other qualifications, experience, and skills to the library setting.[39] This was also mentioned in a paper looking at research into trends in liaison librarianship, where a team approach with different backgrounds and skills was advocated.[40] Sewell reports the trend of employing people with PhDs in scholarly communication roles has been proposed by some as a solution,[41] although not necessarily as the best one.[42] However, Bell and Kennan, in discussing the involvement of librarians in the digital humanities, propose that this foci on bringing experts with additional knowledge into the library, rather than focusing on upskilling librarians in emerging knowledge and skill requirements, relies on an outdated "service" model of librarianship.[43] They propose that education and training for librarians should be more responsive to emerging changes and better equip librarians to act as partners and collaborators in research and scholarship. This position was strengthened with a recent Research Libraries UK report that argued research libraries should become active participants and leaders in the production of scholarly research.[44]

In 2017, Hollister[45] reported that "the scholarly communication course is offered in about 15% of the American Library Association-accredited Master of Library and Information Science (MLIS) programs. A review of schools' syllabi shows these courses offer a variety of overlapping topics that align well with the evolving research lifecycle needs of scholars and their institutions." This is a relatively low proportion of MLIS courses. In their review of implementing Open Science policies in a university library in Finland, Jarmo Sarrti and colleagues advised that "The development of new open science and research support ser-

vices, infrastructures and tools would also require qualifications beyond those of traditional library skills."[46] In the same year, Bonn, Cross, and Bolick observed that formal training on scholarly communication topics is uncommon in LIS courses; as a result, early-career practitioners tend to feel underprepared for work in this area.[47] The authors suspect that scholarly communication topics are also rarely taught explicitly in LIS courses in Australasia although are aware that some courses cover specific areas of scholarly communication such as Research Data Management, Digital Curation, and Research Methods. One of the objects of this study was to identify how respondents felt that their courses had prepared them for scholarly communication roles.

To understand the scholarly communication work undertaken in libraries in Australasia, an online survey of people working in scholarly communication was conducted.

Methods

An online survey was employed, as it would enable data collection from the geographically dispersed population of people working in scholarly communication around Australasia. For the purposes of this study, we define scholarly communication roles as roles that include the following areas: institutional repository management, publishing services, research practice, copyright services, open access policies and the scholarly communication landscape, data management services, and assessment and impact metrics (more detail below).

The three researchers worked as a team on each area of survey development. All three authors have lengthy practitioner experience in academic libraries, as well as academic backgrounds with multiple publications including scholarly communication. Two have faculty LIS teaching experience, one very recent; one has recently held a senior position in scholarly communication and faced significant challenges recruiting staff with scholarly communication competencies. It is this wide experience that has created their interest in scholarly communication skill development.

Questions in the survey were compiled using a number of sources. A recent survey titled "Impostor Phenomenon and Skills Confidence among Scholarly Communications Librarians in the United States" provided a starting point.[48] The original intention was to extend this research to Australasia to compare similarities and differences with the United States. However, close examination of the survey used by this US study revealed the following:

- The competency section was, in fact, our primary area of interest.
- Some areas of the study were not relevant in the Australasian context.

Thus, the focus of this paper is on aspects of the level of confidence that librarians working in scholarly communication have in their current competencies. Amendments were made to the aims and survey questions to develop a locally appropriate study. The focus is on questions of confidence in the core competencies of scholarly communication and the education and training background of the respondents, the latter to understand how respondents develop confidence in these core competencies. Questions related to impostor phenomenon were not included in this study. The demographic questions in the original impostor phenomenon study[49] were also not directly relevant to the Australasian community, so these were adapted. We included a question about the institution the respondent was working in. This potentially identifying information has only been used to understand the range of responses across institutions in Australasia and is not reported in the study or linked to any of the analyses we subsequently undertook.

Questions about confidence in competencies from Owens' study[50] were used with permission and some minor adaptations. In response to feedback after piloting the questionnaire, the options for the "reasons for having low confidence" were adapted to be shorter, with some responses from the original survey conflated, some removed, and others reworded to ensure clarity in the Australasian context. This reduced the list from 10 options to six.

Owens' study[51] used the NASIG[52] competencies as the basis for the questions. The research team undertook a comparative analysis of the NASIG and COAR (Confederation of Open Access Repositories) competencies[53] to inform their assessment of the competencies for inclusion in this study. No amendments were made to the sections on institutional repository management, publishing services, data management services, and personal strengths. We removed one of the copyright competencies ("Awareness of judicial environment"), as the language is not relevant in our context, and reworded the remaining competencies to ensure they could be recognized by the Australasian audience. Minor amendments were made to the wording of one of the competencies in assessment and impact metrics. We also chose to create two new sections: 1) open access policies and scholarly communication landscape, which consisted of five competencies that appeared on the COAR list but not the NASIG list; and 2) research practice, which consisted of three competencies similarly from the COAR list and three developed by the research team. We chose not to include any reference to Open Educational Resources because, in the Australian context, they relate to the learning and teaching domains rather than research support. Our analysis of the comparison is included in our online dataset.

The survey used Qualtrics software. Once the survey was approved by the Australian National University's (ANU) ethics process, the research team uploaded a webpage about the project online[54] with some information about the survey and a link to the participant information sheet, the survey instrument, and a list of the questions. The survey was piloted by two experts in the field of scholarly communication in Australia and the UK, and pilot feedback confirmed the terminology of the instrument, resulted in a number of minor clarifying changes, and assisted in confirming face and content validity. The ANU ethics panel required that no question would be compulsory; thus, not all respondents answered all questions. As a result, a pre-analysis was undertaken for each of the questions to determine the number of responses for each question. This analysis is included in our online dataset.

Participants were recruited through communication mediums used by the target cohort, including email lists, discussion groups, Slack channels, Twitter, and two relevant newsletters, one of which is distributed by the Council of Australian University Librarians and the other by the Australasian Open Access Strategy Group (now Open Access Australasia). To encourage participation, the research team offered a contribution to Kambri Scholars Program for each completed survey; as a result, a total of $500 was donated. The survey period was extended to increase the number of responses from institutions where there had been either a single or no response. Recruitment emails were sent directly to librarians with roles listed as "research support" or similar, using publicly available email addresses on university web pages. The first completed response was received on 21 October 2020; the last was submitted on 3 December 2020.

In all, 160 valid responses were received and analyzed using Excel and descriptive statistics (for the quantitative questions) and NVivo and manual thematic coding (for the qualitative questions). Each member of the team took responsibility for analysis of different quantitative questions and coding of the qualitative questions, after which the team came together and

confirmed each other's work. Initial analysis of the confidence in competency areas included a set of specific tasks for each competency area from matrix questions. Initially, the results from these questions were individually analyzed for each competency area. These charts demonstrated the depth of information available from these sections of the survey. However, to conduct an analysis of each competency area in this way would be extremely detailed. It may be potentially useful for future decision making regarding future needs for education and training topics. However, given the broader purpose of this study, we analyzed the level of confidence the responses showed *across* a competency area by adding together all of the tasks listed in each competency area and then charting the total confidence for each competency area. Further information, including the survey instrument, is available in our online dataset.

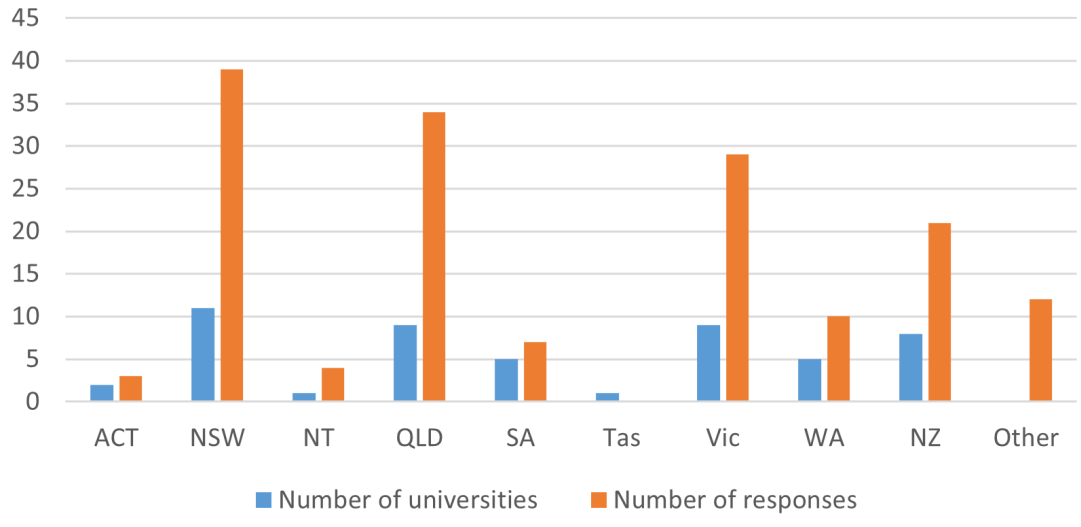
Results

Demographics

Of the 160 valid responses, 136 (85%) were from Australia and 24 (15%) were from New Zealand (NZ). Of the Australian responses, 126 were from universities and 10 were from other organizations that conduct research, such as hospitals and health services, government departments, and the National Library. Australian responses came from 37 of a potential 43 universities. Three Australian universities recorded more than 10 responses each, while seven recorded only one respondent. Responses came from seven of the eight New Zealand universities and two other New Zealand research institutions. Two responses recorded no location. We considered analyzing whether there were any major differences between the Australian and New Zealand responses to the confidence in competencies questions. After an initial analysis of the data management responses, where it was possible there would be some difference because of the developments in Australia initially fostered by the Australian National Data Service (ANDS) and more recently by the Australian Research Data Commons (ARDC),[55] there were no clearly identifiable differences so the countries were considered in aggregation. A summary of the location of responses is provided in figure 1 below.

In Australia, in terms of the Higher Education Worker (HEW) classification as defined by the *Higher Education Industry—General Staff—Award 2020*,[56] slightly greater than one-third

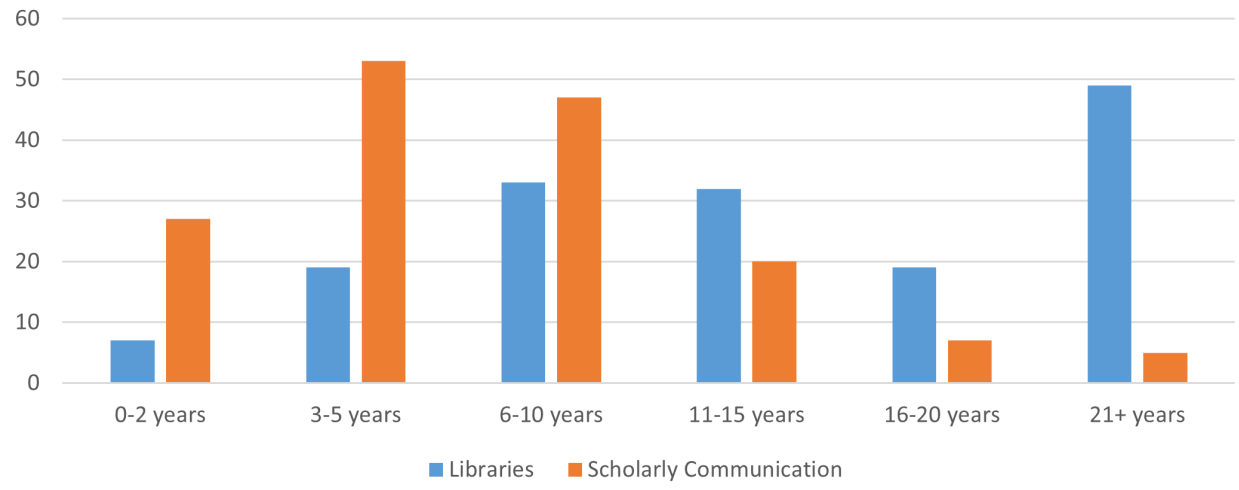
FIGURE 1
Summary of Responses by Location



of respondents (35.1%) were at HEW6, with very few (6.7%) at a lower level. The authors are all from Australia and, when preparing the survey, asked New Zealand colleagues how to structure the employment levels for New Zealand respondents. However, these were not answered consistently, with the greatest response being *Not applicable*. One respondent from New Zealand noted at the end of the survey: "Just a note on pay—the scales presented were unfamiliar, so I was not able to indicate my pay band." For this reason, these results do not include any detail on New Zealand respondents' employment levels.

Almost one-third (30.8%) of respondents had been working in libraries for more than 20 years. Slightly greater than one-third (37.2%) had been working for 10 years or less. However, the distribution is considerably less uniform in terms of years spent working specifically with scholarly communication. One-third of respondents (33.3%) had worked between 3 and 5 years. Only 3.1 percent of staff with more than 20 years of library experience had been working in scholarly communication. Overall, nearly 80 percent of respondents had worked in scholarly communication for 10 years or less. In summary, the cohort represented a great level of experience in libraries, but experience in scholarly communication was mostly much more recent, as represented in figure 2.

FIGURE 2
Distribution of Responses by Time Working in Libraries versus Time in Scholarly Communication

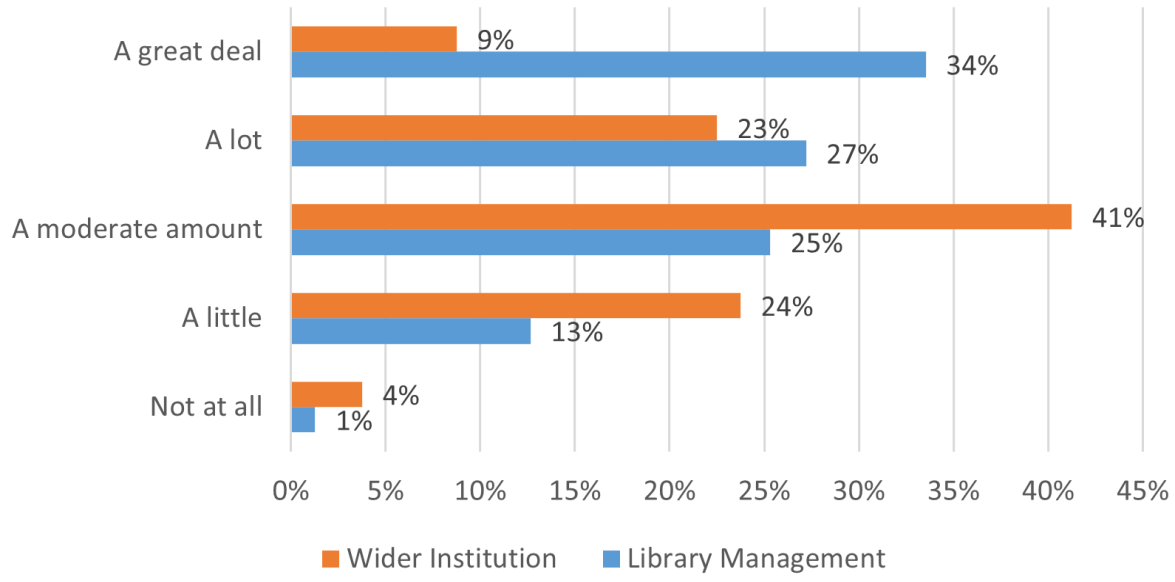


Nearly one-fifth (19.4%) of respondents reported spending 100 percent of their time on scholarly communication. Of the remaining approximately 80 percent, 82 respondents (or 80.4%) reported that scholarly communication was an important secondary responsibility in their position. For 19.6 percent, it was only a small part of their role. Overall, the level of responsibility for supporting scholarly communication was quite high among the respondents.

Support for Scholarly Communication

Staff were asked how well they felt that their library management, as well as the wider institution, supported them in their scholarly communication role. The results are represented in figure 3 below. Regarding support by library management, there were 158 responses, with an

FIGURE 3
Support for Scholarly Communication by the Wider Institution versus Library Management



additional 34 comments. On a Likert scale ranging from *A great deal* to *Not at all*, 53 respondents (33.54%) felt that library management supported them *A great deal*. Scores for *A lot* and *A moderate amount* were less but similar: 27.2 percent and 25.3 percent, respectively.

Regarding support by the wider institution, there were 160 responses, with an additional 31 comments. A total of 66 respondents (41.3%) felt that the wider institution provided moderate support. Scores for *A lot* and *A little* were less, but similar: 22.5 percent and 23.8 percent, respectively. Unlike support by library management, respondents ranked support by the wider institution extremely low for the value of *A great deal*: 8.8 percent.

A lack of knowledge about, and understanding of, scholarly communication work by library management is a repeated theme among the submitted comments. In some cases, there are inconsistent levels of support within library management. Interestingly, this contrasts quite sharply with other libraries in which staff feel actively supported by library management.

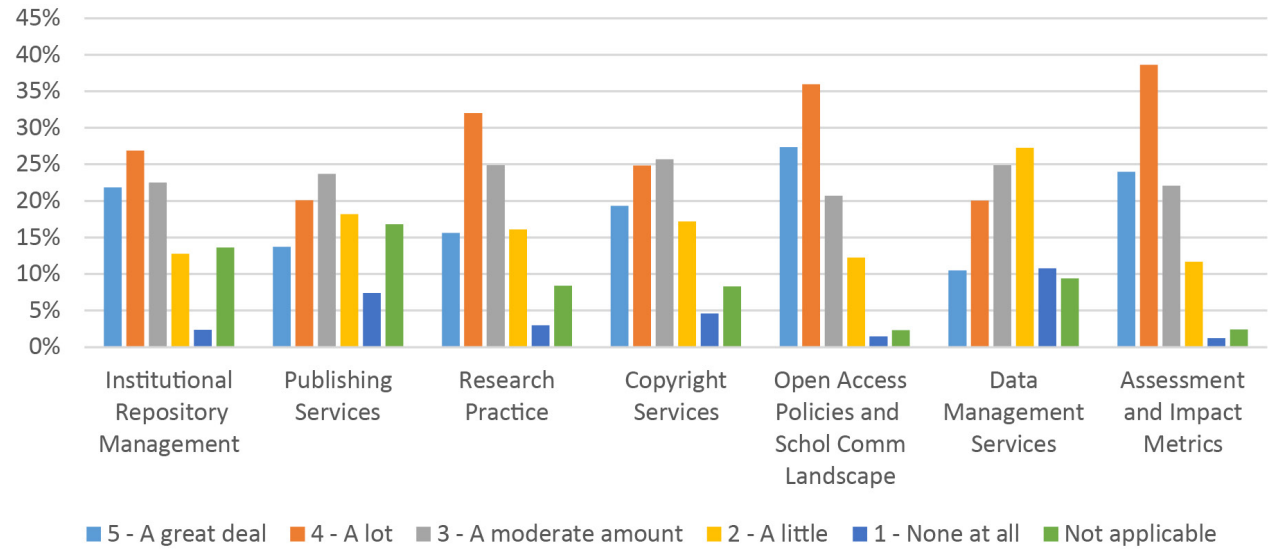
Comments about support from the wider institution indicate that, in some cases, a particular library's strategic goals and direction are aligned with those of the university, which in theory contextualizes any discussion about staff's roles and support. Several respondents, however, have equated library management with university management in terms of a perceived lack of interest and understanding of scholarly communication work by library staff. Two responses directly or indirectly allude to the Research Office, with which they felt there clearly could be a better relationship.

Confidence in Competencies

As described in the Method section, the competency areas were analyzed across the responses for each task, and this information is represented in figure 4.

By considering these comparative graphs across the competency areas, there are some insights that can be gleaned. It is not unreasonable to consider that library professionals working competently in a particular competency area would have either *A great deal* or *A lot*

FIGURE 4
Confidence in Competency Areas



of confidence in it. Looking at these combined confidence levels, however, only two competency areas had the majority of confidence levels as *A great deal* or *A lot*: open access policies and scholarly communication landscape (27.3% + 36.0% = 63.3%) and assessment and impact metrics (24.0% + 38.6% = 62.6%). Three competency areas showed lower confidence levels: institutional repository management (21.8% + 26.9% = 48.7%), research practice (15.6% + 32.0% = 47.6%), and copyright services (19.3% + 24.8% = 44.1%).

There were two competency areas where the positive confidence levels were considerably lower: publishing services (13.7% + 20.1% = 33.8%) and data management services (10.5% + 20.0% = 30.5%). The tasks listed under publishing services are more specialized and less aligned with traditional library tasks, and include *Knowledge of, and experience with, publishing platforms*; *Knowledge of, and experience with, the full life cycle of publishing*; *Possess a basic knowledge of relevant metadata schemata*; and *Collect and disseminate assessment metrics*. There were also some technical tasks, including *Perform system administration and programming* and *Collect and disseminate assessment metrics*. In many cases these roles are conducted by specialists and are not conducted by traditional academic librarians; therefore, it could be expected that these would be areas in which library professionals had less confidence. However, the low figure for data management services is potentially surprising, because there has been a concerted effort to improve the data management services across the sector since the former Australian National Data Service (ANDS) was established in 2008 and later subsumed into the Australian Research Data Commons (ARDC).

Reasons for Low Confidence in Competencies

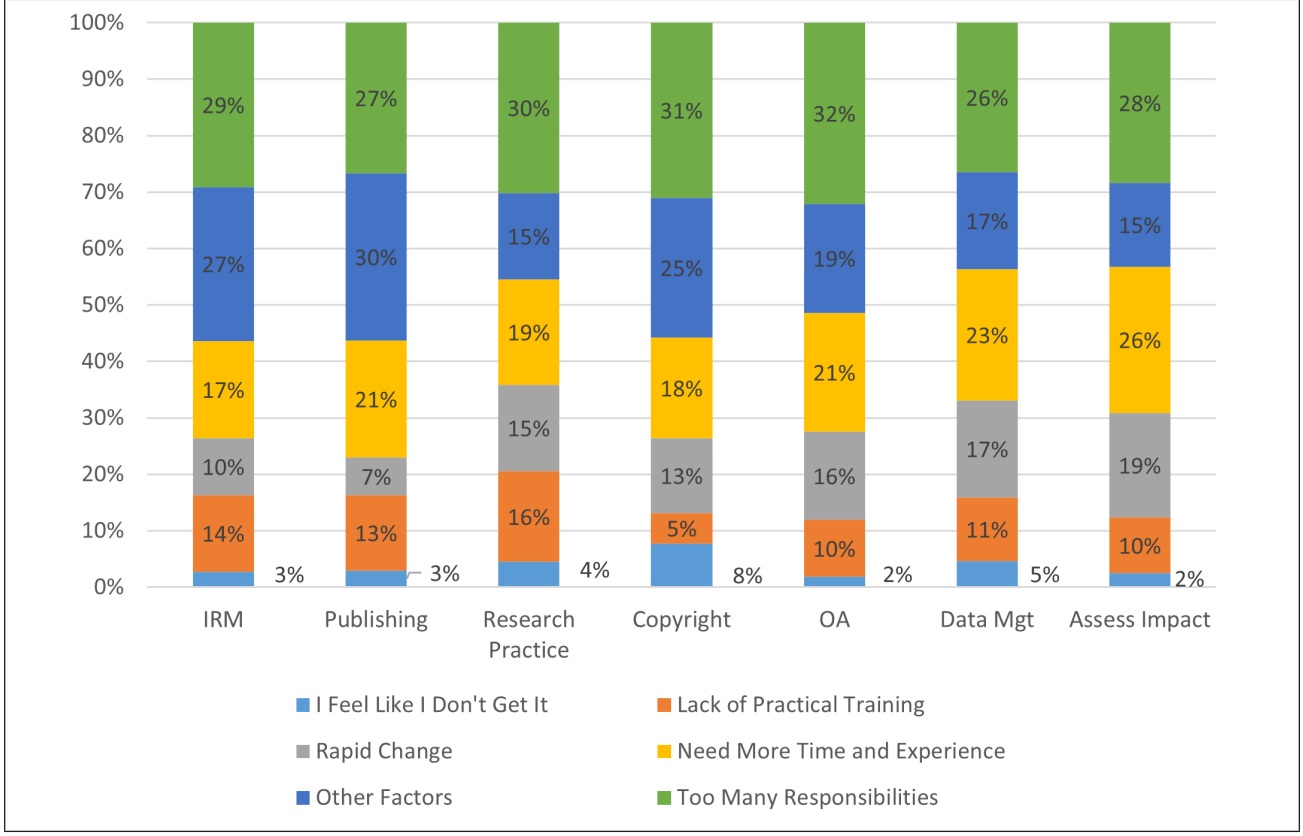
The people who were responding to the questions about competencies have responsibilities for this area of work; thus, it is valuable to explore further those people who do not feel confident in a particular task. Users who indicated *Moderate*, *Little*, or *No confidence* on any task in a competency area were then asked to consider factors affecting their confidence level. Users could select multiple suggested factors and could also add other influences ("Comments"). For the convenience of reporting, the six full-sentence factors suggested to survey participants have been assigned short descriptive names (see table 1).

TABLE 1
Short Names Assigned to Factors Impacting Confidence

Short Name for Reporting	Full Response Seen and Selected by Respondents
Need More Time and Experience	I am still new to working with the topic(s) and need more time/ experience/training
Too Many Responsibilities	I have too many responsibilities and have not been able to devote enough time to the topic(s)
I Feel Like I Don't Get It	I have an insufficient understanding of the key concepts of the topic(s); I sometimes feel like I "don't get it."
Lack of Practical Training	I need practical/hands-on training that I have been unable to find, although I have conceptual understanding of the topic(s)
Rapid Change	I am unable to keep up with the rapidly changing information, standards, and/or practices in the topic(s)
Other Factors	Other factors (please describe)

Among six of the seven competencies, the one factor that was selected as most negatively impacting respondents' confidence levels was *Too Many Responsibilities* (see figure 5), with scores ranging between 26 and 32 percent. High impact was also attributed to two other factors: *Need More Time and Experience* and *Other Factors* (as identified in the comment box). In general, very few respondents felt a negative impact from an insufficient understanding of key concepts (in other words, *I Feel Like I Don't Get It*), with low scores ranging between 2 and 8 percent. Lack of practical training scored considerably less than the other factors (specifi-

FIGURE 5
Factors Averaged across Competency Areas



cally, between 10 and 16 percent), which has implications for the areas where training might be needed to build competency.

Each of the competency areas included a wide range of competency tasks. Other factors recorded in text by respondents for competencies for which they answered "moderate, little, or no confidence" were that the particular scholarly communication competency was not a core part of their role or was an area in which they do not regularly contribute or for which they hold less responsibility. Similarly, a number of respondents reported that, as they were supervisors or managers, they had a general overview but did not have detailed, practical, or hands-on experience or understanding. In some areas, particularly data management, assessment and impact measurement, copyright, and systems administration and other technical roles, respondents reported that these were roles conducted by specialists who are often in other parts of the university, such as the Research Office or Information Technology or legal department.

In a few cases, respondents reported that the particular competency was not relevant in their organization or were more critical, reporting that their university had outdated policies that needed changing or that their institution was not very engaged in particular scholarly communication fields (institutional repositories, copyright services, open access, research data management). These comments emphasize that, in Australasian universities, there is not something that may be called an overall *scholarly communication role*; instead, there are many roles in which people may become involved in one or more aspects of scholarly communication.

Qualifications

Library or Information Science Qualification

There are many ways by which respondents might learn scholarly communication competencies. For example, they might be covered in the qualifications held by respondents, such as a library and information studies (LIS) qualification. Nearly 9 out of 10 (88%, n = 141) participants held an LIS qualification, and a further 1.8 percent (n = 33) of participants were studying for such a qualification. Only 10 percent (n = 16) did not hold an LIS qualification. The initial call for respondents included anyone working in scholarly communication; this potentially encompassed people working outside the library sector (for example, in Research Offices).

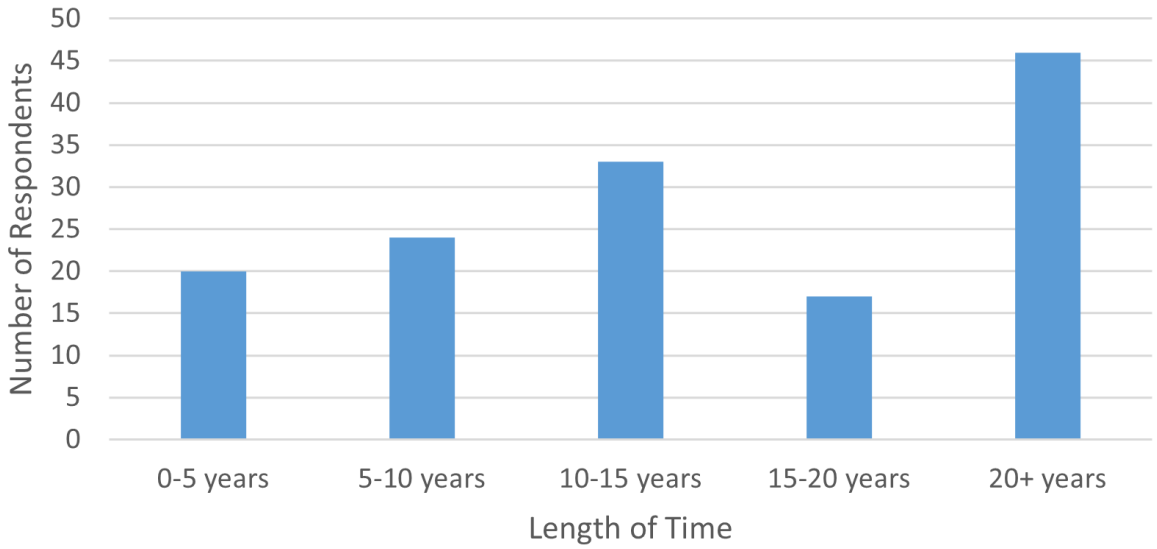
Of those who answered the question about the length of time they had held their LIS qualification (n = 140), 96 respondents (nearly 60%) had held it for more than 10 years, as shown in figure 6.

Participants who have an LIS qualification were asked if their LIS qualification equipped them with the knowledge required to work in scholarly communication. Of the 122 respondents to this question, a slight majority answered *No* (57.4%, n = 70) and 92 took the opportunity to comment. Twenty-five respondents were critical that scholarly communication knowledge and skills were not included in their degree at all, and they did not feel well equipped when taking on such a role. For example:

> My LIS qualification barely touched on scholarly communication issues …

> My qualification … felt overly basic and general, not offering much depth at all about the complexities of scholarly communication, emerging platforms, the changing landscape in university libraries, etc.

FIGURE 6
Length of Time LIS Qualification Held



> The course itself however didn't teach me much/anything about what I actually do at work. It's been a steep learning curve.

And one shared that they felt this was an ongoing issue:

> My experience with work placement students is that they do not get great insight into scholarly communications. This is a crying shame, not just for their own professional development, but for the industry. We need graduates who are aware of the big issues and who have knowledge in emerging and current issues in Scholarly Communications. Just look at the impact COVID had on publishing!

Other *No* respondents offered reasons, such as that their qualification was obtained too long ago (n = 16) and the scholarly communication landscape is constantly changing, the implication being that what is learned in a course at one point in time may change very quickly.

> Scholarly Communication wasn't covered in my course at all. Admittedly, I finished my course in 1996.

However, some *No* respondents and most of the *Yes* respondents acknowledge the important role of their LIS qualification in providing a foundation to a discipline: for example, enabling them to "learn how to learn" or to gain a position that in turn enabled continuous learning:

> My qualification helped me to gain the positions I've held, and these positions have provided me with the training and knowledge in the area of scholarly communication. So while I don't believe my studies gave me the direct knowledge, they were still an essential part of my development in this area.

Other Qualifications

Other qualifications may also provide knowledge about, and competencies in, scholarly communication. More than 8 out of 10 (81.3%, n = 130) of respondents had a qualification other than LIS, with 1.9 percent (n = 3) working toward one, and only 16.9 percent (n = 27) not having an additional qualification. Of those who had an additional qualification, the majority had postgraduate degrees, either a graduate diploma or master's degree (50.7%, n = 34) or a doctorate (14.4%, n = 21) (see figure 7 below).

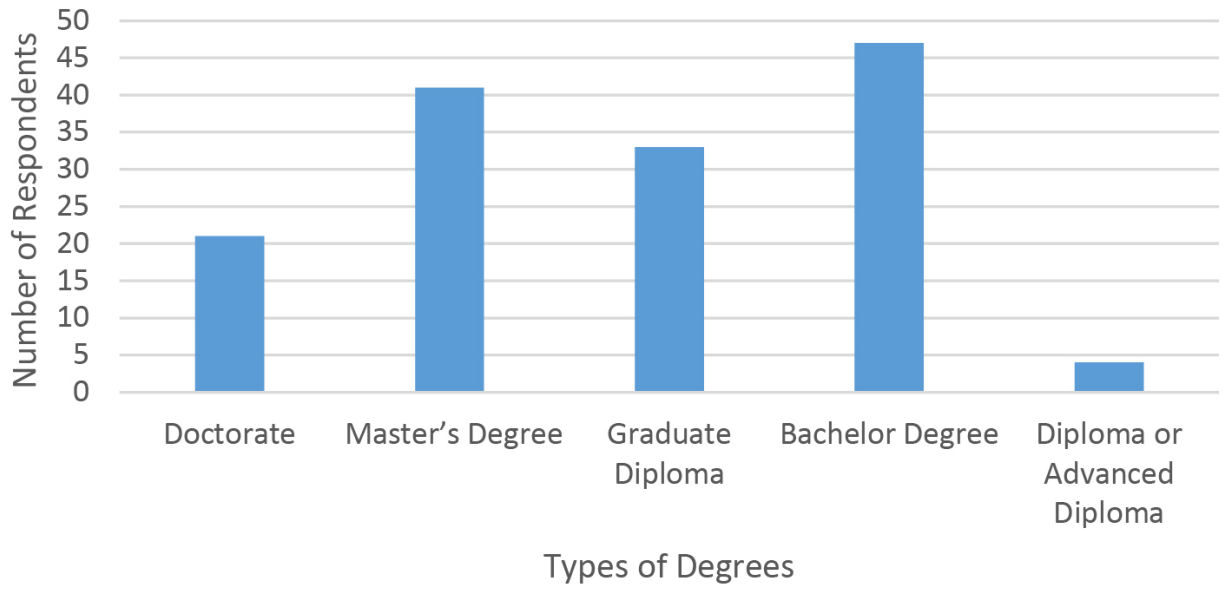
These respondents were also asked if their other qualification had equipped them with the knowledge required to work in scholarly communication; 67.2 percent (n = 84) said *Yes*, and 32.8 percent (n = 41) said *No*. As there were a range of disciplines recorded including arts, education, and humanities; health informatics and nursing; business and information systems; and science and mathematics as well as a range of degree levels, there was a wide variety of responses as to whether these degrees had assisted them in their scholarly communication roles. Whereas some people who had done research degrees noted that these had been useful, others observed that the usefulness was often limited to a specific discipline. One research qualified respondent noted:

> I understand first-hand the scholarly writing and publishing process, although I have learned more about research metrics and journal rankings as a professional staff member than I did when I was research active.

And another:

> Part of the problem librarians face in this area is the issue of universities being hierarchical institutions where the PhD is a piece of cultural capital that is often necessary to be taken seriously by academics. I don't think my PhD will make me a better librarian but it will make them think I am a better librarian!

FIGURE 7
Non-LIS Qualifications



Respondents with degrees in education noted that these helped them with communication and designing and teaching scholarly communication workshops.

In reflecting on the role of their LIS and other qualifications in their scholarly communication work, many also observed that a qualification was not the end of learning. Furthermore, they stressed the importance of learning throughout their employment, through both formal professional development and informal learning:

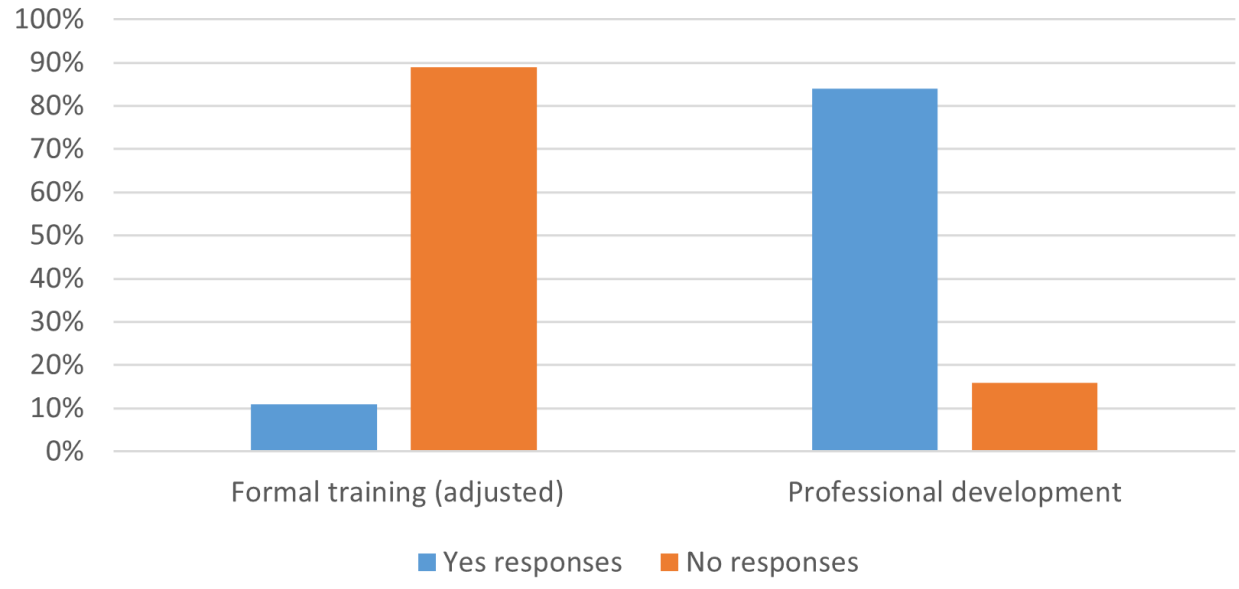
> It is an evolving and changing landscape where a qualification does not necessarily equip you with the knowledge required. To be professionally active in this area and to continuously build my knowledge are required to effectively work in the current scholarly communication environment.

Training and Professional Development

The survey asked three questions about knowledge and skills acquisition beyond the respondents' degrees. These were separated into questions about *formal training*, *professional development*, and *self-directed learning*. The responses to these three methods of skill acquisition varied considerably; figure 8 below demonstrates the variance between *formal training* and *professional development*.

While there was some descriptive text to explain each of these categories, the respondents appear unclear about the distinction between them, with people nominating "23 research things" (a self-directed training concept) as *formal training* rather than *self-directed learning*. Similarly, another respondent nominated Leiden University's CWTS course on Bibliometrics and Scientometrics for Research Evaluation as *professional development* rather than *formal training*.

FIGURE 8
Responses by Methods of Skills Development



Formal Training

The responses to the question about whether respondents had formal training related to the scholarly communication aspects of their jobs were interesting. Despite there only being 160 respondents, there were 161 responses because one person answered both *Yes* and *No* to this question. Of these, there were 32 *Yes* responses (20% with 23 comments) and 128 *No* responses (80% with 5 comments). While this is already heavily weighted to a lack of formal training received, further analysis of the comments identified that the situation was more marked.

The question defined *formal training* as "courses with a structured plan that have some formal recognition upon completion, e.g., participation certificate or certification" and is within the definition of scholarly communication of the study. However, 14 of the 23 comments related to a *Yes* response referred to a course that would not fit the defined criteria. For example, four people described courses that are not within the areas of scholarly communication as defined by this study, such as the Lean Six Sigma Green Belt in project management, or the Digital Preservation Coalition's Novice to Know-How course. Therefore, of the 32 people who had responded *Yes*, at least 14 are not in actuality formal training or certification courses. This amends the proportion of responses to 18 *Yes* (11.3%) and 140 *No* (88.7%). It is highly probable that some of the respondents who chose *Yes* but did not comment would also have had in mind courses and/or training that does not meet the *formal training* criteria for this survey.

Professional Development

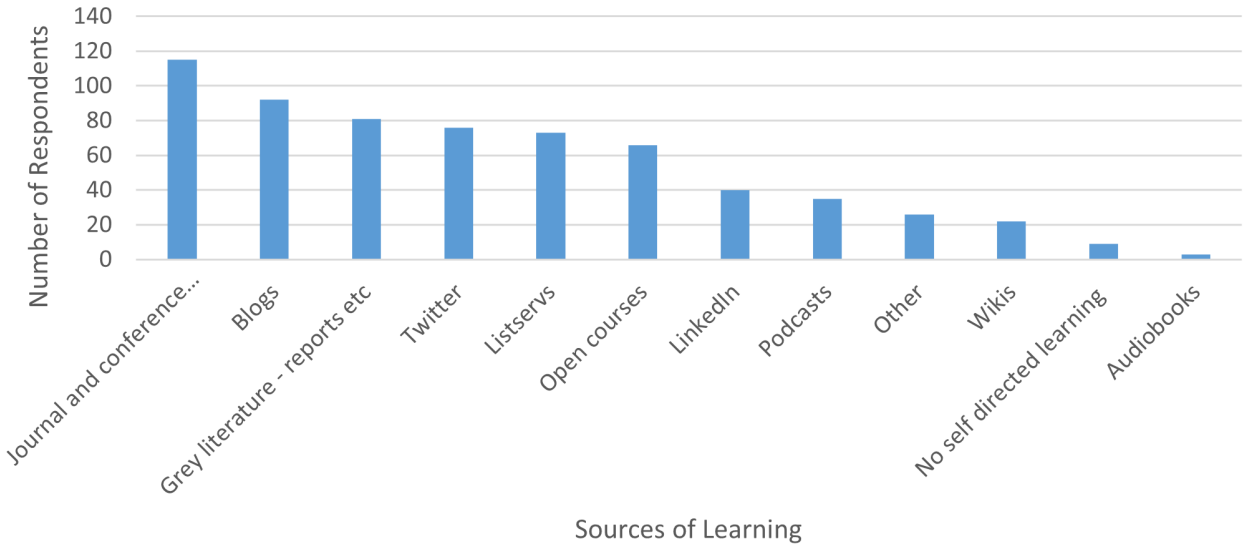
There were multiple responses that identified the value of professional development for contextualizing the work that staff were doing, such as: "Webinars have also been a useful way of understanding the broader context for scholarly communication issues, rather than just what is happening at my own institution" and "[I] Attended eResearch Australasia conference—was relevant and allowed me to gain a broader understanding of current issues and opportunities."

Multiple people commented on the value of conferences from the perspective of networking as well as developing and maintaining a community of practice. In the question about professional development, the respondents volunteered a range of information. Conferences were specifically mentioned in 32 of the 95 comments, with the Research Support Community Day and the CAIRSS Research Repository Days being mentioned multiple times. The most mentioned form of professional development was webinars, appearing in nearly half of the comments. This might be partly because of the nature of work during 2020 prior to the survey. Organizations that specifically exist to support scholarly communication were named by multiple respondents: Open Access Australasia[57] and ARDC. Several people also identified specific library training offered by professional associations.

Self-Directed Learning

The responses to the question about self-directed learning asked respondents to indicate what types of learning they are currently interacting with; participants could tick as many as were relevant. These responses are described below in figure 9, indicating that *journal and conference papers* are the most used, followed by *blogs* and *grey literature*.

FIGURE 9
Types of Self-Directed Learning in Scholarly Communication



There were considerably fewer comments associated with this question, but of the 24 people who did comment, nine mentioned webinars and two mentioned conferences. These are probably more appropriate for *professional development* rather than *self-directed learning*.

When asked about the average number of hours per week they spent on staying up to date through self-directed learning, the majority of respondents (68%) spent less than two hours. Several shared the same approach: scanning email updates on scholarly communication from journals as well as colleagues. For several, the challenge was that they work part-time. Others found it difficult to quantify the time allocated because it varies according to their workload each week. All respondents who commented recognized the value of staying up to date in a "space [that] changes so rapidly." However, as one person so aptly put it, "Like the researchers, I too am very time poor."

The survey included two questions about participation in the scholarly publication process. Unfortunately, there was an error in the configuration of the survey. This meant the second question that asked if participating in the scholarly publication process helped equip them with the knowledge required to work in scholarly communication was not displayed, so no results were recorded for that question. For this reason, neither of the questions is reported in this paper.

Many of the optional comments at the end of the survey reiterated aspects of the survey such as a lack of time and different learning pathways. One person noted: "It is important for LIS students to be made more aware of this aspect of librarianship." A couple mentioned an appetite for a community of practice and "participating in any new Australian capacity-building programs or initiatives that come out of it." By far, the majority of the comments referred to a need for better recognition and understanding of this type of work as "management work" because it is an "emerging area" and there is "little understanding."

Discussion

Through considering the level of confidence in required competencies of people working in scholarly communication, this study intended to provide insight into the workforce in

Australasia. As such, it builds upon studies previously undertaken by Sewell;[58] Bonn, Cross, and Bolick;[59] and Owens.[60] The changing nature of the research endeavor has generated new requirements for research support. As a result, staff working in these roles require new sets of skills to support open access to research outputs, research data management, FAIR data, reproducibility, and copyright assistance. While aspects of scholarly communication work have long been a part of a librarian's role, the specific role of "scholarly communication librarian" emerged as a new position title in 2011.[61] This is reflected in the relatively short length of time respondents to our study have been working in scholarly communication, with just over 50 percent of respondents working in the field for five years or less. Sewell's study was undertaken four years before ours and showed at the time that 65 percent of current roles in scholarly communication had been established in respondents' organizations for less than five years, with fewer than 15 percent having been established for more than 10 years.[62] This almost directly correlates with Owen's finding that 87.2 percent of respondents had been working in scholarly communication for less than 10 years.

This result contrasts with the length of service in libraries, with the majority of respondents (62.8%) working in libraries for more than 10 years, including almost one-third (30.8%) having worked in libraries more than 20 years (see figure 2). The general pattern of an inverse relationship between time spent working in libraries against time spent in a scholarly communication role was also shown in Owen's study, where just over half of respondents (53%) had been in libraries for more than 10 years.

The nature of work in scholarly communication requires interacting with the academic community, often in an advocacy role. Indeed, there is work underway to recognize academic and research libraries as active participants and leaders in the production of scholarly research.[63] Given the large number of respondents employed in scholarly communication at a relatively low level of HEW6 or below (41.8%), this is challenging and requires a relatively high level of confidence. Generally, we found that looking across the combined competency areas, at face value the responses appear to be weighted toward the confident side of the scale. However, there are only two areas where the majority of confidence levels were *A great deal* or *A lot*: open access policies and scholarly communication landscape and assessment and impact metrics. In every area there are a proportion of people who do not have confidence in the area, and in the cases of publishing services and data management services, the confidence levels were considerably lower. As with Owens' results, these findings reflect the wide degree of variation in survey responses. However, Owens did not have open access policies and scholarly communication landscape as a competency area.

It can be insightful to understand what barriers staff may be experiencing to gaining higher levels of confidence. For example, the nature of their role often appears to be a factor. In the majority of cases, the respondents combined their scholarly communication tasks with other roles. Only 19 percent of the respondents' roles were completely devoted to scholarly communication, with the greatest number of respondents (43%) only spending 25 percent of their role on these tasks. This is in almost inverse proportion to the Bonn, Cross, and Bolick study, which indicated only 14 percent of respondents had "other" responsibilities than scholarly communication, where 72 percent of those indicated those duties were a primary part of their job. The inference from this is that 86 percent of respondents to that study had scholarly communication as their primary focus.[64] Owen's study also surveyed librarians in the United States and found 61.1 percent of respondents reported that scholarly communications was their

primary role, and the other 38.9 percent indicated that scholarly communications was an important secondary responsibility with 53 percent of respondents allocating more than half their time to specializing in scholarly communications.[65] The Sewell study did not ask this question.

Owens' study found *too many responsibilities* was the highest factor identified as a factor negatively impacting respondents' confidence levels at 24 percent across all competency areas, leading her to suggest: "Library directors should consider how the sheer scope of a scholarly communications librarian's responsibilities may impact the manifestation of impostor phenomenon and a librarian's lack of confidence in key skills areas."[66] As demonstrated above, the Australasian respondents in our study are managing scholarly communication among a considerably higher proportion of other responsibilities, so the finding that *too many responsibilities* ranged from 26 to 32 percent for our study (see figure 5). In addition, the high response to *need more time and experience* indicates that there needs to be a greater consideration of the challenges associated with remaining up to date in these fast-moving areas for relevant staff.

Allowing a greater amount of time for people working in scholarly communication to increase skills is a consideration that will need to be made by their immediate work environment. Indeed, increasing the proportion of staff roles to focus on scholarly communication and releasing them from other responsibilities needs to be given serious consideration in Australasia. This would be easier if there were some recognition of the importance and complexity of this work by the wider institution. Respondents indicated in inverse proportion their perceived level of support for scholarly communication from both library management and the wider institution. This indicates that, while there may be a higher level of support locally, this is not matched by the support from the institution as a whole (see figure 3). The nature of this type of work involves the development of cross-campus relationships to support research, such as with the Research Office and Information Services, a skill described as "social interoperability" by Bryant, Dortmund, and Lavoie in 2020.[67] There is some import for senior library management to consider the value of leveraging scholarly communication as a means of increasing their library's role in broader cross-campus partnerships. This type of strategic collaboration has been recommended as an outcome from a survey of 300 researchers and interviews with senior members of research offices in the United States, the United Kingdom, and Australia, which recommended open access, identifying publications of researchers, and creating and updating researcher profiles as "key opportunities for more strategic collaboration between the research office and library."[68]

Providing the opportunity for developing skills and knowledge is one issue. The availability of opportunities is another. The survey considered several approaches to skill and knowledge acquisition, including formal education. Given the length of service of the respondents, many undertook their original LIS qualification some years ago, with nearly 60 percent holding their qualification for 10 years or more. The response that a majority (57.4%) indicated that their LIS qualification had not equipped them to work in scholarly communication could be a reflection that this is a relatively new field. These findings are similar to those of Sewell; in her survey, 49 percent had held their LIS qualification for 10 years or more and 56 percent felt that this qualification had not equipped them with appropriate knowledge of scholarly communication.[69] The findings were even starker in the work of Bonn, Cross, and Bolick, where the respondents to their survey indicated a mean of 12.4 years since graduation from their degree with a "shared experience among most (77%, 122 of 158) that no course on scholarly communication was offered during their graduate education."[70]

However, some of the responses in the comments in this survey indicated a level of frustration about their qualification. This could be a reflection of the previously low level of reference to any scholarly communication skills that ALIA lists in the *Foundation Knowledge, Skills and Attributes Relevant to Information Professionals Working in Archives, Libraries and Records Management*, which forms the basis of LIS degrees in Australia.[71] As scholarly communication and other research support services have now been included as an element of foundation knowledge by ALIA,[72] LIS Education programs now need to consider adding it more explicitly to their programs. It should be noted that, while not related to the formation of LIS degrees, the ALIA *Health Library Association (HLA) Competencies* do specifically mention scholarly communication tasks, including "data science, research data management," "promoting scholarly communication," "promoting open science and open access to government-funded research outputs," "content, learning, research data, repository, and database management systems," and "digitisation and digital repository management."[73]

The respondents to this survey were very highly qualified. More than 80 percent of respondents had a qualification other than an LIS degree, with the majority being postgraduate degrees. More than 1 out of 10 (14.4%) have doctorates (see figure 7). This result was similar to the responses in the 2020 Bonn, Cross, and Bolick study, where 12 percent held a PhD and 11 percent had a JD.[74] Our study asked whether other qualifications equipped respondents with the knowledge required to work in scholarly communication, to which they answered in a two-third *Yes*, one-third *No* split. The Bonn, Cross, and Bolick study focused on curricula and did not ask this question. One of our respondents commented that having a PhD gave them a level of gravitas when talking to academics. This is related to issues librarians encounter when not being perceived as scholarly communication experts.

A discussion about the value of an LIS degree as opposed to a higher degree in another field to those people working in scholarly communication is one that could be interesting to explore further. Regardless, while an LIS qualification is one method by which skills and knowledge can be gained, there is also an ongoing need to stay relevant and up to date. Our study showed a strong weighting to *professional development* over *formal training* (see figure 8). There is an overwhelmingly low number of people working in scholarly communication in Australasia having any formal training in the area. This is also reflected in the findings of the Bonn, Cross, and Bolick study, where fewer than 10 percent of respondents indicated they were pursuing additional education through a formal degree or certificate.[75]

The lack of formal scholarly communication training among the respondents is likely a reflection of a lack of opportunity. The few courses identified in the question on formal training all incur a cost. The survey did not ask this question, but given other studies looking at the cost of professional development for academic libraries,[76] it could be an enlightening follow-up to understand whether these costs are being met in Australasia by the individual or their employer. In the case of Owen's US survey, respondents cited lack of funding for training as an important factor that contributed to their lack of confidence in some competencies.[77]

There is evidence that, over the past decade, people working in LIS have taken multiple approaches to remaining up to date, including mentoring, writing for publication and "managing the management."[78] Other approaches have included committee work, cultivating mentors, and informal discussions with colleagues.[79] In addition, other research demonstrated that taking advantage of training and development reduced the sense of impostor phenomenon in people working in scholarly communication.[80] Our study supported this; while there appears

to be a serious lack of formal training opportunity in scholarly communication, practitioners are resourceful and take advantage of conferences and webinars. The perceived value of conference attendance appears to be high, and there is a strong engagement with organizations such as Open Access Australasia and ARDC. It is possible that conferences and webinars are popular as they can be timely and targeted, given respondents used expressions such as "a fast-moving and diverse area such as this" and "useful in keeping up with such a quick-moving and varied research environment." In addition, "keeping up to date" and "understanding new trends" appeared several times.

The next two most commonly used professional development resources in our study after *journals and conferences* were *blogs* and *grey literature.* This is reflected in the Bonn, Cross, and Bolick study where *conferences* equaled *articles and book chapters* as the most common types of resources used to continue their education, with 27 percent each.[81] Respondents to our study are generally (68%) spending less than two hours a week on different types of informal learning. However, given the constraints on time identified earlier in the survey, it appears there is a time opportunity-cost in this practice.

This work has identified multiple areas where improvements could be made in relation to the professional development and support of those working in scholarly communication in Australasia.

Limitations

The study had intended to ask those people who had higher degrees whether participating in the scholarly publication process had helped equip respondents with the knowledge required to work in scholarly communication. However, a glitch in the flow of the survey meant this question did not appear. It remains a valid question.

Given the apparent confusion by respondents around whether a course or event classified as professional development or formal training, the definitions of what these meant within the survey should have been clearer. The study did not ask what type of LIS qualification the respondents held—bachelor's degrees, graduate diplomas, or master's. Future work in this area should make this distinction.

All research methods have limitations; thus, we must acknowledge limitations of questionnaire-based research such as this. While they enable researchers to recruit respondents from wide geographic areas and multiple organizations, in a nonprobability sample such as this, where potential respondents can choose whether or not to participate, results cannot be generalized, although they can provide insight into the problem under investigation.

Future Study

This research opens up further questions. One area that warrants exploration is the practical need for people working in this area to "manage up" to advocate for the strategic imperative of scholarly communication work. This is work that is primarily focused on the research community, but there is also work within the library, given the low general level of understanding of scholarly communication issues. The relatively lower level of the staff working in this area is a greater challenge and relates to having to justify their existence.

In addition, a deeper analysis of the correlation between confidence levels and the academic or training background of the respondents could evaluate the direct effect of education and training, identifying where energy should be directed into the future. The authors have

made the raw data set available for any other researcher who wishes to undertake their own analysis. One view could be a cross-reference between those comments that a respondent was frustrated with their LIS qualification and the length of time since that qualification was gained. This could potentially identify if there remains an issue with the level of instruction with more recent degrees or if that is a historical reflection.

Conclusion

Given that research practice and technology are constantly evolving and there is a globally and locally increasing focus on open research, scholarly communication practice is also constantly evolving. These changes in practice and focus make scholarly communication an increasing imperative for research institutions, which will require qualified, confident, and up-to-date staff. In addition, arguments that academic libraries should be active participants in the production of scholarly research further indicates the need for academic libraries to be looking at the skills and knowledge of their staff in order for them to be prepared for these future challenges.

Responses also indicate that the sector needs to provide structured training and professional development opportunities that keep staff up to date with the constant change and that are recognized by professional organizations such as ALIA and ARMS. In addition, there is a clear appetite for a community of practice and Australasian capacity-building programs or initiatives. In both instances, this needs to be addressed at a national level, potentially through existing professional organizations or through the development of a new scholarly communication-focused group.

The findings in this study also have implications at an institutional level because they bring weight to the argument that staff working in scholarly communication need to be further recognized by institutional central administration as a strategic imperative for research institutions. This can happen in multiple ways, including academic libraries recognizing the breadth and complexity of the area of scholarly communication, in both reducing the external workload for those people working in the area and also increasing the proportion of academic library staff whose responsibilities encompass scholarly communication.

Acknowledgment

The authors would like to acknowledge the Australian National Centre for the Public Awareness of Science for their assistance with and hosting of a webpage about the project: https://cpas.anu.edu.au/research/research-projects/scholarly-communication-knowledge-and-skills-australasian-research

Notes

1. Christian Gumpenberger, Martin Wieland, and Juan Gorraiz, "Bibliometric Practices and Activities at the University of Vienna," *Library Management* 33, no. 3 (1 January 2012): 174–83, https://doi.org/10.1108/01435121211217199.

2. Heather Moulaison Sandy, Anthony J. Million, and Cynthia Hudson-Vitale, "Innovating Support for Research: The Coalescence of Scholarly Communication?" *College & Research Libraries* 81, no. 2 (2020): 193.

3. Andrew M. Cox et al., "Maturing Research Data Services and the Transformation of Academic Libraries," *Journal of Documentation* 75, no. 6 (2019): 1432–62.

4. Andrew Cox, "Academic Librarianship as a Data Profession: The Familiar and Unfamiliar in the Data Role Spectrum," *ELucidate* 15, no. 1/2 (2018): 49.

5. Erin Owens, "Impostor Phenomenon and Skills Confidence among Scholarly Communications Librarians

in the United States," *College & Research Libraries* 82, no. 4 (2021): 490, https://doi.org/10.5860/crl.82.4.490.

6. Anthony J.G. Hey, Stewart Tansley, and Kristin Michele Tolle, *The Fourth Paradigm: Data-Intensive Scientific Discovery*, vol. 1 (Redmond, WA: Microsoft Research, 2009); Laura Saunders, "Core Knowledge and Specialized Skills in Academic Libraries," *College & Research Libraries* 81, no. 2 (2020): 288.

7. N. Haltas and C. Devereux, "Report on the Consultation Workshop Skills and Human Resources for E-Infrastructures within Horizon 2020," *Undefined* (2012), paper/Report-on-the-Consultation-Workshop-Skills-and-for-Haltas-Devereux/bcfa2dcd24f8adf353c6f7ceb0afcff78a3fa872.

8. Bianca Kramer and Jeroen Bosman, "Innovations in Scholarly Communication: Global Survey on Research Tool Usage," *F1000Research* 5 (18 April 2016), https://doi.org/10.12688/f1000research.8414.1.

9. M. Wolski, Louise Howard, and J. Richardson, "The Importance of Tools in the Data Lifecycle," *Digital Library Perspectives* (2017): 249, https://doi.org/10.1108/DLP-11-2016-0042.

10. Nancy Maron et al., *Open and Equitable Scholarly Communications: Creating a More Inclusive Future* (Chicago, IL: Association of College and Research Libraries, 2019), https://doi.org/10.5860/acrl.1.

11. Liat Klain-Gabbay and Snunith Shoham, "Scholarly Communication and Academic Librarians," *Library & Information Science Research* 38, no. 2 (2016): 170–79.

12. I. Diane Cooper and Janet A Crum, "New Activities and Changing Roles of Health Sciences Librarians: A Systematic Review, 1990–2012," *Journal of the Medical Library Association: JMLA* 101, no. 4 (October 2013): 268–77, https://doi.org/10.3163/1536-5050.101.4.008.

13. Jeremy Atkinson, "Academic Libraries and Research Support: An Overview," *Quality and the Academic Library* (2016), 135–41.

14. Sheila Corrall, Mary Anne Kennan, and Waseem Afzal, "Bibliometrics and Research Data Management Service: Emerging Trends in Library Support for Research," *Library Trends* 61, no. 3 (2013): 636–74.

15. Tibor Koltay, "Data Literacy for Researchers and Data Librarians," *Journal of Librarianship and Information Science* 49, no. 1 (1 March 2017): 3–14, https://doi.org/10.1177/0961000615616450; Gaby Haddow and Jayshree Mamtora, "Research Support in Australian Academic Libraries: Services, Resources, and Relationships," *New Review of Academic Librarianship* 23, no. 2/3 (2017): 89–109; Lisa M. Federer, Ya-Ling Lu, and Douglas J. Joubert, "Data Literacy Training Needs of Biomedical Researchers," *Journal of the Medical Library Association* 104, no. 1 (January 2016): 52–57.

16. Cox et al., 'Maturing Research Data Services and the Transformation of Academic Libraries."

17. Ada Ducas, Nicole Michaud-Oystryk, and Marie Speare, "Reinventing Ourselves: New and Emerging Roles of Academic Librarians in Canadian Research-Intensive Universities," *College & Research Libraries* 81, no. 1 (2020): 43.

18. Ngoc-Yen Tran and Emily K. Chan, "Supporting Scholarly Research: Current and New Opportunities for Academic Libraries" (2020); Steve Brantley, Todd A. Bruns, and Kirstin I. Duffin, "Librarians in Transition: Scholarly Communication Support as a Developing Core Competency," *Journal of Electronic Resources Librarianship* 29, no. 3 (2017): 137–50; Klain-Gabbay and Shoham, 'Scholarly Communication and Academic Librarians."

19. Andrea M. Ketchum, "The Research Life Cycle and the Health Sciences Librarian: Responding to Change in Scholarly Communication," *Journal of the Medical Library Association: JMLA* 105, no. 1 (2017): 80.

20. Sandy, Million, and Hudson-Vitale, 'Innovating Support for Research."

21. Mary Auckland, "Re-Skilling for Research," RLUK Report (Research Libraries UK, 12 January 2012), https://www.rluk.ac.uk/re-skilling-for-research/.

22. Todd Bruns, John Stephen Brantley, and Kirstin Duffin, "Scholarly Communication Coaching: Liaison Librarians' Shifting Roles," in *The 21st Century Library: Partnerships and New Roles* (Washington, DC: Rowman & Littlefield Publishers, 2015), 9–29, https://thekeep.eiu.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1100&context=lib_fac.

23. Mary Anne Kennan, "Data Management: Knowledge and Skills Required in Research, Scientific and Technical Organisations" (2016), 7.

24. Hannelore Vanhaverbeke, Barbara Lancho Barrantes, and Andrew Cox, "Don't Stop Thinking about Tomorrow!—Future Competencies in Bibliometrics," *The Bibliomagician* (blog, 15 March 2021), https://thebibliomagician.wordpress.com/2021/03/15/future-competencies-in-bibliometrics/; Andrew Cox and Sabrina Petersohn, "Competency Model for Bibliometric Work," *The Bibliomagician* (blog, 2 October 2017), https://thebibliomagician.wordpress.com/competencies/.

25. Birgit Schmidt and Kathleen Shearer, "Librarians' Competencies Profile for Research Data Management" (June 2016), https://www.coar-repositories.org/files/Competencies-for-RDM_June-2016.pdf.

26. Pascal Calarco et al., "Librarians' Competencies Profile for Scholarly Communication and Open Access" (2016), 6.

27. Association of College & Research Libraries, "Framework for Information Literacy for Higher Education,"

Text, Association of College & Research Libraries (ACRL) (9 February 2015), https://www.ala.org/acrl/standards/ilframework.

28. Calarco et al., "Librarians' Competencies Profile for Scholarly Communication and Open Access."

29. NASIG Executive Board, "NASIG Core Competencies for Schol. Comm. Librarians," *NASIG Webpages* (blog, 11 August 2017), https://www.nasig.org/Competencies-Scholarly-Communication.

30. Australian Library and Information Association, "Foundation Knowledge for Entry-Level Library and Information Professionals," Foundation Knowledge, Skills and Attributes Relevant to Information Professionals Working in Archives, Libraries and Records Management (2020), https://read.alia.org.au/foundation-knowledge-entry-level-library-and-information-professionals.

31. Bruns, Brantley, and Duffin, "Scholarly Communication Coaching."

32. Claire Sewell, "Where Did They Come From? Educational Background of People in Scholarly Communication," *Unlocking Research* (blog, 9 March 2017), https://unlockingresearch-blog.lib.cam.ac.uk/?p=1313.

33. Jaya Raju, "Embracing New Trends in Scholarly Communication: From Competency Requirements in the Workplace to LIS Curriculum Presence," *Journal of Librarianship and Scholarly Communication* 7, no. 1 (19 July 2019): 13, https://doi.org/10.7710/2162-3309.2291.

34. Owens, "Impostor Phenomenon and Skills Confidence among Scholarly Communications Librarians in the United States.

35. NASIG Executive Board, "NASIG Core Competencies for Schol. Comm. Librarians."

36. Anna R. Craft and Samantha Harlow, "Scholarly Communications Training: Professional Development for the Next Generation of Scholars," *Serials Review* 46, no. 3 (2 July 2020): 175–83, https://doi.org/10.1080/00987913.2020.1806651.

37. Australian National Data Service, "23 (Research Data) Things," ANDS, https://www.ands.org.au/working-with-data/skills/23-research-data-things [accessed 3 August 2021].

38. University of Melbourne, "'23 Research Things—Digital Tools to Support Your Research" (2017), https://blogs.unimelb.edu.au/23researchthings/.

39. Matt Burton et al., "Shifting to Data Savvy: The Future of Data Science in Libraries" (2018).

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

41. Sewell, "Where Did They Come From?"

42. Claire Sewell, "Bursting the Bubble: Why It's (Not) All about the PhD in Research Support," *UKSG ENews*, no. 439 (22 February 2019), https://hcommons.org/deposits/item/hc:25459/.

43. Emilia C. Bell and Mary Anne Kennan, "Partnering in Knowledge Production: Roles for Librarians in the Digital Humanities," *Journal of the Australian Library and Information Association* 70, no. 2 (2021): 157–76.

44. Melanie Cheung, "RLUK Publishes Report on the Role of Research Libraries in the Production of Scholarly Research," *Research Libraries UK* (blog, 8 July 2021), https://www.rluk.ac.uk/rluk-publishes-report-on-the-role-of-research-libraries-in-the-production-of-scholarly-research/.

45. Christopher Hollister, "Perceptions of Scholarly Communication among Library and Information Studies Students," *Journal of Librarianship and Scholarly Communication* 5 (2017): 2, https://doi.org/10.7710/2162-3309.2180.

46. Jarmo Saarti, Tomi Rosti, and Helena Silvennoinen-Kuikka, "Implementing Open Science Policies into Library Processes: Case Study of the University of Eastern Finland Library," *LIBER Quarterly* 30, no. 1 (16 September 2020): 1–20, https://doi.org/10.18352/lq.10336.

47. Maria Bonn, Will Cross, and Josh Bolick, "Finding Our Way: A Snapshot of Scholarly Communication Practitioners' Duties and Training," *Journal of Librarianship and Scholarly Communication* 8, no. 1 (28 April 2020): eP2328, https://doi.org/10.7710/2162-3309.2328.

48. Owens, "Impostor Phenomenon and Skills Confidence among Scholarly Communications Librarians in the United States.

49. Owens, "Impostor Phenomenon and Skills Confidence among Scholarly Communications Librarians in the United States.

50. Owens, "Impostor Phenomenon and Skills Confidence among Scholarly Communications Librarians in the United States.

51. Owens, "Impostor Phenomenon and Skills Confidence among Scholarly Communications Librarians in the United States.

52. NASIG Executive Board, "NASIG Core Competencies for Schol. Comm. Librarians."

53. Calarco et al., "Librarians' Competencies Profile for Scholarly Communication and Open Access."

54. https://cpas.anu.edu.au/research/research-projects/scholarly-communication-knowledge-and-skills-australasian-research.

55. "Australian Research Data Commons," https://ardc.edu.au/ [accessed 13 August 2021].
56. Australian Government, "MA000007: Higher Education Industry—General Staff—Award 2020," Fair Work Ombudsman (2020), https://awardviewer.fwo.gov.au/award/show/MA000007#P72_2823.
57. "Open Access Australasia," https://oaaustralasia.org/ [accessed 13 August 2021].
58. Sewell, "Where Did They Come From?"
59. Bonn, Cross, and Bolick, "Finding Our Way.
60. Owens, "Impostor Phenomenon and Skills Confidence among Scholarly Communications Librarians in the United States.
61. Therese F. Triumph and Penny M. Beile, "The Trending Academic Library Job Market: An Analysis of Library Position Announcements from 2011 with Comparisons to 1996 and 1988," *College & Research Libraries* 25 (April 2017), https://doi.org/10.5860/crl.76.6.716.
62. Sewell, "Where Did They Come From?"
63. Evidence Base, "The Role of Academic and Research Libraries as Active Participants and Leaders in the Production of Scholarly Research," A Report for Research Libraries UK (June 2021), https://www.rluk.ac.uk/rluk-publishes-report-on-the-role-of-research-libraries-in-the-production-of-scholarly-research/.
64. Bonn, Cross, and Bolick, "Finding Our Way.
65. Owens, "Impostor Phenomenon and Skills Confidence among Scholarly Communications Librarians in the United States.
66. Owens, "Impostor Phenomenon and Skills Confidence among Scholarly Communications Librarians in the United States.
67. Rebecca Bryant, Annette Dortmund, and Brian Lavoie, "Social Interoperability in Research Support: Cross-Campus Partnerships and the University Research Enterprise" (2020), https://doi.org/10.25333/WYRD-N586.
68. alterline, "Supporting Academic Research: Market Study" (ExLibris, 2020), 15, https://exlibrisgroup.com/supporting-academic-research/.
69. Sewell, "Where Did They Come From?"
70. Bonn, Cross, and Bolick, "Finding Our Way, 8.
71. Australian Library and Information Association (ALIA), "Foundation Knowledge for Entry-Level Library and Information Professionals."
72. ALIA, "Foundation Knowledge for Entry-Level Library and Information Professionals."
73. Lisa Slingsby, "ALIA HLA Competencies," Text, ALIA Library (22 October 2019), http://read.alia.org.au/alia-hla-competencies.
74. Bonn, Cross, and Bolick, "Finding Our Way.
75. Bonn, Cross, and Bolick, "Finding Our Way.
76. Bridgette Comanda et al., "Service Ceiling: The High Cost of Professional Development for Academic Librarians," *In the Library with the Lead Pipe*, https://www.inthelibrarywiththeleadpipe.org/2021/service-ceiling/ [accessed 8 July 2021].https://www.inthelibrarywiththeleadpipe.org/2021/service-ceiling/."
77. Owens, "Impostor Phenomenon and Skills Confidence among Scholarly Communications Librarians in the United States.
78. Claire Sewell, "New Skills, New Challenges: CPD in the Information Profession," *New Review of Academic Librarianship* (19 April 2018), https://doi.org/10.17863/CAM.22210.
79. Bonn, Cross, and Bolick, "Finding Our Way.
80. Owens, "Impostor Phenomenon and Skills Confidence among Scholarly Communications Librarians in the United States.
81. Bonn, Cross, and Bolick, "Finding Our Way.

References

alterline. 'Supporting Academic Research—Market Study'. ExLibris, 2020. https://exlibrisgroup.com/supporting-academic-research/.

Association of College & Research Libraries. 'Framework for Information Literacy for Higher Education'. Text. Association of College & Research Libraries (ACRL), 9 February 2015. https://www.ala.org/acrl/standards/ilframework.

Atkinson, Jeremy. 'Academic Libraries and Research Support: An Overview'. *Quality and the Academic Library*, 2016, 135–41.

Auckland, Mary. 'Re-Skilling for Research'. RLUK Report. Research Libraries UK, 12 January 2012. https://www.rluk.ac.uk/re-skilling-for-research/.

Australian Government. 'MA000007: Higher Education Industry—General Staff—Award 2020'. Fair Work Om-

budsman, 2020. https://awardviewer.fwo.gov.au/award/show/MA000007#P72_2823.
Australian Library and Information Association. 'Foundation Knowledge for Entry-Level Library and Information Professionals'. Foundation Knowledge, Skills and Attributes relevant to Information Professionals working in Archives, Libraries and Records Management, 2020. https://read.alia.org.au/foundation-knowledge-entry-level-library-and-information-professionals.
Australian National Data Service. '23 (Research Data) Things'. ANDS. Accessed 3 August 2021. https://www.ands.org.au/working-with-data/skills/23-research-data-things.
'Australian Research Data Commons'. Accessed 13 August 2021. https://ardc.edu.au/.
Bell, Emilia C., and Mary Anne Kennan. 'Partnering in Knowledge Production: Roles for Librarians in the Digital Humanities'. *Journal of the Australian Library and Information Association* 70, no. 2 (2021): 157–76.
Bonn, Maria, Will Cross, and Josh Bolick. 'Finding Our Way: A Snapshot of Scholarly Communication Practitioners' Duties & Training'. *Journal of Librarianship and Scholarly Communication* 8, no. 1 (28 April 2020): eP2328. https://doi.org/10.7710/2162-3309.2328.
Brantley, Steve, Todd A. Bruns, and Kirstin I. Duffin. 'Librarians in Transition: Scholarly Communication Support as a Developing Core Competency'. *Journal of Electronic Resources Librarianship* 29, no. 3 (2017): 137–50.
Bruns, Todd, John Stephen Brantley, and Kirstin Duffin. 'Scholarly Communication Coaching: Liaison Librarians' Shifting Roles'. In *The 21st Century Library: Partnerships and New Roles*, 9–29. Rowman & Littlefield Publishers, 2015. https://thekeep.eiu.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1100&context=lib_fac.
Bryant, Rebecca, Annette Dortmund, and Brian Lavoie. 'Social Interoperability in Research Support: Cross-Campus Partnerships and the University Research Enterprise', 2020. https://doi.org/10.25333/WYRD-N586.
Burton, Matt, Liz Lyon, Chris Erdmann, and Bonnie Tijerina. 'Shifting to Data Savvy: The Future of Data Science in Libraries', 2018.
Calarco, Pascal, Kathleen Shearer, Birgit Schmidt, and Dominic Tate. 'Librarians' Competencies Profile for Scholarly Communication and Open Access', 2016, 6.
Cheung, Melanie. 'RLUK Publishes Report on the Role of Research Libraries in the Production of Scholarly Research'. *Research Libraries UK* (blog), 8 July 2021. https://www.rluk.ac.uk/rluk-publishes-report-on-the-role-of-research-libraries-in-the-production-of-scholarly-research/.
Comanda, Bridgette, Jaci Wilkinson, Faith Bradham, Amanda Koziura, and Maura Seale. 'Service Ceiling: The High Cost of Professional Development for Academic Librarians—In the Library with the Lead Pipe'. *In the Library with the Lead Pipe*. Accessed 8 July 2021. https://www.inthelibrarywiththeleadpipe.org/2021/service-ceiling/.
Cooper, I. Diane, and Janet A Crum. 'New Activities and Changing Roles of Health Sciences Librarians: A Systematic Review, 1990–2012'. *Journal of the Medical Library Association : JMLA* 101, no. 4 (October 2013): 268–77. https://doi.org/10.3163/1536-5050.101.4.008.
Corrall, Sheila, Mary Anne Kennan, and Waseem Afzal. 'Bibliometrics and Research Data Management Service: Emerging Trends in Library Support for Research'. *Library Trends* 61, no. 3 (2013): 636–74.
Cox, Andrew. 'Academic Librarianship as a Data Profession: The Familiar and Unfamiliar in the Data Role Spectrum'. *ELucidate* 15, no. 1–2 (2018): 49.
Cox, Andrew M., Mary Anne Kennan, Liz Lyon, Stephen Pinfield, and Laura Sbaffi. 'Maturing Research Data Services and the Transformation of Academic Libraries'. *Journal of Documentation* 75, no. 6 (2019): 1432–62.
Cox, Andrew, and Sabrina Petersohn. 'Competency Model for Bibliometric Work'. *The Bibliomagician* (blog), 2 October 2017. https://thebibliomagician.wordpress.com/competencies/.
Craft, Anna R., and Samantha Harlow. 'Scholarly Communications Training: Professional Development for the Next Generation of Scholars'. *Serials Review* 46, no. 3 (2 July 2020): 175–83. https://doi.org/10.1080/00987913.2020.1806651.
Ducas, Ada, Nicole Michaud-Oystryk, and Marie Speare. 'Reinventing Ourselves: New and Emerging Roles of Academic Librarians in Canadian Research-Intensive Universities'. *College & Research Libraries* 81, no. 1 (2020): 43.
Evidence Base. 'The Role of Academic and Research Libraries as Active Participants and Leaders in the Production of Scholarly Research.' A Report for Research Libraries UK., June 2021. https://www.rluk.ac.uk/rluk-publishes-report-on-the-role-of-research-libraries-in-the-production-of-scholarly-research/.
Federer, Lisa M., Ya-Ling Lu, and Douglas J. Joubert. 'Data Literacy Training Needs of Biomedical Researchers'. *Journal of the Medical Library Association* 104, no. 1 (January 2016): 52–57.
Gumpenberger, Christian, Martin Wieland, and Juan Gorraiz. 'Bibliometric Practices and Activities at the University of Vienna'. *Library Management* 33, no. 3 (1 January 2012): 174–83. https://doi.org/10.1108/01435121211217199.
Haddow, Gaby, and Jayshree Mamtora. 'Research Support in Australian Academic Libraries: Services, Resources, and Relationships'. *New Review of Academic Librarianship* 23, no. 2–3 (2017): 89–109.
Haltas, N., and C. Devereux. 'Report on the Consultation Workshop Skills and Human Resources for E-Infra-

structures within Horizon 2020.' *Undefined*, 2012. /paper/Report-on-the-Consultation-Workshop-Skills-and-for-Haltas-Devereux/bcfa2dcd24f8adf353c6f7ceb0afcff78a3fa872.
Hey, Anthony JG, Stewart Tansley, and Kristin Michele Tolle. *The Fourth Paradigm: Data-Intensive Scientific Discovery*. Vol. 1. Microsoft research Redmond, WA, 2009.
Hollister, Christopher. 'Perceptions of Scholarly Communication Among Library and Information Studies Students'. *Journal of Librarianship and Scholarly Communication* 5 (2017). http://dx.doi.org.libraryproxy.griffith.edu.au/10.7710/2162-3309.2180.
Jaguszewski, Janice M., and Karen Williams. 'New Roles for New Times: Transforming Liaison Roles in Research Libraries'. New Roles for New Times. Association of Research Libraries, 2013. https://www.arl.org/resources/new-roles-for-new-times-transforming-liaison-roles-in-research-libraries/.
Kennan, Mary Anne. 'Data Management: Knowledge and Skills Required in Research, Scientific and Technical Organisations', 10, 2016.
Ketchum, Andrea M. 'The Research Life Cycle and the Health Sciences Librarian: Responding to Change in Scholarly Communication'. *Journal of the Medical Library Association: JMLA* 105, no. 1 (2017): 80.
Klain-Gabbay, Liat, and Snunith Shoham. 'Scholarly Communication and Academic Librarians'. *Library & Information Science Research* 38, no. 2 (2016): 170–79.
Koltay, Tibor. 'Data Literacy for Researchers and Data Librarians'. *Journal of Librarianship and Information Science* 49, no. 1 (1 March 2017): 3–14. https://doi.org/10.1177/0961000615616450.
Kramer, Bianca, and Jeroen Bosman. 'Innovations in Scholarly Communication—Global Survey on Research Tool Usage'. *F1000Research* 5 (18 April 2016). https://doi.org/10.12688/f1000research.8414.1.
Maron, Nancy, Rebecca Kennison, Paul Bracke, Nathan Hall, Isaac Gilman, Kara Malenfant, Charlotte Roh, and Yasmeen Shorish. 'Association of College and Research Libraries. Open and Equitable Scholarly Communications: Creating a More Inclusive Future'. Chicago: Association of College and Research Libraries, 2019. https://doi.org/10.5860/acrl.1.
NASIG Executive Board. 'NASIG Core Competencies for Schol. Comm. Librarians'. *NASIG Webpages* (blog), 11 August 2017. https://www.nasig.org/Competencies-Scholarly-Communication.
———. 'NASIG Core Competencies for Schol. Comm. Librarians'. *NASIG Webpages* (blog), 11 August 2017. https://www.nasig.org/Competencies-Scholarly-Communication.
'Open Access Australasia'. Accessed 13 August 2021. https://oaaustralasia.org/.
Owens, Erin. 'Impostor Phenomenon and Skills Confidence among Scholarly Communications Librarians in the United States'. *College & Research Libraries* 82, no. 4 (2021): 490. https://doi.org/10.5860/crl.82.4.490.
Raju, Jaya. 'Embracing New Trends in Scholarly Communication: From Competency Requirements in the Workplace to LIS Curriculum Presence'. *Journal of Librarianship and Scholarly Communication* 7, no. 1 (19 July 2019). https://doi.org/10.7710/2162-3309.2291.
Saarti, Jarmo, Tomi Rosti, and Helena Silvennoinen-Kuikka. 'Implementing Open Science Policies into Library Processes—Case Study of the University of Eastern Finland Library'. *LIBER Quarterly* 30, no. 1 (16 September 2020): 1–20. https://doi.org/10.18352/lq.10336.
Sandy, Heather Moulaison, Anthony J. Million, and Cynthia Hudson-Vitale. 'Innovating Support for Research: The Coalescence of Scholarly Communication?' *College & Research Libraries* 81, no. 2 (2020): 193.
Saunders, Laura. 'Core Knowledge and Specialized Skills in Academic Libraries'. *College & Research Libraries* 81, no. 2 (2020): 288.
Schmidt, Birgit, and Kathleen Shearer. 'Librarians' Competencies Profile for Research Data Management', June 2016. https://www.coar-repositories.org/files/Competencies-for-RDM_June-2016.pdf.
Sewell, Claire. 'Bursting the Bubble: Why It's (Not) All about the PhD in Research Support'. *UKSG ENews*, no. 439 (22 February 2019). https://hcommons.org/deposits/item/hc:25459/.
———. 'New Skills, New Challenges: CPD in the Information Profession'. *New Review of Academic Librarianship*, 19 April 2018. https://doi.org/10.17863/CAM.22210.
———. 'Where Did They Come from? Educational Background of People in Scholarly Communication'. *Unlocking Research* (blog), 9 March 2017. https://unlockingresearch-blog.lib.cam.ac.uk/?p=1313.
Slingsby, Lisa. 'ALIA HLA Competencies'. Text. ALIA Library, 22 October 2019. http://read.alia.org.au/alia-hla-competencies.
Tran, Ngoc-Yen, and Emily K. Chan. 'Supporting Scholarly Research: Current and New Opportunities for Academic Libraries', 2020.
Triumph, Therese F., and Penny M. Beile. 'The Trending Academic Library Job Market: An Analysis of Library Position Announcements from 2011 with Comparisons to 1996 and 1988 | Triumph | College & Research Libraries', 25 April 2017. https://doi.org/10.5860/crl.76.6.716.
University of Melbourne. '23 Research Things—Digital Tools to Support Your Research', 2017. https://blogs.

unimelb.edu.au/23researchthings/.
Vanhaverbeke, Hannelore, Barbara Lancho Barrantes, and Andrew Cox. '"Don't Stop Thinking about Tomorrow!"—Future Competencies in Bibliometrics'. *The Bibliomagician* (blog), 15 March 2021. https://thebibliomagician.wordpress.com/2021/03/15/future-competencies-in-bibliometrics/.
Wolski, M., Louise Howard, and J. Richardson. 'The Importance of Tools in the Data Lifecycle'. *Digital Library Perspectives*, 2017. https://doi.org/10.1108/DLP-11-2016-0042.

Listen to Librarians: Highlighted Core Competencies for Librarianship from the Perspectives of Working Librarians

Yuerong Hu, Melissa G. Ocepek, John Stephen Downie, and Lecia Barker

Librarianship is constantly confronted with unexpected and quickly evolving socio-technical challenges, yet the documents that define the core professional competencies for librarians are infrequently updated. Based upon survey responses collected from 383 working librarians located in the United States, we describe a set of gaps between current competency guidelines and current library realities with regard to practice, management, communication, career development, relations, and personal attributes. We argue that professional library organizations, educators, and policy-makers could formulate more relevant and impactful core competency documents by deliberately integrating the on-the-ground insights of librarians' lived experience.

Introduction

Librarianship and librarians have been constantly challenged by societal changes and technological developments,[1] which have been significantly accelerated by the COVID-19 pandemic. Libraries have been taking unprecedented action to resume ordinary services through this sustained crisis,[2] such as holding virtual reference and programming, offering curbside services, and providing online access to copyrighted materials. As pandemics have changed and shaped our social world throughout human history, new skills and processes are required for libraries to continue to serve their communities. This year has highlighted the news for emerging skill sets that had never been embedded in LIS competencies before, and corresponding action needs to be deployed to incorporate them. It makes us think about what core competencies LIS students should acquire to prepare for ongoing transitions as well as incoming challenges. To answer this question, we started by consulting existing North American librarian core competencies documents (standards, frameworks, statements, guidelines, and so on) and research articles. Two

* *Yuerong Hu is a doctoral student in the School of Information Sciences at University of Illinois Urbana-Champaign; email: yuerong2@illinois.edu. Melissa G. Ocepek is Assistant Professor in the School of Information Sciences at University of Illinois Urbana-Champaign; email: mgocepek@illinois.edu. John Stephen Downie is Professor and Associate Dean for Research in the School of Information Sciences at University of Illinois Urbana-Champaign; email: jdownie@illinois.edu. Lecia Barker is Associate Chair for Undergraduate Studies and Associate Professor in the College of Media, Communication and Information at University of Colorado Boulder; email: lecia.barker@colorado.edu.*

problems arose from our preliminary investigation. First, the formal documents have not been frequently updated to accommodate rising trends.[3] Second, while LIS students and working professionals are profoundly influenced by these documents, through our literature review, we've rarely seen the role that their on-the-ground voices played in instigating or reshaping the standards. To bridge this emerging gap between demanding competencies on site and the acknowledged ones on record, it is important to listen to the voices of the practitioners.

Driven by the aforementioned initiatives, we investigated pre-existing but unexamined survey responses collected from 383 librarians based in the United States.[4] These librarians spontaneously spoke of favorable but underdeveloped core competencies for librarianship when asked about their advice for future LIS professionals interested in their positions. In this paper, we present their empirical insights for the following constituencies: 1) for LIS organizations and policymakers to better craft core competencies documents; 2) for library administrators and staff to plan future recruitment and on-the-job training; and 3) for LIS program educators and students to better equip future librarians. In the following sections, we first introduce our literature review findings. Next, we introduce the research design and the data analysis procedure. Then we profile the respondents and present their opinions. Finally, we discuss our findings and make suggestions for future library stakeholders.

Literature Review

Competencies include skills, knowledge, abilities, and personal characteristics that individuals can acquire through education and training to define their occupational identity and conduct their professional practice.[5] Prior research into librarians' competencies has been centered on "core competencies," which was a concept originally developed for studying companies' competitiveness in the early 1990s.[6] This term quickly gained popularity in many areas, LIS included, for its feasibility in discussing professional competencies at both institutional and personal levels. However, the topics under the umbrella of librarians' core competencies are nothing novel; they have been deeply rooted in the historical discourse in library science core curriculum for nearly a century.[7] In the late twentieth century, although there had existed several library science school standards and curriculum guidelines put forward by organizations such as The International Federation of Library Associations and Institutions (IFLA) and American Library Association (ALA),[8] almost no consensus had been reached on the core curricula or accreditation standards due to two facts: first, the dynamic sociotechnical environment made the core competencies changeable; second, without any mechanism to ensure that consensus would be broadly accepted and applied, agreements on core competencies failed to make a difference in practice.[9] For instance, ALA's *Standards for Accreditation 1972* was only a passing reference without any elaboration or enforcement.[10] Consequently, library schools nationwide were still developing curricula on their own.[11]

ALA started to specify core competencies for graduates of ALA-accredited programs in the late 1990s. A draft statement on core competencies created by four ALA task forces came out in 2001, however, then it languished for years before a new group took up the job.[12] In 2008, under the charge of Leslie Burger (the 2006–2007 president of ALA) and with extensive consultation among various bodies, the ALA Executive Board approved the Core Competencies of Librarianship Statement (hereinafter ALACC), which finalized many earlier years of work.[13] This statement defined "*the basic knowledge to be possessed by all persons graduating from ALA-accredited master's programs in library and information studies*" and was officially adopted

as policy by the ALA Council in 2009.[14] Since ALA has become the creator and evaluator of accreditation standards for library education in the United States, this statement has made a tremendous impact on the curricula of all the ALA-accredited programs in the United States.[15] Meanwhile, other LIS professional associations have also released their statements of knowledge and competencies for specific tracks of librarianship as supplements,[16] as presented in table 1. For instance, the Association for College and Research Libraries, as an important division of ALA, have released and updated many guidelines, standards, and frameworks specifically devoted to academic librarianship.

TABLE 1
Competencies Statements Developed by Professional Organizations

Associated Organization	Name of Document	First and Latest Formal Release
Map & Geospatial Information Round Table (MAGIRT)	Map, GIS, and Cataloging / Metadata Librarian Core Competencies	2008 and 2018
Association for Library and Information Science Education (ALISE)	ALISE Ethics Guidelines Statement	First published in 2010
Canadian Association of Research Libraries (CARL)	Core Competencies for 21st Century CARL Librarians	First published in 2010
Young Adult Library Services Association (YALSA)	Teen Services Competencies for Library Staff	1981 and 2010
Federal Library and Information Center Committee (FLICC)	Competencies for Federal Librarians	2008 and 2011
Association of College & Research Libraries (ACRL)	ACRL Diversity Standards: Cultural Competency for Academic Libraries	First published in 2012

Nevertheless, many core competencies documents were publicly released almost a decade ago, while others have only been updated irregularly. As time went by, there emerged increasing discussions on the comprehensiveness and timeliness of these documents. Such discussions primarily covered two topics: 1) assessment of existing documents;[17] and 2) proposals of emerging core competencies.[18] Most findings were based on literature review and content analysis, with information extracted from the following sources: 1) core competencies documents;[19] 2) LIS program catalogs and curriculum;[20] 3) job advertisements and position announcements;[21] and 4) data directly collected from librarians, educators, and LIS students.[22] For instance, scholars considered it a "*surprising omission*" that marketing was not explicitly mentioned in the ALACC.[23] They argued that marketing skills should be included along with advocacy because libraries had to demonstrate their worth to "*compete for scarce financial resources*" in the current fiscal environment.[24] Other frequently advocated competencies involved the following areas: 1) communication and management;[25] 2) advanced customer services;[26] 3) digital literacy and computational skills;[27] and 4) selected personal characteristics and elusive soft skills.[28] While there remain certain ambiguity and controversy over the definitions and scope of core competencies,[29] at the center of all discussions lies what it takes to be a competent librarian.

While we highly appreciate prior studies, we noticed two methodological features shared by most empirical research that might lead to certain limitations. First, data collection pre-

dominantly relied on structured interviews and close-ended questions that were rooted in pre-existing competencies documents.[30] Second, data analyses were often based on content analysis of categorical and numerical data, even when there was qualitative data collected.[31] While such methods make the research operationalizable, they might subtly orient the respondents toward certain perspectives. Besides, hypothesis testing and statistical significance under quantitative research could be inadequate for generating new ideas or developing a deeper understanding.[32] Therefore, we believed a less directive and more holistic approach would make a good supplement to the existing empirical studies. For instance, open-ended questions without any predetermined set of choices would encourage the free flow of thoughts and narratives, particularly for sensitive topics, unexpected issues, and reasons behind the answers.[33] Compatible with such a data collection approach, qualitative analysis of content will allow the researchers to work in an interpretive paradigm, code for consensus, and leverage their domain knowledge for data analysis. For instance, while categories under quantitative content analysis have to be mutually exclusive to follow certain statistical assumptions, qualitative analysis of content allows using multiple categories simultaneously.[34]

Research Design and Methods

Based on the findings aforementioned, our research aimed at identifying and presenting the most demanding core competencies from working librarians' perspectives, especially those that have been underdeveloped in existing documents but spontaneously advocated by the practitioners. For eliciting ground truth and gaining a more nuanced understanding of desirable core competencies on-site, we conducted a qualitative analysis of content on 383 librarians' responses to the following open-ended question: "*What advice, if any, would you provide to a degree program that educates future librarians who want to do the kind of library work you do?*" These responses were collected from a pre-existing survey participated by 759 librarianship professionals (mostly librarians). This librarianship survey was part of a large survey that included eight tracks for different information professionals to explore their opinions on LIS education through the lens of their varied roles. With approval of the Institutional Review Board (IRB) at the University of Texas at Austin, all survey respondents were recruited through two nonprobability sampling methods: convenience sampling and snowball sampling. The convenience sampling began with email invitations sent to 2,631 registered alumni who graduated from a LIS school in the US with an MLIS, MSIS, or PhD degree from the early 1950s to 2013. This alumni group was contacted for convenience sampling because the survey conductors were affiliated with this school at that time. Snowball sampling was conducted by inviting the respondents to share the link with other relevant LIS professionals whom they believed would be interested in this survey. Some survey data have already led to several published papers regarding the relationship between LIS education and specific kinds of information work.[35] However, since the survey data collected was large and heterogenous, there remained a subset of responses from 759 librarians unexamined. Among these 759 librarians, 383 respondents answered the aforementioned open-ended question that was the focus of this study. Except for the two respondents who declined to provide alumni information, 223 of these respondents (58% of 383) identified themselves as alumni of the same LIS school, while 158 respondents (41% of 383) denied their alumni affiliations with this school. Although the original open-ended question did not specify librarians' core competencies, respondents spontaneously talked about core competencies, along with their education experience and concerns about library realities.[36]

Considering how the emergent feedback might answer our proposed questions and fill the gap we identified in the literature review, we analyzed these responses and uncovered six groups of desirable core competencies. Two rounds of coding were conducted. First, two researchers coded these responses independently using a web application for qualitative and mixed analysis called Dedoose.[37] Each response was annotated with words and phrases that were regarded as good summaries of its content according to each coder's familiarity with librarianship and LIS education. Many identical codes and intercode relationships about librarians' core competencies emerged from the comparison of the two independent codebooks. Based on such coding consensus observed, a new codebook was created and applied to the second round of coding. All the codes and intercode relationships adopted were examined and organized based on their topics and thematic relations to best preserve and reflect the respondents' authentic understanding. It is to be noted that the core competencies codes were neither mutually exclusive nor collectively exhaustive. As there were many different competencies and so much overlap between them, it was difficult and unnecessary to cover everything or separate highly correlated competencies into isolated buckets. This was another reason why qualitative analysis of content was chosen over quantitative content analysis. Given this codebook, each response was annotated with at least one code by the two researchers respectively. Then the two coding results were discussed and merged into one. In terms of criteria for coding evaluation, as an interpretive method, qualitative analysis of content differs from the traditional quantitative content analysis.[38] Instead of calculating the intercoder reliability, the credibility of this analysis was based on precise coding definitions, comprehensive expertise of the coders, and clear coding procedures, which were all strictly followed and applied in this coding process.

Respondent Profiles

Table 2 provides an overview of the respondent profiles. They worked in a wide variety of library types: public libraries (38%, n = 147), academic or higher education libraries (35%, n = 133), school libraries (12%, n = 46), hospital and health libraries (9%, n = 35), government libraries (4%, n = 17), law libraries (2%, n = 9), corporate libraries (2%, n = 7) and other nonprofit libraries such as the art museum library and the synagogue library (2%, n = 7). Geographically, they worked in urban (56%, n = 214), suburban (32%, n = 123), rural (7%, n = 26) and other areas (5%, n = 20). Some respondents held more than one position or worked for multiple libraries simultaneously. For working experience, 227 respondents (59%) were very experienced librarians who have been working for more than 10 years, of which 173 (45%) people had been library professionals for more than 15 years. Fifty-six (15%) respondents had been librarians for 5–10 years and 95 (25%) librarians had been working for less than 5 years. The following titles were included: 1) various tracks of librarians (64%, n = 247); 2) administration and management positions (27%, n = 104); and 3) research and academic positions (7%, n = 25). These librarians were highly educated, especially in LIS. More than 90 percent (n = 306) of the 339 respondents with education information provided had at least one master's degree, of which 300 respondents earned their master's degree in LIS. Other degrees held by our respondents include Juris Doctor degree (n = 9), PhD in LIS (n = 3) and humanities (n = 1), and MS in humanities (n = 31), education (n = 13), law (n = 9), natural science and technology (n = 4), and other social sciences (n = 10). In short, the respondents were predominantly experienced and well-educated librarians coming from diverse positions and educational backgrounds, which provides various perspectives on librarians' competencies. The average length of their responses is 41 words, while the longest response was 264 words.

TABLE 2
Respondent Profiles

Respondent Profiles (n = 383)		
Types of Libraries	**Count**	**Percentage**
public libraries	147	38%
academic or higher education libraries	133	35%
school libraries	46	12%
hospital and health libraries	35	9%
government libraries	17	4%
law libraries	9	2%
corporate libraries	7	2%
other nonprofit libraries	7	2%
Geographical Distribution	**Count**	**Percentage**
urban	214	56%
suburban	123	32%
rural	26	7%
other areas	20	5%
Library Working Experience	**Count**	**Percentage**
more than 15 years	173	45%
10 to 15 years	54	14%
5 to 10 years	56	15%
less than 5 years	95	25%
N/A	5	1%
Job Titles	**Count**	**Percentage**
various specializations of librarians	247	64%
administrative and management positions	104	27%
faculty, research, and professional positions	25	7%
N/A	7	2%

Notes: Some respondents work on multiple positions at the same time so the percentages for "Types of Libraries" added up to over 100%.
"N/A" means the answer to this question was not available (not answered or answered with "not applicable" and the like).

Findings

Coding Overview

The final codebook was composed of 33 codes in 9 categories. Table 3 summarized the coding outcomes and figure 1 showed the co-occurrence of each two groups of codes. Co-occurrence happens when two different groups of codes are applied to the same response simultaneously, which indicates their proximity or correlation. Mapping co-occurrence of all coded competencies shows us their overall interaction in the context of the responses. In figure 1,

the number in each colored block indicates the number of times the two codes co-occurred in all the responses while the corresponding textual variables on this colored block's x-axis (the horizontal line) and y-axis (the vertical line) tell what the two codes are. The color of the block represents the relative frequency of the paired codes' co-occurrence: the darker colors indicate that the paired codes were brought up together more frequently, while the lighter colors suggest less co-occurrence. For instance, we can tell from the darkest block in figure 1 that "Library Foundations" co-occurred with the codes of "Practice" in 39 responses, which suggests a strong correlation between these two groups of competencies at work from the respondents' perspectives. In comparison, the blocks with the lightest colors and numbers under 3 suggest that the respondents rarely discussed the corresponding competencies at the same time. For instance, no one discussed "Personal Attributes" together with "Technical and Computational Knowledge and Skills." Furthermore, we compared and aligned our codes with ALACC published in 2009, as it was one of the most influential core competencies standards in North America (see appendix for alignment details).[39] Two clusters of codes emerged from the alignment. The first cluster of competencies was emphasized by both ALACC and the respondents, including "Library Foundations," "Specific Knowledge and Skills," and "Technical and Computational Knowledge and Skills." Meanwhile, the second cluster of competencies was advocated by working libraries but marginalized or overlooked in ALACC. Since the first cluster of competencies has been well established and extensively studied, we excluded them from further analysis. In contrast, we focused on the six groups of competencies in the second cluster. The following paragraphs presented our analysis and findings of each group.

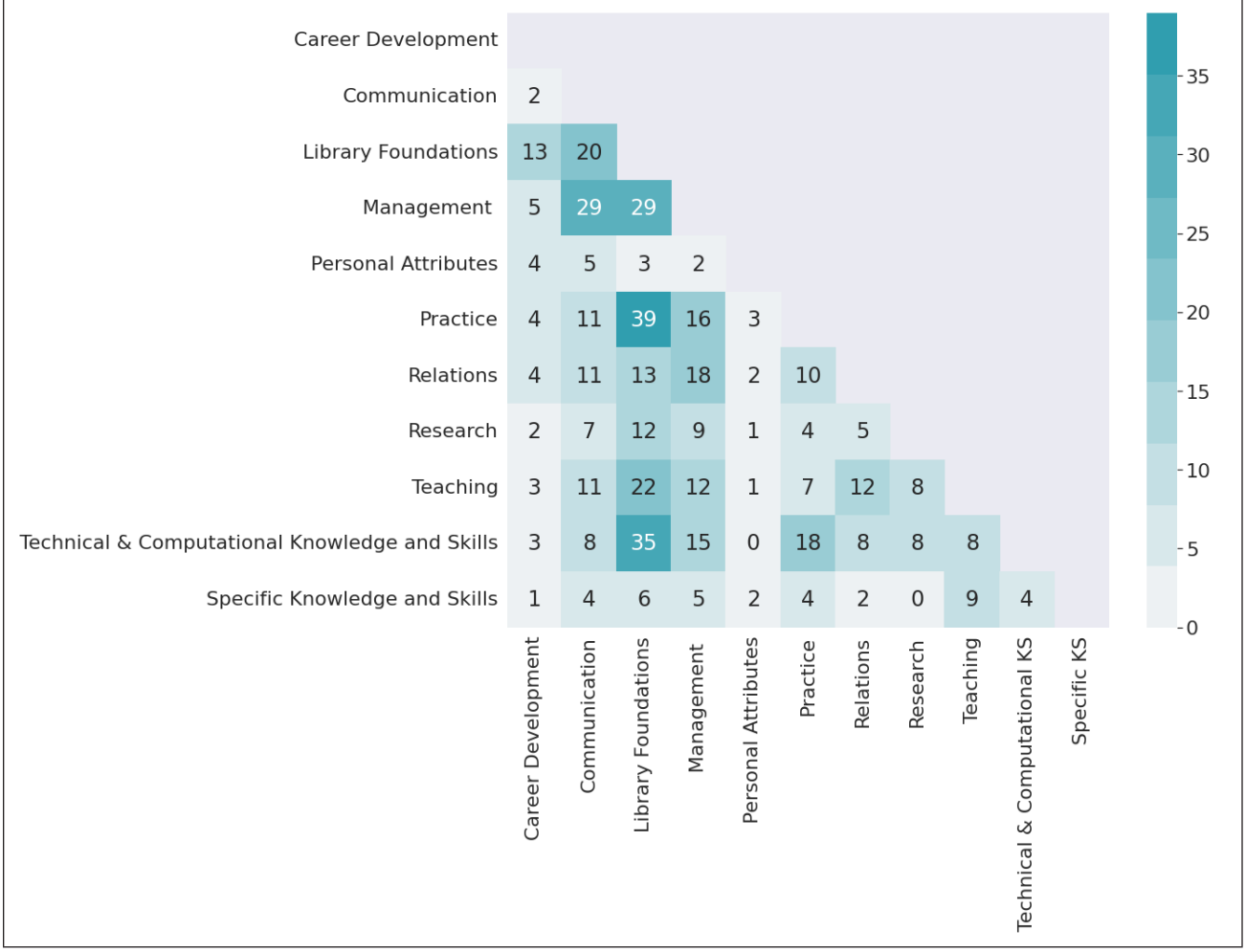
TABLE 3
Survey Coding Summary

	Survey coding summary based on responses to "*What advice, if any, would you provide to a degree program that educates future librarians who want to do the kind of library work you do?*")		
Survey Codes		**Times Coded and Their Percentage (n = 383)**	
		Count	**Percentage**
1. Library Foundations			
1.1	knowledge and skills for various librarianships	82	21%
1.2	customer service	27	7%
1.3	curriculum/coursework/program	17	4%
1.4	library values, ethics and history	8	2%
Subtotal		134	35%
2. Practice			
2.1	experience	77	20%
2.2	real-life issues	27	7%
2.3	soft skills	22	6%
Subtotal		126	33%
3. Management			
3.1	advertising, marketing, and advocacy	32	8%
3.2	budget management and fundraising	32	8%
3.3	leadership and people management	28	7%

TABLE 3
Survey Coding Summary

	Survey coding summary based on responses to "*What advice, if any, would you provide to a degree program that educates future librarians who want to do the kind of library work you do?*")		
Survey Codes		**Times Coded and Their Percentage (n = 383)**	
		Count	**Percentage**
3.4	administration and organization	24	6%
3.5	strategic planning	5	1%
Subtotal		121	32%
4. Specific Knowledge and Skills			
4.1	instruction	25	7%
4.2	knowledge and skills for children and adolescent	23	6%
4.3	programming (for events)	19	5%
4.4	research methods	19	5%
4.5	scholarly communication	11	3%
4.6	other specific qualifications	9	2%
4.7	pedagogy	6	2%
4.8	health and medical knowledge	6	2%
Subtotal		118	31%
5. Technical and Computational Knowledge and Skills			
5.1	computer skills and literacy	44	11%
5.2	library system, tools, and resources	24	6%
5.3	information and data management	20	5%
Subtotal		88	23%
6. Communication			
6.1	diplomacy skills	25	7%
6.2	oral and written skills	17	4%
6.3	presentations and public speaking	11	3%
6.4	empathy training	8	2%
Subtotal		61	16%
7. Career Development			
7.1	job market	21	5%
7.2	change management	18	5%
7.3	continuing education/lifelong learning	14	4%
Subtotal		53	14%
8. Relations			
8.1	community collaboration	28	7%
8.2	networking and outreach	12	3%
Subtotal		40	10%
9. Personal attributes			
Subtotal		15	4%

FIGURE 1
Coding Co-occurrence (KS: knowledge and skills)



Practice

As 126 (33%) respondents emphasized, practice (practicum, internship, on-site independent studies, volunteering, and so on) bridged the gap between students' expectations and the realities. It gave students what they could hardly acquire through school education, including hands-on opportunities, real-life experience, and practical soft skills. Besides, it was also vital for leveraging other core competencies by transforming their theoretical knowledge to applicable skills. First, 77 respondents stressed the necessity of gaining hands-on experience for getting professionally employed. For a job candidate, "*The degree gets a candidate in the door for the initial interview, but once actually in the interview what matters is the real experience*" (Respondent 54). The respondents who identified themselves as library administrators claimed that "*When hiring we never ask new graduates about their coursework or review transcripts. We ask about their real work experiences in libraries*" (Respondent 127). Practice also enabled students to have a try on their careers of interest and decide whether they would fit into a position or not. For instance, Respondent 377 suggested that students aiming for children librarian positions should "*volunteer with different organizations who serve children to ensure that you want to work with children and to get a feel for the range of children you may serve.*"

Second, 27 respondents talked about how practice prepared librarians for handling real-life issues. Some respondents recalled their lack of practice at school and how overwhelmed

they were when they encountered such situations on-site. Respondent 229 insisted that in the future LIS educators should "*Make sure that future librarians are warned about disruptive, violent, or ill patrons"* because *"Dealing with the public can be stressful. I wish I had know [sic] when I began my career*." Respondent 101 added that topics on "*how to recognize and dodge patron interactions that cross the line into the too-personal zone*" would be very useful to know how to handle. Sometimes, the situations that arose at libraries could be so intense that they caused safety emergencies. Respondent 266 reported that "*issues in violence and safety have become a recent concern in my library so right now*" and Respondent 143 demanded *"a self-defense course*" as part of LIS curriculum for students thinking about public librarianship. Third, we received substantial feedback on insufficient education and training on practical aspects of librarianship. Some respondents vehemently complained about the "*useless theory*" in their class. For instance, Respondent 245 commented that "*there's so little in the curriculum that reflects what I actually need to do every day with respect to cataloging, managing our ILS, and related stuff*." Respondent 318 said that "*I talked a lot of theory and slung around all kinds of ideas and concepts in MLIS, and none of it helped me do the actual, in the trenches job, solo*." Last but not least, 22 respondents praised practice for cultivating their "*soft skills*," which involved a variety of topics. Since these responses overlapped tremendously with other groups of codes, we elaborated on them in the following sections.

Management

Management competencies were highlighted by 121 (32%) respondents. They believed all librarians, even "*front line staff*," should try to "*understand the big picture of libraries with an administrative perspective*" (Respondent 290). Respondent 144 said that "*Most librarians will become managers at some point in their career and few are good at it naturally*." Nevertheless, "*So many librarians lack management skills yet are required to supervise or run departments*" (Respondent 288). Various management competencies were brought up by the respondents. First, 32 respondents emphasized financial skills including budgeting, fundraising, and purchase decision making. They pictured two contrary and complementary scenarios: libraries with limited budgets and libraries with sufficient budgets. For the former, librarians must "*plan programs efficiently and creatively*" (Respondent 207) within "*tiny budgets*" (Respondent 1). For the latter where libraries' budgets were sufficient, LIS students were advised to sharpen their financial skills because "*Future librarians will manage multi-million dollar organizations; they need to learn how to manage them effectively*" (Respondent 141). In either case, librarians were expected to "*evaluate thoroughly the products of vendors*" and "*be alert to the changes in publishing models*" to get the best price for library acquisition (Respondent 166). According to our respondents, budget difficulties observed at some libraries were quite severe and were pushing potential librarians away. For example, Respondent 316 suggested LIS students should "*steer clear of rural libraries in conservative states and communities…. local and state funding at risk.*"

Second, 32 respondents promoted marketing skills to "*publicize and market library services to the community*" (Respondent 243) as well as "*measure and articulate library value to funders and stakeholders*" (Respondent 348). Respondents particularly underlined the necessity of adopting new tools and "*non-traditional ways*" (Respondent 222) for marketing, such as "*using new media to reach the underserved patron*" (Respondent 248). Also, librarians needed to take the initiative to reach out to potential patrons: "*Don't expect patrons to come to the library for assistance"* (Respondent 222). Third, 28 respondents advocated leadership and people management for

"*motivating employees, maintaining a positive professional environment, coaching, providing constructive feedback to staff*" and "*leading from anywhere in the organization as well as from a leadership position*" (Respondent 348). However, such competencies came through practice. As Respondent 189 put forward, "*It's difficult to train for management/leadership because it's often years before one is able to put any of the training into practice.*" Respondent 224 echoed that, in terms of people management, librarians often "*just have to learn as we go.*" To merge such competencies gap, both formal coursework on leadership development, staff supervision, human resources, and on-the-job training for truly understanding "*the big picture*" of the organization were recommended (Respondents 290 and 365). Fourth, general administration and organization competencies were recommended by 24 respondents for grasping and adapting to the organizational contexts of the libraries, such as "*how to read an organization—how does it function? how do you function within it? What autonomy do you have or not? Where and why*" (Respondent 206). Five respondents underpinned strategic planning skills to "*position the library well in the community*" (Respondent 76) and to empower the librarians.

Communication

Four competencies for communication were underscored by 61 (16%) respondents: 1) diplomacy skills; 2) oral and written skills; 3) presentations and public speaking skills; and 4) empathy training. First, 25 respondents highlighted diplomacy skills for formal and administrative communication with funders and decision-makers. According to them, real-world administrative conversations could be difficult. Respondent 17 claimed that "*The hardest challenge is explaining what I actually do to higher-ups … who think my job is to sit behind a desk reading a novel all day.*" Respondent 337 shared the same feelings:

> *Tell your students that they and the library itself will be disrespected and dismissed. The people above you (city/county/state officials, college/university/k–12 administrators) will reduce your budget and ask why anyone needs a library when you have a Kindle/Nook/the Internet. Your students will need to work with these people and change their minds.*

Therefore, diplomacy skills were proposed for the following actions: 1) "*communicating the importance of libraries to the governing bodies*" (Respondent 35) and 2) "*dealing with bureaucracies and difficult systems*" for policy changes (Respondent 73). Future librarians were advised to "*learn about the politics of the job, and how to effectively tell your library's story including effectively using and presenting data—such as with infographics … to develop programming and gain support*" (Respondent 198).

Seventeen respondents emphasized presentation and public speaking skills, while 11 respondents advocated oral and written communication skills. While these skills might be considered very basic qualifications, they have not been as widely valued and acquired as expected. For instance, Respondent 148 recalled that "*When I was at the iSchool, everyone complained about all the group work and presentations*" and Respondent 80 said that "*I run into fellow professionals who misuse apostrophes, can't spell very well and have either poor typing skills or poor writing skills such that their email messages are barely intelligible*." Our respondents reiterated the importance of writing and speaking proficiency such as "*being able to spell and punctuate sentences correctly, as well as use appropriate vocabulary and phrasing*" (Respondent 80). In addition, it was essential for librarians to relate to and communicate with various patrons and co-workers

at their educational levels and in their language both orally and verbally. For instance, they should know "*how to recognize and remove jargon from your vocabulary in patron situations*" and "*keep 'plethora' out of conversations with patrons new to the English language*" (Respondent 101). Respondent 152 shared an example in the context of an academic health sciences library, where "*You don't have to have a science background to do what I do, but you must be able to speak the language and be curious about the subjects your users are studying/researching*." Finally, empathy training was proposed by 8 respondents, especially for public librarians who constantly worked with difficult patrons. As Respondent 299 told us, "*Empathy training and people management skills are incredibly important for public librarians…We need patience and understanding in order to provide the best possible service to the public*." However, the respondents also confirmed that empathy was "*something that is not easy to teach but should come from within, based on life experiences*" (Respondent 80). Therefore, they recommended both supporting coursework (such as psychology) and on-site practice for empathy training.

Career Development

According to 53 (14%) respondents, career development competencies are crucial for librarians to get professionally employed and maintain competitiveness in the long run. There were three core competencies: 1) a good understanding of the LIS job realities; 2) change management skills; and 3) lifelong learning. First, 21 respondents expressed deep concerns about the decreasing LIS job opportunities and gloomy job prospects. They warned the students not to "*be lulled by the liberal atmosphere of your school and professors*" (Respondent 64) and not to expect a job offer right after graduation because the positions were very limited. Respondent 150 even claimed, "*Frankly, I would steer people to other professions, not libraries*." In addition to limited jobs, LIS positions were also precarious because its "*values, working conditions, and even reasons for being, are often challenged by the market, by politicians, by administrators, citizens*" (Respondent 145).

Consequently, 18 respondents highlighted change management, which we found extremely relevant under current COVID circumstances. Librarianship is an ever-changing occupation where a considerable amount of learning takes place on the job. As Respondent 30 suggested, "*Be prepared for change. It is amazing how much my job has changed and librarianship has changed since I graduated*." Furthermore, a few respondents put forward "crisis management" for unexpected emergencies: "*As a public librarian in a large urban environment, the primary thing I feel I am missing in my education is crisis management"* (Respondent 14). To keep pace with the current issues and rising trends, lifelong learning was advocated by 14 respondents for maintaining competitiveness. Meanwhile, both LIS educators and students should stick to the core values and unique visions of LIS to preserve the best of this profession. As Respondent 352 appealed, "*Try to keep up with the changes but don't lose sight of core values: free access to info, promoting love of reading, developing reading readiness skills in young children*."

Relations

Forty (10%) respondents acclaimed relational competencies as the key for the acquisition, development, and maintenance of both interpersonal and organizational relationships. As Respondent 153 brought forward, "*LIS students may not be aware that all types of librarians work with persons external to the library (vendors, community/university partners, etc.)*." However, since interpersonal relations with patrons and colleagues were covered in the aforementioned discussions (such as diplomatic skills), to avoid repetition, the following discussion on relational

competencies was focused on organizational relations in two aspects: community collaboration (28 responses) and networking and outreach (12 responses). The first argument was that fulfilling libraries' commitments to the communities would not only benefit the communities but also expand the libraries' patron base and help them establish partnerships with new individuals and institutions. For instance, according to the respondents who were school/academic/higher education librarians, good relations with the schools and college departments brought more people to the libraries to work on-site and even volunteer for specialized projects of their interest. Moreover, community collaboration remarkably strengthened the library's image in the eyes of the funders. As Respondent 151 declared, "*the people that I've been able to establish relationships with are my champions. They use the library more and can speak to upper administration about why the library is important*." To form good relational competencies, librarians had to understand the community in depth: "*Not simply demographics, but what is important to the people they serve, how they see themselves, and what they aspire to*" (Respondent 297), including the community's issues, structure, culture, language, and so on. Only if librarians understood how to create materials that patrons would desire and attend, would they achieve effective community engagement and extensive networking through programming. To make this happen, courses on public relations and cross-cultural communication were recommended.

Personal Attributes

Fifteen (4%) respondents brought up personal attributes as both favorable individual characteristics and occupational competencies. Respondent 267 believed that "*Personality counts. You need to be a people person, not a BOOK person*." Respondent 58 explained, "*At root we are working with people and if you cannot manage those relationships you won't be able to conduct an effective reference interview or assess user needs or successfully argue your case with city hall.*" According to our respondents, many people came to libraries to seek person-to-person contact, and librarians were expected to provide that instead of just referring people to some online source. Respondent 162 argued, "*If you are not enthusiastic about being a servant of the people, then do not become a librarian*." These respondents encouraged the LIS students who were less sociable to develop people-centered skills to facilitate interpersonal communication and collaboration. As Respondent 148 concluded, "*A lot of librarians are socially awkward, but I don't think that's an excuse.*" Along with being sociable, staying patient, kind, and positive were also regarded as desirable personal attributes for librarians. Besides, flexibility and adaptability were considered significant for navigating career developments (Respondents 6 and 24). To foster and reinforce such competencies, LIS students were advised to "*take as broad a range of courses as you can*" (Respondent 8) and get "*a good overview of the various types of library systems and how they work*" (Respondent 45). Respondent 187, who had been on various librarian tracks for more than 40 years, encouraged the students to "*be open to learning, absorb as much as possible, and see where it takes you*."

Discussion

This study contributed to the continuing dialogue of core competencies in three ways. First, it differed from many prior empirical studies by focusing on qualitative analysis of emergent feedback.[40] Correspondingly, it highlighted practitioners' opinions about desirable competencies that had not been formally laid out in existing documents or had been deficiently emphasized in academic discussions. For instance, strategic and diplomatic skills for dealing

with supervisors, external funders, and bureaucracies were rarely examined before, but they were underlined by many respondents. Second, the respondents spontaneously endorsed many existing proposals.[41] Third, our qualitative analysis connected multiple competencies that previously were examined individually and shed light on how to bridge them together in future studies. For instance, our analysis showed a couple things: 1) how practice played an indispensable role in cultivating a realistic mindset and hands-on skill for all the other groups of competencies; and 2) how communication, relations, and management competencies work together as for good interpersonal skills.

Meanwhile, there were also a few limitations to be noted. The first potential problem lay in the way the open-ended question was originally asked, as "core competencies" was not specified. However, it was also the openness and inclusiveness of this question that led us to our emergent observations.[42] Second, while the respondents were from diverse backgrounds and different generations, many of them were alumni of the same LIS school. Therefore, the respondents who answered this open-ended question might hold different characteristics from those who did not.[43] Third, skeptical readers might question our broad definition of "core competencies." We were aware that some qualities we addressed were arguably considered beyond the scope of core competencies, such as personal attributes.[44] We retained such inclusiveness for accommodating all opinions emerging from our respondents' insights, even the controversial ones.

While COVID-19 was the significant background when we drafted this paper, we were not writing this paper as a response to challenges posted by COVID-19; instead, we anticipated visions beyond. For sure, many unprecedented challenges were caused by the peculiarities of such a global pandemic; however, recurring difficulties and unexpected crises constantly happen despite their sizes and forms. For instance, libraries have gone through natural disasters and budget crises,[45] sheltered people from gunshots,[46] and fought with social problems on-site in the last two decades.[47] Libraries not only have to survive these iterative, transformational, or catastrophic cases, they also have to grow and thrive.[48] With quarantine and social distancing, librarians might have to reassure people that libraries are safe and welcoming spaces for the community and restore patrons' interest in visiting libraries in person, given the accelerated shift to online access and virtual reference. Even in the post-COVID times and in the further future, there would still be a long way for library professionals to go with uncertainty, changes, and challenges due to the problems we have witnessed during the pandemic: social injustice, digital divide, job loss, public health concerns, and so on. To stay competitive, it is important to plan for the worst while hoping for the best. Therefore, as suggested by both scholars and our respondents,[49] librarians should equip themselves with change and crisis management, critical and reflective thinking, strategic planning, and life-long learning to evolve with this challenging profession.

Conclusion

The present study analyzed the survey responses collected from 383 working librarians to elicit the most demanding but less emphasized core competencies for practitioners. Competences in six areas emerged from their responses: practice, management, communication, career development, relations, and personal attributes. We urge LIS organizations and policymakers to consider accommodating these competencies to frame more up-to-date and on-the-ground core

competencies documents. Library administrators and strategic planning committees could also consider revising their institutional core competencies frameworks and recruitment strategies on a regular and consistent basis to ensure their documentation matches the lived experience of working librarians and their patrons' needs. Notwithstanding the time and administrative costs of such organizational adoption, we suggested current LIS students take the initiative to directly engage with these core competencies in consultation with their program advisors. LIS educators should also infuse these emergent suggestions into program curricula, to help future librarians acquire as much realistic understanding and hands-on skills as possible. For scholars and researchers, our research indicates that, in addition to structured interviews and guided surveys, open-ended questions and unfiltered conversations can be resourceful ways of collecting librarians' real-life experiences and nuanced thoughts. Therefore, we recommend diversifying research methods to leverage librarians' insights on the ground for revising librarians' core competencies.

All in all, the unprecedented challenges posed by the COVID-19 pandemic remind us vividly that librarianship is an ever-evolving and challenging profession where perennially revisiting and updating librarians' core competencies documents are necessary for librarians to maintain their competitiveness. Emergent insights from our respondents also call for a consistent revision and updating of core competencies documents for librarians to acquire long-term and transferable skills, especially for resilience against crisis-ridden challenges. The development of librarians' core competencies requires enduring and joint efforts, particularly focused on bottom-up participation of working librarians. Through listening to what they are faced with and incorporating what they need, we shall be in a better position to handle current problems and future challenges.

Acknowledgments

We wish to express our gratitude to all the survey respondents for their time and insights. We want to thank the committee of the School of Information at University of Texas at Austin for their strong support. We also want to thank our reviewers and colleagues at the School of Information Sciences at the University of Illinois Urbana-Champaign for their insightful comments and suggestions. Finally, we would like to thank our editors and reviewers for their critical and insightful feedback!

APPENDIX. Alignment of Our Codebook and ALA's Core Competences of Librarianship (ALACC)

Survey Codes	Times Coded	ALACC Code Paired	ALACC Code Group
1. Library Foundations	**Subtotal: 134**		
knowledge and skills for various librarianships	82	1E, 2A to 2D, 3A to 3C	1. Foundations of the Profession; 2. Information Resources; 3. Organization of Recorded Knowledge and Information
customer service	27	5A, 5B, 5C	5. Reference and User Services
curriculum/coursework/program	17	Not pairable	Not pairable
library values, ethics, and history	8	1A, 1B, 1G	1. Foundations of the Profession
2. Practice	**Subtotal: 126**		
experience	77	1I	1. Foundations of the Profession
real-life issues	27		
soft skills	22		
3. Management	**Subtotal: 121**		
advertising, marketing, and advocacy	32	1H, 5E	1. Foundations of the Profession; 5. Reference and User Services
budget management and fundraising	32	8A	8. Administration and Management
leadership and people management	28	8B	
administration and organization	24	8B, 8C	
strategic planning	5	8C	
4. Specific Knowledge and Skills	**Subtotal: 118**		
knowledge and skills for children and adolescent	23	1K	1. Foundations of the Profession
other specific qualifications	9		
health and medical knowledge	6		
research methods	19	6A to 6C	6. Research
scholarly communication	11		
instruction	25	7B	7. Continuing Education and Lifelong Learning
programming (for events)	19	7C	
pedagogy	6	7D	
5. Technical and Computational Knowledge and Skills	**Subtotal: 88**		
computer skills and literacy	44	4A to 4D	4. Technological Knowledge and Skills
library system, tools, and resources	24		
information and data management	20		

Survey Codes	Times Coded	ALACC Code Paired	ALACC Code Group
6. Communication	**Subtotal: 61**		
diplomacy skills	25	5C, 5E, 5F	5. Reference and User Services
oral and written skills	17	1J	1. Foundations of the Profession
presentations and public speaking	11		
empathy training	8		
7. Career Development	**Subtotal: 53**		
job market	21	1F	1. Foundations of the Profession
change management	18		
continuing education/lifelong learning	14	7A	7. Continuing Education and Lifelong Learning
8. Relations	**Subtotal: 40**		
community collaboration	28	8D, 8E	8. Administration and Management
networking and outreach	12		
9. Personal attributes	**15**	Not pairable	Not pairable

Notes

1. Isto Huvila et al., "What Is Librarian 2.0: New Competencies or Interactive Relations? A Library Professional Viewpoint," *Journal of Librarianship and Information Science* 45, no. 3 (September 2013): 198–205; Canadian Association of Research Libraries (CARL), Core Competencies for 21st Century CARL Librarians (2010), www.carl-abrc.ca/doc/core_comp_profile-e.pdf; Michael Gorman, *Our Enduring Values Revisited: Librarianship in an Ever-changing World* (Chicago, IL: American Library Association, 2015); A. Ducas, N. Michaud-Oystryk, and M. Speare, "Reinventing Ourselves: New and Emerging Roles of Academic Librarians in Canadian Research-intensive Universities," *College & Research Libraries* 81, no. 1 (2020): 43–65; Brad Warren, "Developing a Practical Approach to Change," *College & Research Libraries* 81, no. 1 (2020): 2–7.

2. "Now and Next: What a Post-COVID World May Bring for Libraries," IFLA Library Policy and Advocacy Blog, https://blogs.ifla.org/lpa/2020/04/06/now-and-next-what-a-post-covid-world-may-bring-for-libraries/ [accessed 18 April 2021]; Lisa Janicke Hinchliffe and Christine Wolff-Eisenberg, "First This, Now That: A Look at 10-Day Trends in Academic Library Response to COVID19" (last modified March 24, 2020) https://sr.ithaka.org/blog/first-this-now-that-a-look-at-10-day-trends-in-academic-library-response-to-covid19/ [accessed 18 April 2021]; Natalie Fulkerson, Sandra McIntyre, and Melissa Stewart, "HathiTrust Emergency Temporary Access Service: Reaping the Rewards of Long-term Collaboration," *Collaborative Librarianship* 12, no. 2 (2020): 187–92.

3. Laura Saunders, "Core Knowledge and Specialized Skills in Academic Libraries," *College & Research Libraries* 81, no. 2 (2020): 288–311.

4. Rachel N. Simons, Melissa G. Ocepek, and Lecia J. Barker, "Teaching Tweeting: Recommendations for Teaching Social Media Work in LIS and MSIS Programs," *Journal of Education for Library and Information Science* 57, no. 1 (2016): 21–30; Sarah Buchanan et al., "Surveying Archivists and Their Work toward Advocacy and Management, or Enterprise Archiving," *American Archivist* 80, no. 2 (2017): 268–95; Sarah A. Buchanan et al., "Survey Research on Tasks and Competencies to Inform Records Management Education," *Records Management Journal* (2017); Yuerong Hu et al., "The Real Library World Is Dirty and You Don't Learn That at All in Schools," *iConference 2020 Proceedings* (2020).

5. Huvila et al., "What Is Librarian 2.0"; CARL, Core Competencies for 21st Century CARL Librarians; American Library Association (ALA), ALA's Core Competences of Librarianship, http://www.ala.org/education-careers/sites/ala.org.educationcareers/files/content/careers/corecomp/corecompetences/finalcorecompstat09.pdf

[accessed 20 April 2021] (After we submitted this paper, ALA published an updated ALA's Core Competences of Librarianship Draft Version for public review and feedback. We have compared the most recent information in this Draft 2021 ALA Core Competences [ALA keeps using this spelling] with the ALA Core Competences of Librarianship published in 2009 as well as the arguments we made in this paper. Our findings and proposals remain valid and valuable); Federal Library and Information Center Committee (FLICC), FLICC Competencies for Federal Librarians, https://www.loc.gov/flicc/publications/Lib_Compt/2011/2011Competencies.pdf [accessed 20 April 2021]; Sajjad ur Rehman, Shaheen Majid, and Ahamd Bakeri Abu Baker, "Competency Definition and Validation for Library and Information Professionals in Malaysia," *Journal of Education for Library and Information Science* (1998): 100–17.

6. Gary Hamel and Coimbatore K. Prahalad, "The Core Competence of the Corporation," *Harvard Business Review* 68, no. 3 (1990): 79–91.

7. Boyd Keith Swigger, *The MLS Project: An Assessment after Sixty Years* (Lanham, MD: Scarecrow Press, 2010).

8. Guy A. Marco, "The Demise of the American Core Curriculum," *Libri* 44, no. 3 (1994): 175–89; Renée McKinney, "Draft Proposed ALA Core Competencies Compared to ALA: Accredited, Candidate, and Precandidate Program Curricula: A Preliminary Analysis," *Journal of Education for Library and Information Science* 47, no. 1 (2006): 52–77.

9. Gorman, *Our Enduring Values Revisited*.

10. Marco, "The Demise of the American Core Curriculum."

11. Marco, "The Demise of the American Core Curriculum."

12. Swigger, *The MLS Project*.

13. Swigger, *The MLS Project*; Gayle Bogel, "School Librarian's Bill of Responsibilities and the ALA Core Competences," *Knowledge Quest* 38, no. 2 (2009): 64–68.

14. ALA, ALA's Core Competences of Librarianship.

15. Bradley Wade Bishop, Adrienne W. Cadle, and Tony H. Grubesic, "Job Analyses of Emerging Information Professions: A Survey Validation of Core Competencies to Inform Curricula," *Library Quarterly* 85, no. 1 (2015): 64–84.

16. CARL, Core Competencies for 21st Century CARL Librarians; FLICC, FLICC Competencies for Federal Librarians; Association for Library and Information Science Education (ALISE), ALISE Ethics Guidelines Statement, https://www.alise.org/index.php?option=com_content&view=article&id=31 [accessed 20 April 2021]; Map & Geospatial Information Round Table (MAGIRT), Map, GIS and Cataloging / Metadata Librarian Core Competencies, https://www.ala.org/rt/sites/ala.org.rt/files/content/publicationsab/MAGERTCoreComp2008.pdf [accessed 5 November 2021]; MAGIRT, Core Competencies for Map, GIS and Cartographic Cataloging/Metadata Librarians, https://connect.ala.org/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=da9e23f5-0ce9-7e61-f913-32a7fd0dcf5c&forceDialog=0 [accessed 5 November 2021]; Young Adult Library Services Association (YALSA), "Teen Services Competencies for Library Staff," www.ala.org/yalsa/guidelines/yacompetencies [accessed 20 April 2021]; ACRL, ACRL Standards, Guidelines, and Frameworks: Alphabetical List, www.ala.org/acrl/standards/alphabetical [accessed 20 April 2021].

17. Bishop, Cadle, and Grubesic, "Job Analyses of Emerging Information Professions"; Karl Pettitt, "Educating Librarians: Applying the Carnegie Foundation for the Advancement of Teaching Apprenticeship Model to the Education of Librarians," in *Re-Envisioning the MLS: Perspectives on the Future of Library and Information Science Education*, eds. Johnna Percell et al. (Bingley, UK: Emerald Publishing Limited, 2018), 123–51, https://doi.org/10.1108/S0065-28302018000044B008; Jason Martin, "What Do Academic Librarians Value in a Leader? Reflections on Past Positive Library Leaders and a Consideration of Future Library Leaders," *College & Research Libraries* 79, no. 6 (2018): 799–821; Youngok Choi and Edie Rasmussen, "What Qualifications and Skills Are Important for Digital Librarian Positions in Academic Libraries? A Job Advertisement Analysis," *Journal of Academic Librarianship* 35, no. 5 (2009): 457–67.

18. Huvila et al., "What Is Librarian 2.0"; Choi and Rasmussen, "What Qualifications and Skills Are Important for Digital Librarian Positions in Academic Libraries?"; Rahim Shahbazi and Aziz Hedayati, "Identifying Digital Librarian Competencies According to the Analysis of Newly Emerging IT-based LIS Jobs in 2013," *Journal of Academic Librarianship* 42, no. 5 (2016): 542–50; Anne E.C. Norman, "Librarians' Leadership for Lifelong Learning," *Public Library Quarterly* 31, no. 2 (2012): 91–140; Craig Finlay, Andrew Tsou, and Cassidy Sugimoto, "Scholarly Communication as a Core Competency: Prevalence, Activities, and Concepts of Scholarly Communication Librarianship as Shown Through Job Advertisements," *Journal of Librarianship & Scholarly Communication* 3, no. 1 (2015): eP1236, https://doi.org/10.7710/2162-3309.1236; Angela Dresselhaus, "Opportunities beyond Electronic Resource Management: An Extension of the Core Competencies for Electronic Resources Librarians to Digital Scholarship and Scholarly Communications," *Serials Librarian* 68, no. 1/4 (2015): 361–69; Brent D. Currier, Rafia Mirza, and Jeff Downing, "They Think All of This Is New: Leveraging Librarians' Project Management Skills

for the Digital Humanities," *College & Undergraduate Libraries* 24, no. 2/4 (2017): 270–89; Laura Saunders, "Identifying Core Reference Competencies from an Employers' Perspective: Implications for Instruction," *College & Research Libraries* 73, no. 4 (2012): 390–404; D. Fife and M.N. Stephens, "Swiss Army Degree: Library and Information Science," in *Re-Envisioning the MLS: Perspectives on the Future of Library and Information Science Education*, eds. Johnna Percell et al. (Bingley, UK: Emerald Publishing Limited, 2018), 139–48, https://doi.org/10.1108/S0065-28302018000044B008.

19. Pettitt, "Educating Librarians"; Dresselhaus, "Opportunities beyond Electronic Resource Management."

20. McKinney, "Draft Proposed ALA Core Competencies Compared to ALA"; Vandana Singh and Bharat Mehra, "Strengths and Weaknesses of the Information Technology Curriculum in Library and Information Science Graduate Programs," *Journal of Librarianship and Information Science* 45, no. 3 (2013): 219–31.

21. McKinney, "Draft Proposed ALA Core Competencies Compared to ALA"; Choi and Rasmussen, "A Job Advertisement Analysis"; Shahbazi and Hedayati, "Identifying Digital Librarian Competencies"; Finlay, Tsou, and Sugimoto, "Scholarly Communication as a Core Competency."

22. Huvila et al., "What Is Librarian 2.0"; Bishop, Cadle, and Grubesic, "Job Analyses of Emerging Information Professions"; Saunders, "Identifying Core Reference Competencies from an Employers' Perspective"; Fife and Stephens, "Swiss Army Degree"; Camille V.L. Thomas and Richard J. Urban, "What Do Data Librarians Think of the MLIS Professionals' Perceptions of Knowledge Transfer, Trends, and Challenges?" *College & Research Libraries* 79, no. 3 (2018): 401–23.

23. Pettitt, "Educating Librarians."

24. Pettitt, "Educating Librarians."

25. Saunders, "Core Knowledge and Specialized Skills in Academic Libraries"; Martin, "What Do Academic Librarians Value in a Leader?"; Shahbazi and Hedayati, "Identifying Digital Librarian Competencies"; Currier, Mirza, and Downing, "They Think All of This Is New"; Fife and Stephens, "Swiss Army Degree"; Gabrielle K.W. Wong, "A Tool for Academic Libraries to Prioritize Leadership Competencies," *College & Research Libraries* 80, no. 5 (2019): 597–617; Wanda V. Dole, "What's All This I Hear about Core Competencies for Library Planning and Assessment?" *Journal of Library Administration* 53, no. 7/8 (2013): 472–81.

26. Finlay, Tsou, and Sugimoto, "Scholarly Communication as a Core Competency"; Currier, Mirza, and Downing, "They Think All of This Is New"; William Fisher, "Core Competencies for the Acquisitions Librarian," *Library Collections, Acquisitions, and Technical Services* 25, no. 2 (2001): 179–90.

27. Choi and Rasmussen, "What Qualifications and Skills Are Important for Digital Librarian Positions in Academic Libraries?"; Shahbazi and Hedayati, "Identifying Digital Librarian Competencies"; Thomas and Urban, "What Do Data Librarians Think of the MLIS Professionals' Perceptions of Knowledge Transfer, Trends, and Challenges?"

28. Lindsay Gypin, "Soft Skills: Hard to Teach? On Self-direction, Flexibility, and Other Things You Didn't Learn in Library School" (last modified January 27, 2019), https://americanlibrariesmagazine.org/blogs/the-scoop/soft-skills-hard-teach/ [accessed 20 April 2021]; Jeanine M. Williamson and John W. Lounsbury, "Distinctive 16 PF Personality Traits of Librarians," *Journal of Library Administration* 56, no. 2 (2016): 124–43.

29. Dole, "What's All This I Hear about Core Competencies for Library Planning and Assessment?"

30. Saunders, "Core Knowledge and Specialized Skills in Academic Libraries"; Bishop, Cadle, and Grubesic, "Job Analyses of Emerging Information Professions"; Choi and Rasmussen, "What Qualifications and Skills Are Important for Digital Librarian Positions in Academic Libraries?"; Saunders, "Identifying Core Reference Competencies from an Employers' Perspective."

31. Saunders, "Core Knowledge and Specialized Skills in Academic Libraries"; Bishop, Cadle, and Grubesic, "Job Analyses of Emerging Information Professions"; Choi and Rasmussen, "What Qualifications and Skills Are Important for Digital Librarian Positions in Academic Libraries?"; Saunders, "Identifying Core Reference Competencies from an Employers' Perspective"; Thomas and Urban, "What Do Data Librarians Think of the MLIS Professionals' Perceptions of Knowledge Transfer, Trends, and Challenges?"

32. Martin, "What Do Academic Librarians Value in a Leader?"

33. *Applications of Social Research Methods to Questions in Information and Library Science*, ed. Barbara M. Wildemuth (Santa Barbara, CA: ABC-CLIO, 2016).

34. Renata Tesch, *Qualitative Research: Analysis Types and Software* (Oxfordshire, UK: Routledge, 2013).

35. Simons, Ocepek, and Barker, "Teaching Tweeting"; Buchanan et al., "Surveying Archivists and Their Work toward Advocacy and Management, or Enterprise Archiving"; Buchanan et al., "Survey Research on Tasks and Competencies to Inform Records Management Education."

36. Hu et al., "The Real Library World Is Dirty and You Don't Learn That at All in Schools."

37. "Band," Dedoose, https://www.dedoose.com/ [accessed 20 April 2021].

38. Wildemuth, *Applications of Social Research Methods to Questions in Information and Library Science*.

39. June Lester and Connie Van Fleet, "Use of Professional Competencies and Standards Documents for Curriculum Planning in Schools of Library and Information Studies Education," *Journal of Education for Library and Information Science* (2008): 43–69.

40. Martin, "What Do Academic Librarians Value in a Leader?"

41. Saunders, "Core Knowledge and Specialized Skills in Academic Libraries"; Pettitt, "Educating Librarians"; Norman, "Librarians' Leadership for Lifelong Learning"; Dole, "What's All This I Hear about Core Competencies for Library Planning and Assessment?"

42. Martin, "What Do Academic Librarians Value in a Leader?"; Wildemuth, *Applications of Social Research Methods to Questions in Information and Library Science*.

43. Wong, "A Tool for Academic Libraries to Prioritize Leadership Competencies."

44. Dole, "What's All This I Hear about Core Competencies for Library Planning and Assessment?"

45. Warren, "Developing a Practical Approach to Change"; Rebecca Hamilton, "The State Library of Louisiana and Public Libraries' Response to Hurricanes: Issues, Strategies, and Lessons," *Public Library Quarterly* 30, no. 1 (2011): 40–53; George M. Eberhart, "Hurricane Harvey and Libraries Recovery and Assistance Are Ongoing" (last modified September 6, 2017) https://americanlibrariesmagazine.org/blogs/the-scoop/hurricane-harvey-libraries/ [accessed 20 April 2021].

46. Kelsey Lupo Mazmanyan, "Student Perceptions of the Library during Times of Terror: Exploratory Research Surveying Students Affected by the October 1 Shooting and Their Impressions of Safety in the Academic Library Community," *College & Research Libraries* 81, no. 1 (2020): 109–21.

47. Hu et al., "The Real Library World Is Dirty and You Don't Learn That at All in Schools."

48. Warren, "Developing a Practical Approach to Change."

49. Warren, "Developing a Practical Approach to Change"; Saunders, "Core Knowledge and Specialized Skills in Academic Libraries."

From Pathfinder to Indigenized: An Assessment of LibGuides for Indigenous Studies by ARL Member Institutions

Kristen J. Nyitray and Dana Reijerkerk

LibGuides is a popular web platform to thematically curate and promote information sources. While guides bridge curricular and research objectives to library collections, there is little discussion about Indigenizing content and design as a decolonization strategy. The study identified and evaluated 357 guides for Indigenous Studies (IS) created by members of the Association of Research Libraries (ARL). Data compiled from Springshare's LibGuides Community and ARL member webpages was analyzed for Indigenous representation, content, and user experience (UX) against a rubric of Indigenous critical pedagogical practices and protocols. The findings reveal variety in vocabulary terms to describe Indigenous peoples and subjects, organization, and topics and foci, as well as a lack of interdisciplinarity. The discussion highlights opportunities for libraries to reimagine guides as Indigenized and decolonized information sources that validate Indigenous ways of knowing.

Introduction

The historical underpinnings of Indigenous Studies (IS) and its inherent interdisciplinary nature require that library research collections account for both past and contemporary experiences of Indigenous peoples. Inspections of bias in collection management (for example, the accuracy and relevance of Library of Congress Authorities and classification schemes for Indigenous collections) have been covered in library literature.[1] Yet to be undertaken is a survey of research guides developed for IS. For more than a decade, library scholarship has considered the use and effectiveness of the LibGuides platform.[2] Only a few articles have attended to discussing guides in Indigenous contexts.[3] The present study makes a contribution to the literature with its assessment of IS guides created by Association of Research Libraries (ARL) member institutions.[4] The data for this study was compiled from Springshare's LibGuides Community[5] and ARL member web pages; it was evaluated for content and against criteria for Indigenous critical pedagogical and design practices. "Indigenous Studies" or "IS" is used in this research as an umbrella term to represent many interrelated academic fields and subfields including First Nations Studies, Métis Studies, Native American Studies, American Indian Studies, Inuit Studies, Polar Studies, and

*Kristen J. Nyitray is Director, Special Collections and University Archives, and University Archivist at Stony Brook University, email: kristen.nyitray@stonybrook.edu; Dana Reijerkerk is the Knowledge Management and Digital Assets Librarian at Stony Brook University, email: dana.reijerkerk@stonybrook.edu.

Hawaiian Studies. This article provides background on IS, presents an overview of LibGuides, discusses the methodology for collecting and evaluating guide content, and highlights opportunities to reimagine guides as Indigenized and decolonized information sources that validate Indigenous ways of knowing.

Background

Indigenous Studies (IS) is a distinct field of study in higher education institutions. It emerged in Canada in the 1960s and in the United States during the 1970s during a period characterized by heightened challenges to social injustices, increased antiwar sentiment, and growth of organized resistance movements.[6] According to Professor Emerita and enrolled Crow Creek Sioux tribal member Elizabeth Cook-Lynn, "a major reason for the development of Native American Studies as disciplinary work was to defend indigenous nationhood in America."[7] Of note, a call to action voiced by the Red Power movement[8] included Indigenous representation and recognition of treaty rights in higher education.[9] Today, more than 200 academic institutions in North America offer a range of programs in IS.[10] Gros Ventre legal scholar Sidner Larson commented on the uniqueness of IS programmatic contexts: "It may be helpful to distinguish American Indian studies (or, as it is termed in some places, Indigenous studies) from race, ethnic, cultural, and multicultural studies, especially as a means of emphasizing indigenous rights of self-government, land, and negotiated relations with state governments."[11] Since its inception, nuanced concentrations in regional studies have been established to reflect US and Canadian government classifications of Indigenous peoples in discrete subdisciplines, such as Hawaiian Studies and Polar Studies. Most recent US Census data finds the American Indian and Alaska Native population comprises 2.9 percent of the US population, equating to 9.7 million people.[12]

Academic libraries engage in work that Indigenizes higher education and removes access barriers to Indigenous research materials. LibGuides is a popular web platform to thematically curate and promote information sources, and to bridge curricular and research objectives to library collections.[13] For IS in particular, guides facilitate access to authoritative Indigenous knowledge and can foster collaboration with local Indigenous communities. Developed by Springshare,[14] LibGuides is a content management system designed for creating subject, topical, and course guides. These guides have largely supplanted traditional print bibliographic lists and basic pathfinders, replacing them with engaging and interactive information-gathering experiences.[15] The LibGuides platform affords guide authors with capabilities to edit in real time, embed audio and visual media, and run statistical usage reports. This library technology tool empowers librarians to dynamically produce and directly publish web pages that connect users to authoritative source materials. According to Springshare, more than 850,000 guides have been published by 6,000 institutions,[16] affirming that LibGuides has become ubiquitous.

For this assessment of IS guides, the authors focused their research questions in three thematic areas: representation, content, and UX design.

1. Representation: To what extent do ARL institutions represent Indigenous Studies (IS) in guides? Are the purposes and intentions of the guides clearly communicated?
2. Content: What words or phrases most frequently appear in assigned titles, subjects, and tags?
3. UX Design: Is there a presence of one or more of the following: decolonizing descriptions, arrangement, and organization of sources; inclusion of a land acknowledgment, local resources, and reference terminology; links to institutional Indigenous Studies (IS) programs?

Do guides align with the best practice protocols recommended in the *International Indigenous Design Charter: Protocols for Sharing Indigenous Knowledge in Professional Design Practice*?[17]

Literature Review

Indigenous and University Relations

Socioeconomic and political conditions of Indigenous peoples are uniquely intertwined with issues of sovereignty and land ownership. A rich literature chronicles the complicated histories of "Native Studies,"[18] university and tribal relations,[19] and land seizures by "land-grab universities," with the latter provoked by the US Federal Morrill Act of 1862. This act set in motion the dispossession of Indigenous peoples from their rightful lands to benefit and subsidize higher education.[20] Lee and Ahtone emphatically argued that the existence of US and Canadian universities has been predicated on buying stolen land from Indigenous communities.[21] Their extensive research confirmed that land in 24 US states was seized from Indigenous peoples in the quest to build universities; while acreage was used as land bases, it was also sold to establish self-sustaining institutional endowments. In the late 1960s, vigorous activism of the Indigenous-led Red Power Movement sought to end oppression of Indigenous peoples, attain justice, and reclaim the right to self-governance. These actions were spurred in part by the US government's 1953 resolution to terminate tribal sovereignty and force assimilation.[22]

Civil rights and related campaigns in support of the American Indian Movement (AIM) have roots in cities where early IS programs were developed such as Native American Studies (NAS) at the University of Michigan. Elizabeth Cook-Lynn's seminal article traces the complex history of IS.[23] In this important wide-ranging examination, Cook-Lynn draws attention to a pivotal event held at Princeton University in 1970 at which thought leaders collectively advocated for atoning for legacies of harm, oppression, and marginalization through higher education programs. At this gathering, a proclamation was made asserting the following: "the academic intention of U.S. colleges and universities was to use education to affect the policy of this nation in Indian affairs"; further, there was a formal directive "for the development by Indians of bodies of indigenous knowledge, and it called that development 'Native American Studies as an Academic Discipline.'"[24] In a keynote address presented years later, Cook-Lynn pointed out progress in some areas, but lamented the lack of Indigenous-directed influence in the discipline and the minimal centrality of Indigenous histories and voices in the curriculum.[25]

Decolonizing practices in academic libraries have been discussed in the areas of cataloging and classification,[26] collection development,[27] archives and special collections,[28] and information literacy.[29] Early US libraries were products of colonial collecting, a global movement to extract knowledges and resources from Indigenous communities.[30] The history of libraries is ensnared in political ideology (for example, the Library of *Congress*) and commodification of knowledge that have contributed to the absences of Indigenous peoples in collections and archival silences that persist today. Indigenous scholars often criticize decolonization work for continued exploitation of knowledge/resources under the guise of diversity and inclusion.[31] Fullmer,[32] Turner,[33] and Christen[34] have discussed decolonization opportunities in online spaces. Anderson's paper addressed Indigenous intellectual property issues, publishing, and access and use models to rebalance Indigenous cultural protocols in LIS contexts.[35]

Critical Indigenous Pedagogy in Higher Education

Grounded in social justice, Indigenous critical pedagogy is "a merger of indigenous and

critical methodologies. It understands that all inquiry is both political and moral…. It values the transformative power of indigenous, subjugated knowledges."[36] Sandy Grande observed, "Native communities continue to be affected and transformed by the forces of colonization, rendering the 'choice' of whether to employ Western research methods in the process of defining indigenous methodologies essentially moot."[37] To reconcile and reckon with their colonial pasts, universities have acted to redress their complicity in displacing and benefiting from the removal of Indigenous peoples through Indigenization. Indigenization in higher education is a movement to prioritize Indigenous ways of knowing in all aspects of higher education, including curricular programs, to better support Indigenous representation and empowerment.[38] To advance national and provincial mandates to Indigenize education curriculum, institutions are engaging in holistic institutional reform, such as the development of the teaching tool *Pulling Together: A Guide for Indigenization of Post-Secondary Institutions*[39] and *Handbook of Critical and Indigenous Methodologies*.[40] Additional examples include implementing place and context-specific Indigenous pedagogy and IS programs,[41] and recruitment and retention programs designed to increase the number of Indigenous students, faculty, and staff.

Scholars have criticized colleges and universities for not being steadfast in their actions to improve Indigenous participation and success.[42] Nakata et al. posited that IS is often too fixated on simplistic decolonization of Western knowledge and practice rather than critically engaging in complex theoretical dilemmas.[43] While many IS programs offer strong local community connections to students and faculty,[44] Luiseño/Tongva scholar Stewart-Amibo found that senior university leaders had little understanding of the institutional relationship with and cultural knowledge of local Indigenous communities.[45]

Pedagogical Considerations for LibGuides UX Design

Librarians often use LibGuides as an instructional design tool to support learning and share knowledge about discipline-specific resources.[46] Alternatively, some have questioned the connection between the use of LibGuides and pedagogy in higher education and whether the wide adoption of the tool addresses information inequity.[47] Among academic libraries, a common theme in the literature is guide effectiveness in reaching target audiences[48] and providing library services.[49] Bowen's comparison study concluded that LibGuide and web-based tutorials are equally effective tools for delivering information literacy skills and strategies.[50]

Since 2010, Springshare has released guidance to its platform users to optimize LibGuides usability and design.[51] The platform's intuitive functionality has in essence eliminated the need for guide authors to have HTML coding experience and to rely upon technology systems mediators to make guides immediately available. Creating a guide using LibGuides is facilitated by completing a brief form. Although the process is simple, each configuration decision prompts a design choice that, when combined with content selection, impacts user experience. Upon selecting the option to create a new guide, authors complete this series of steps: select a template that dictates navigation (side or top); enter a "guide name" and "description"; select the "guide type (such as subject, topic, or course)"; and decide whether or not the guide is available for indexing and reuse by community members. Associated subjects and tags and a friendly URL can also be added at this point or later. A standard LibGuide template presents customizable box structures with optional, predesigned interface elements such as drop-down lists. All guides have an accordion element positioned at the top or side that displays guide

pages and subpages as tabs. Optionally, guide creators can display the Springshare LibGuides logo, last modified date, subjects, and tags at the bottom of the webpage.

Several studies have assessed content curation and UX in LibGuides.[52] Content analysis,[53] a quantitative technique "for making replicable and valid inferences from data to their context,"[54] has been used to evaluate library websites and LibGuides.[55] The impetus is often to develop and implement a content strategy for all guides of a specific subject or topic[56] to improve the usability and findability of content.[57] Past assessments have focused on STEM[58] and digital humanities[59] subject guides. In their study of anti-Black racism guides using LibGuides and created by ARL member institutions, Piper et al. evaluated guides using a rubric based on the Hodge social justice bullet points.[60] Few institutions systematically review guides after they are published; if reviewed by guide creators, it is on an ad hoc basis.[61] UX recommendations have emerged from analyses of the adoption and application of LibGuides in academic libraries.[62] Libraries often use data from assessments of their guides to improve usability and design.[63] From a UX perspective, there is debate about the optimal position of the navigation menu, [64] design aesthetic (for example, minimalism),[65] and accessibility practices.[66] Web accessibility and usability are important considerations for academic library websites.[67] Design frameworks, such as the *Web Content Accessibility Guidelines* (WCAG),[68] usability testing,[69] and the creation of new librarian positions focused on user experience are increasingly more common. Implementation of UX principles and interpretations of the WCAG in libraries vary. Compliance with WCAG 2.0 is subjective.[70] To this point, the white paper prepared by Sims and Fiers highlights elements with some incompatibilities in standardization such as consensus on the appropriate level of detail needed for description of textual works and images.

Methodology

Defining Indigenous Guides

Indigenous guides in this study are guides with primary coverage in at least one Indigenous-focused criterion, in a North American context: inclusion of the phrase "Indigenous Studies" or "Native American Studies" in the title or description; Indigenous holidays (like Native American Heritage Month); relevant library programming; narrow Indigenous issues (for example, Dakota Access Pipeline); Indigenous communities; courses centered on Indigenous topics; and Indigenous student resources. The guide types were: general subject, course, and topic. Also included were guides that present as web pages. Excluded were guides with Indigenous-related content nested or positioned as secondary within another guide, as well as guides on themes with emphasis beyond the geographic boundaries of North America. Libraries that do not use the LibGuides platform were eliminated and not part of this research.

Data Collection Framework

Information and data were collected in December 2021. A first step in the research process was creating a shared, master Google sheet with columns corresponding to the types of information sought from each guide in support of analyzing content, UX design, themes, and Indigenous critical pedagogical practices. The use of this sheet ensured consistency in data recording and served as a conduit for communication between the authors as questions arose. Information to be gathered from each guide was organized with heading titles: Institution; Country; State or Province; Degree-granting; Indigenous Studies Program (Y or N); Program Type; Use of the LibGuides platform (Y or N); Dedicated Indigenous LibGuide (Y or N); Guide

Type (web page, topic, course, subject); URL; Title; Subject Directory; Subjects; Tags; Purpose Statement; Purpose Statement Location (header, main body, both header and main body); Last Updated; Number of Tabs; Tab Names; Librarian Assigned (Y or N); Land Acknowledgment (Y or N); Local Resources; Navigation Type (Top or Side); Reference Terminology (Y or N). A final column was assigned for free text as a place to add notes about unique features or elements of a guide.

ARL institutions were identified using ARL's membership list.[71] To locate guides, searches were performed twice for specific words and phrases and in an iterative manner: once in Springshare's LibGuides Community[72] and once in the institution's own web page or online presence for guides. Keyword searches used common variations of the word Indigenous: Native, Native American, Indian, Indigenous, Aboriginal, First Nations, and Métis. Guides yielded from these searches were added to the sheet if they met the criteria of an Indigenous guide. They were further categorized as the "subject" type if that term was used by the guide authors. A course guide could be identified by a specific reference to a corresponding course title, semester, etc. Topical guides described a narrow Indigenous issue. All other guides were deemed a web page if they did not fall into the other categories. IS programs were identified using the Association on American Indian Affairs' "Native American Studies Programs" list.[73] Canadian institutions were searched individually and for majors, minors, certificates, or concentrations.

The integration of Indigenous design centers Indigenous knowledges and cultures. The UX design assessment for this study draws from nine best-practice protocols articulated in the *International Indigenous Design Charter*.[74] The tenth protocol is implementation. The UX assessment was limited in scope to LibGuide-using ARL members who offer IS programs. If an individual member created multiple IS guides, one representative guide was selected. Crosswalks were created for mapping the protocols to practical library contexts. The machine learning tool Voyant[75] was used for textual analyses of titles, subjects, and tags assigned to guides. Finally, for each library that created a guide, a search was conducted on its corresponding institutional web page to determine if it offered a degree, minor, or certification in IS.

The Indigenizing framework for assessment of content and UX design is organized in five columns (see table 1). Each "Protocol" mirrors the 10-step best-practice protocols defined in the *International Indigenous Design Charter: Protocols for Sharing Indigenous Knowledge in Professional Design Practice*.[76] The second column, "Crosswalked Element," is a process or activity that can bridge a "Protocol" to an Indigenized guide. It provides practical examples of content and UX attributes that transform a guide from a pathfinder to an Indigenized resource. An action can be applied locally and be made incrementally.

Findings

There are 111 ARL institutions presently using the LibGuides platform. Of that subset, 87 institutions have at least one IS guide. A total of 357 Indigenous guides were identified (see table 2). The five institutions with the most IS guides are: University of British Columbia (26); University of Hawai'i at Mānoa (18); University of New Mexico (17); University of Toronto (17); and University of Washington (16). The Library of Congress has produced 12 guides. Of note, 63 percent of guides include a purpose statement that clearly articulates the intention and scope of the guide. The study also considered connections between the presence of a guide and the curriculum, and found that 72 ARL institutions offer a degree, concentration, or certification in IS.

TABLE 1
Indigenizing Framework for Assessment of Content and UX Design of IS Guides

Protocol	Crosswalked Element	Indigenized Action	Indigenized Content	Indigenized UX Attributes
Indigenous led	Assigned librarian	Identifies a librarian liaison to engage with the local Indigenous community	Includes the contact information for the library liaison	Contact information is visible next to the liaison name
		Encourages researchers to directly contact Tribal Nations as authoritative sources	Includes contact information for local Tribal Historic Preservation Officers and/or tribal archive	Labels each tribe and contact clearly; contacts should be positioned near the library liaison contact
Self-determined	Land acknowledgment	Acknowledges all communities regardless of federal or state recognition status	Includes a background and/or sources about land history over time	Integrates graphic or link to a visual representation of land bases
	Decolonizing descriptions, arrangement, and organization of sources	References, acknowledges, and integrates local Indigenous protocols	Assesses and improves existing vocabularies and classification schemes; eliminates inaccurate and culturally offensive terms	Lists the names that local Indigenous groups prefer and use themselves
Community specific	Local resources	Promotes local Indigenous community expertise and histories to academic departments	Adds links to official tribal government websites and local collecting institutions	Includes a list of Indigenous-led projects
			Includes links to significant local archeological or mound sites	Provides context for significant local archeological or mound sites
Deep listening	Tone and voice	Written with a tone of Indigenous self-determinism	Uses terminology that respects sovereignty and cultural viewpoints	Includes words like "resilience," "sovereignty"
			Consults style guides, such as the Government of British Columbia's *Writing Guide for Indigenous Content*[77]	Capitalizes the word "Indigenous" and the names of tribes/peoples

TABLE 1
Indigenizing Framework for Assessment of Content and UX Design of IS Guides

Protocol	Crosswalked Element	Indigenized Action	Indigenized Content	Indigenized UX Attributes
Indigenous knowledge	Reference terminology	Facilitates library research by providing a selection of keyword search recommendations	Provides lists of LC Authorities and classifications for searching collections	Creates a table to visually communicate names and variants
			Provides historical name and spelling variations for local Indigenous communities	Indicates historical or contemporary usage of terms with styling and font
Shared knowledge (collaboration, co-creation, procurement)	Authored with local community	Collaborates and consults with Indigenous communities or community representatives	Designs accountability mechanisms and solicit public feedback	Includes language inviting critique by Indigenous groups and students
	Links to institutional IS programs	Facilitates reciprocal representation on academic websites; encourages collaboration with academic department faculty and students	Embeds guides in syllabi and curricular resources	Includes a tab dedicated to the IS program (if relevant)
Shared benefits	Indigenous methodology	Fosters competencies in relevant methodological approaches and techniques in IS	Includes relevant Indigenous cultural protocols to follow	Adds links to *Protocols for Native American Archival Materials* (PNAAM)[78] and other sources for guidance on using Indigenous materials in research and writing
			Gives scholarly credit to traditional knowledge keepers and elders	Gives example citations for elder knowledge

TABLE 1
Indigenizing Framework for Assessment of Content and UX Design of IS Guides

Protocol	Crosswalked Element	Indigenized Action	Indigenized Content	Indigenized UX Attributes
Impact of design	Inclusion of Indigenous language; reference terminology	Demonstrates cultural responsiveness	Refers to communities with the names they call themselves; query communities for proper name pronunciations; link to official and social media presences of communities	Titles guide tabs and sections in a relevant Indigenous language
				Positions Indigenous authored content at the top of guide sections or boxes
				Communicates greetings in a local Indigenous language
Legal and moral	Indian Law; treaties; elder knowledge; citation style; rights and permissions	References content about relevant treaties, laws, public policy	Names the local treaty and who signed it	Includes the local treaty in the land acknowledgment (if applicable)
		Consults and includes Indigenous citation guides	Provides templates for citing Indigenous knowledge[79]	Positions Indigenous citation styles at the top of boxes

TABLE 2
Indigenous Studies (IS) Guide Representation by ARL Member Institutions

Element	US Total (108 members)	Canada Total (16 members)	Combined Totals	Percentage
Number of IS guides	250	107	357	70% US; 30% Canada
Number of members with IS guides	75	12	87	78% (US and Canada)
Inclusion of guide purpose statement in IS guides	139	85	224	63% (US and Canada)
Number of members with IS guides and parent institution offers an IS program	57	15	72	83% (US and Canada)
Number of members with no IS guide	22	0	22	20% (US and Canada)

Table 3 shows the results of performing textual analyses for guide titles, subjects, and tags using Voyant. The word "Indigenous" appeared as a top-three term in each category. In all three categories, five of the top 10 words appear: Indigenous; American; Native; studies; and history. The most common assigned subjects and tags are the words Indigenous, American, and Native. Many tags use an underscore to separate words in phrases. The most frequently

TABLE 3
Frequency of Words and Phrases in Indigenous Studies (IS) Guides Created by ARL Institutional Members

Element	Top 10 Words	Top 5 Phrases
Title	Indigenous (132); American (102); Native (88); studies (71); Indian (37); resources (29); history (28); guide (21); peoples (18); research (18)	Native American (68); Indigenous studies (33); Indigenous Peoples (12); First Nations (11); North America (9)
Subjects	studies (190); American (68); Indigenous (63); history (59); Native (35); Nations (26); education (23); ethnic (22); law (22); anthropology (19)	Indigenous studies (54); American studies (36); First Nations (26); ethnic studies (17); social sciences (8)
Tags	Indigenous (100); Native (56); studies (51); American (43); Aboriginal (37); peoples (24); history (23); Nations (20); Americans (18); law (16)	Indigenous studies (21); Native American (21); First Nations (17); Native Americans (16); Indigenous Peoples (13); Native Peoples (10)

selected subjects are: Indigenous studies; American studies; First Nations; ethnic studies; and social sciences. Interestingly, despite the persistence of "Indian" in Library of Congress subject headings for library cataloging purposes (such as Indians of North America), the word "Indian" only appeared in the top 10 of the title category.

Table 4 focuses on the findings of the UX design assessment using nine of the 10 protocols delineated by the *International Indigenous Design Charter*.[80] The crosswalked elements are examples of how the protocols can be actualized in libraries. Of the 72 ARL member institutions that offer IS programs, 66 use LibGuides. There are six guides dedicated to a local Indigenous community. Titles of topical guides include the University of British Columbia's "Missing and Murdered Indigenous Women, Girls, & Two-Spirit (MMIWG2S)"[81] and the University of Kansas Libraries' "Standing Rock Teach-In."[82] A land acknowledgment was included in 42 guides, one was co-authored with Indigenous community representatives, and 119 described local resources. A theme found in guides curated by Canadian ARL member institutions is emphasis on historical and traumatic events such as residential schools and stolen lands. This was determined through analysis of guide purpose statements. References to treaties and law were included in 49 guides and primarily from Canadian institutions. An Indigenous-led tone and voice were present in 57 guides.

TABLE 4
Rubric and Results of the 66 ARL Members with Indigenous Studies (IS) Guides at Institutions with IS Programs

Protocols	Protocol Definition[83]	Crosswalked Element	Member-level Total
Indigenous led	Ensure Indigenous stakeholders oversee creative development and the design process.	Assigned librarian	49 institutions (161 guides)
Self-determined	Respect the rights of Indigenous peoples to determine the application of traditional knowledge and representation of their culture in design practice.	Land acknowledgment	18 institutions (42 guides)
		Decolonizing descriptions, arrangement, and organization of sources	26 institutions (50 guides)

TABLE 4
Rubric and Results of the 66 ARL Members with Indigenous Studies (IS) Guides at Institutions with IS Programs

Protocols	Protocol Definition[83]	Crosswalked Element	Member-level Total
Community specific	Ensure respect for the diversity of Indigenous culture by acknowledging and following regional cultural understandings.	Local resources	37 institutions (119 guides)
Deep listening	Ensure respectful, culturally specific, personal engagement behaviors for effective communication and courteous interaction. Make sure to be inclusive and ensure that recognized custodians are actively involved and consulted.	Tone and voice	20 institutions (57 guides)
Indigenous knowledge	Acknowledge and respect the rich cultural history of Indigenous knowledge including designs, stories, sustainability and land management, with the understanding that ownership of knowledge must remain with the Indigenous custodians.	Reference terminology	26 institutions (50 guides)
Shared knowledge (collaboration, co-creation, procurement)	Cultivate respectful, culturally specific, personal engagement behaviors for effective communication. This involves courteous interactions to encourage the transmission of shared knowledge by developing a cultural competency framework to remain aware of Indigenous cultural realities.	Authored with local community	1 institution (1 guide)
		Links to institutional IS programs	21 institutions (57 guides)
Shared benefits	Ensure Indigenous people share in the benefits from the use of their cultural knowledge, especially where it is being commercially applied.	Indigenous methodology	21 institutions (57 guides)
Impact of design	Consider the reception and implication of all designs so that they protect the environment, are sustainable, and remain respectful of Indigenous cultures over deep time: past, present, and future.	Inclusion of Indigenous language; reference terminology	34 institutions (104 guides)
Legal and moral	Demonstrate respect and honor cultural ownership and intellectual property rights, including moral rights, by obtaining appropriate permissions where required.	Indian Law; treaties; elder knowledge; citation style; rights and permissions	29 institutions (49 guides)

Discussion

LibGuides as a platform offers librarians opportunities to easily design engaging, informative guides for academic disciplines. Despite its ubiquity, ARL member libraries are not fully using the tool's enhanced web design and website creation capabilities. The platform is minimally integrated with existing library web infrastructure and branding. Often, few cues communicate that the guide is part of a library's website, as institutional branding is often absent in the LibGuide format. Further, it was challenging to locate landing pages for guides when navigating from within the institution's own homepage. The guide type (subject, topic, course, and so on) was not commonly defined. Many guides function as a pathfinder for general IS content, whereas others operate as web pages, and promote associated services for IS and Indigenous students.

IS guides exhibit variability across and within ARL member institutions in representation, content, and UX design: use and input of template fields, organization, topics and foci, and extent of interdisciplinarity. The ease of creating guides and local control for customized appearances benefits guide creators. Steps to improve user interactions with guides include defining terminology, stating objectives, and branding appearances consistently to reduce unintentional barriers to content discoverability. Overall, presentation of information and library resources for social justice and related issues frequently omits context. Of note, most land acknowledgments lack historical background about the land itself. Guides could direct users to sources on the peoples, geographies, treaties, and acts of dispossession influencing land ownership over time.

The practice of highlighting licensed resources as "top picks" or categorizing library materials by format rather than by subject presents incompatibilities with inquiry-based learning.[84] This method is culturally remote and counter to Indigenous epistemological approaches.[85] As Pedaste et al. point out, "inquiry-based learning is not a prescribed, uniform linear process. Connections between the phases may vary depending on the context."[86] This argument has particular relevance to designing guides based on inclusion of Indigenous ways of knowing, which honor the relationships among all sources of knowledge and does not privilege one over the other.

There was little indication that Indigenous values and collaborations with local communities informed the structure, arrangement, and content selection. Privileging Critical Indigenous Pedagogy (CIP) as described in *Handbook of Critical and Indigenous Methodologies*[87] can support enlarging these processes. CIP is characterized as "ethical, performative, healing, transformative, decolonizing, and participatory" so as to generate dialogue with a community that acknowledges self-determination and cultural autonomy of Indigenous peoples.[88] Further, Cree-Métis scholar and librarian Jessie Loyer argues, "Indigenization must go beyond beautifying the place or engaging in more accountable collection development; instead, it must make room for Indigenous ways of knowing, while recognizing that Indigenous knowledge has been systematically discredited by academia."[89]

Limitations and Further Research

The data collection process required that searches be performed in both Springshare's LibGuide Community and each library website. While the authors were careful to identify all guides by keyword, it is possible that some guides positioned out of context were not counted. The lack of standardization in guide-type categories, specifically "subject" and "topic," could have in-

advertently affected how guides were recorded. Libraries do not always differentiate between these two types or define them. Further complicating this issue was a lack of hierarchy in guide organization. For example, many libraries simply list guides alphabetically or nest them under another heading such as "American Studies." The University of British Columbia has a landing page titled "List of all Xwi7xwa Research Guides" that includes links to "Additional Indigenous Research Guides at UBC" and an A-to-Z list of "UBC Library Indigenous Research Guides." A homepage of this type aids identification of all guides under umbrella headings.

This research was limited to ARL member institutions. Future research could enlarge the scope to include non-ARL libraries, library systems, and non-LibGuide sites, as not all libraries can afford or have access to the platform. Another area of consideration is guides created outside the geographic boundaries of North America. The study did not consider the selection of information sources in the typical categories of databases, e-journals, books, and the like. Preliminary assessments suggest many of the same resources were selected across institutions, and a review would not confirm or reject any conclusive results. Finally, a usability study of guides from the perspective of information seekers would provide insights on how they navigate and interact with guides for IS.

Conclusion

Research guides can be more than pathfinders or lists. Libraries can reimagine guides as Indigenized, decolonized information sources to validate Indigenous ways of knowing. A majority of institutions using the LibGuides content management system have produced guides for IS. Enhancements can be made to them by adding: controlled or defined vocabularies; expressions of scopes and purposes; assignments of librarians; and intuitive positioning on library websites. To increase awareness and accessibility, IS guides should strive to maintain currency, present both past and contemporary histories in proper contexts, and be embedded in curricular materials. In guide development, protocols and pedagogical frameworks can be integrated to center Indigenous knowledge and UX design principles in the arrangement, selection, and presentation of library resources. The authors devised emulatable methods to holistically evaluate IS guides. The themes articulated in the framework and rubric offer an inspirational framework for research guides and UX design that works toward the goal of actualizing Indigenous self-determination.

Notes

1. Examples include D. Vanessa Kam, "Subject Headings for Aboriginals: The Power of Naming," *Art Documentation: Bulletin of the Art Libraries Society of North America* 26, no. 2 (Fall 2007): 18–22, https://doi.org/10.1086/adx.26.2.27949465; Alissa Cherry and Keshav Mukunda, "A Case Study in Indigenous Classification: Revisiting and Reviving the Brian Deer Scheme," *Cataloging & Classification Quarterly* 53, no. 5/6 (2015): 548–67, https://doi.org/10.1080/01639374.2015.1008717; Kristen J. Nyitray and Dana Reijerkerk, "Searching for Paumanok: A Study of Library of Congress Authorities and Classifications for Indigenous Long Island, New York," *Cataloging and Classification Quarterly* 59, no. 5 (2021): 409–41, https://doi.org/10.1080/01639374.2021.1929627.

2. Books include: Jason Puckett, *Modern Pathfinders: Creating Better Research Guides* (Chicago, IL: Association of College and Research Libraries, 2015); Aaron W. Dobbs and Ryan Sittler, *Integrating LibGuides into Library Websites* (Lanham, MD: Rowman & Littlefield, 2016); Aaron W. Dobbs, Ryan Sittler, and Douglas Cook, *Using LibGuides to Enhance Library Services: A LITA Guide* (Chicago, IL: ALA TechSource, an imprint of the American Library Association, 2013); Primary Research Group, *Library Use of LibGuides* (New York, NY: Primary Research Group, 2013).

3. Laura Eggertson, "New Guide on Caring for Indigenous Patients," *Canadian Medical Association Journal (CMAJ)* 188, no. 8 (2016): 563, https://doi.org/10.1503/cmaj.109-5257; Payi Linda Ford et al., "The *Incorporating*

Indigenous Knowledge LibGuide: Charles Darwin University Embedding Australian Aboriginal and Torres Strait Islander Knowledge, Culture and Language," *Australian Academic & Research Libraries* 45, no. 2 (2014): 111–20, https://doi.org/10.1080/00048623.2014.910859; Sarah R. Kostelecky, "Sharing Community Created Content in Support of Social Justice: The Dakota Access Pipeline LibGuide," *Journal of Librarianship and Scholarly Communication* 6, no. 2 (2018), https://doi.org/10.7710/2162-3309.2234; Nora Stewart, "Digitizing Native American Collections," *DttP: Documents to the People* 45, no. 1 (May 2017): 11, https://doi.org/10.5860/dttp.v45i1.6300.

4. "Member Institutions," Association of Research Libraries, https://www.arl.org/category/who-we-are/member-institutions [accessed 3 January 2022].

5. Springshare, "LibGuides Community," https://community.libguides.com [accessed 3 January 2022]. In this article, "LibGuides" refers to the Springshare content management system platform.

6. Tiffany Lee, Lloyd Lee, and Myla Vicenti Carpio, "Native American Studies," *Oxford Bibliographies* (May 27, 2020), https://doi.org/10.1093/OBO/9780199756810-0251; the special issue of the *Indigenous Nations Studies Journal*, ed. Donald L. Fixico, vol. 2, no. 1 (2001) focuses on IS programs; Clara Sue Kidwell, "American Indian Studies: Intellectual Navel Gazing or Academic Discipline?" *American Indian Quarterly* 33, no. 1 (2009): 1–17, https://doi.org/10.1353/aiq.0.0041.

7. Elizabeth Cook-Lynn, "Who Stole Native American Studies?" *Wicazo Sa Review* 12, no. 1 (1997): 9–28, 11, https://doi.org/10.5749/wicazosareview.31.1.0132.

8. Standing Rock Sioux scholar Vine Deloria Jr. coined "Red Power" to describe the pan-Indigenous civil rights demonstrations across North America in the 1960s.

9. "American Indian Movement, Grand Governing Council," https://www.aimovement.org [accessed 4 January 2021].

10. Association on American Indian Affairs, "Native American Studies Programs," https://www.indian-affairs.org/native-studies-list.html [accessed 2 January 2022]; The Newberry Consortium in American Indian and Indigenous Studies (NCAIS) was founded in 2008 to foster collaboration among universities that train graduate students in Indigenous Studies. For members, see: https://www.newberry.org/newberry-consortium-american-indian-studies.

11. Sidner Larson, "Contemporary American Indian Studies," *American Indian Quarterly* 33, no. 1 (2009): 18–32, 25, https://doi.org/10.1353/aiq.0.0033.

12. "2020 Census: Native Population Increased by 86.5 Percent," *Indian Country Today*, last modified August 13, 2021, https://indiancountrytoday.com/news/2020-census-native-population-increased-by-86-5-percent.

13. Chris Neuhaus et al., "Ubiquitous LibGuides: Variations in Presence, Production, Application, and Convention," *Journal of Web Librarianship* 15, no. 3 (2021): 107–27, https://doi.org/10.1080/19322909.2021.1946457.

14. Founded in 2007, Springshare is a library software developer and vendor that facilitates user-community engagement for its technology products; https://www.springshare.com [accessed 2 January 2022].

15. Vileno's survey of literature chronicles the transformation of research guides from print to electronic format. Luigina Vileno, "From Paper to Electronic, the Evolution of Pathfinders: A Review of the Literature," *Reference Services Review* 35, no. 3 (2007): 434–51, https://doi.org/10.1108/00907320710774300.

16. "LibGuides Community," Springshare, https://community.libguides.com [accessed 2 January 2022].

17. Russell Kennedy et al., *International Indigenous Design Charter: Protocols for Sharing Indigenous Knowledge in Professional Design Practice* (Geelong, Australia: Deakin University, 2018), https://www.theicod.org/storage/app/media/resources/International_IDC_book_small_web.pdf.

18. Patrick C. Morris, "Native American Studies: A Personal Overview," *Wicazo Sa Review* 2, no. 2 (1986): 9–16, https://doi.org/10.2307/1409012; John Wunder, "Native American History, Ethnohistory, and Context," *Ethnohistory* 54, no. 4 (2007): 591–604, https://doi.org/10.1215/00141801-2007-023; Scott Richard Lyons, "Actually Existing Indian Nations: Modernity, Diversity, and the Future of Native American Studies," *American Indian Quarterly* 35, no. 3 (2011): 294–312, https://doi.org/10.5250/amerindiquar.35.3.0294; Dynahlee Padilla, "Preserving Indigenous Cultures," *Diverse Issues in Higher Education* 37, no. 19 (November 12, 2020): 16–17; Mary Jo Tippeconnic Fox and John W. Tippeconnic III, "American Indian/Native American Studies and the American Indian Education Experience," *Wicazo Sa Review* 32, no. 2 (2017): 30–45, https://doi.org/10.5749/wicazosareview.32.2.0030; Richard Meyers, "Who Stole Native American Studies II: The Need for an AIS Redux in an Age of Redskin Debate and Debacle," *Wicazo Sa Review* 31, no. 1 (2016): 132–44, https://doi.org/10.5749/wicazosareview.31.1.0132; Leece Lee-Oliver, "Situating Native American Studies and Red Feminisms: Sustaining Ethnic Studies," *Outstanding Faculty Publications*, https://facpub.library.fresnostate.edu/items/show/140 [accessed 6 January 2022]; Raymond Foxworth, Amy H. Liu, and Anand Edward Sokhey, "Incorporating Native American History into the Curriculum: Descriptive Representation or Campaign Contributions?" *Social Science Quarterly* 96, no. 4 (2015): 955–69, https://doi.org/10.1111/ssqu.12177.

19. Theresa Stewart-Ambo, "'We Can Do Better': University Leaders Speak to Tribal-University Relation-

ships," *American Educational Research Journal* 58, no. 3 (2021): 459–91, https://doi.org/10.3102/0002831220983583; Verna J. Kirkness and Ray Barnhardt, "First Nations and Higher Education: The Four R's—Respect, Relevance, Reciprocity, Responsibility," in *Knowledge across Cultures: A Contribution to Dialogue among Civilizations*, eds. Ruth Hayoe and Julia Pan (Hong Kong: Comparative Education Research Centre, The University of Hong Kong, 2001), https://www.afn.ca/uploads/files/education2/the4rs.pdf.

20. Robert Lee and Tristan Ahtone, "Land-Grab Universities: Expropriated Indigenous Land Is the Foundation of the Land-Grant University System," *High Country News* (March 30, 2020), https://www.hcn.org/issues/52.4/indigenous-affairs-education-land-grab-universities; Alyssa Mt. Pleasant and Stephen Kantrowitz, "Campuses, Colonialism, and Land Grabs before Morrill," *Native American and Indigenous Studies* 8, no. 1 (2021): 151–56, https://doi.org/10.5749/natiindistudj.8.1.0151.

21. Lee and Ahtone, "Land-Grab Universities."

22. US House of Representatives Resolution 108, 83rd Congress, 1953 (US Statutes at Large, 67: B132), *Digital History*, https://www.digitalhistory.uh.edu/disp_textbook.cfm?smtid=3&psid=726 [accessed 5 January 2022].

23. Cook-Lynn, "Who Stole Native American Studies?"

24. Cook-Lynn, "Who Stole Native American Studies?" 9.

25. Elizabeth Cook-Lynn, "Keynote Address: Indian Studies—How It Looks Back at Us after Twenty Years," *Wicazo Sa Review* 20, no. 1 (2005): 179–87, https://doi.org/10.1353/wic.2005.0006.

26. Hannah Turner, "Decolonizing Ethnographic Documentation: A Critical History of the Early Museum Catalogs at the Smithsonian's National Museum of Natural History," *Cataloging & Classification Quarterly* 53, no. 5/6 (2015): 658–76, https://doi.org/10.1080/01639374.2015.1010112; Deborah Lee, "Indigenous Knowledge Organization: A Study of Concepts, Terminology, Structure and (Mostly) Indigenous Voices," *Partnership: The Canadian Journal of Library and Information Practice and Research* 6, no. 1 (2011): 1–33; Eleanor Kleiber et al., "Making Pacific Languages Discoverable: A Project to Catalog the University of Hawai'i at Manoa Library Pacific Collection by Indigenous Languages," *Contemporary Pacific* 30, no. 1 (2018): 110–22, https://muse.jhu.edu/article/683735.

27. Margarita Vargas-Betancourt et al., "Contesting Colonial Library Practices of Accessibility and Representation," in *Archives and Special Collections as Sites of Contestation*, ed. Mary Kandiuk (Sacramento, CA: Library Juice Press, 2020), 383–412.

28. "Protocols for Native American Archival Materials," First Archivist Circle (2007), https://www2.nau.edu/libnap-p/protocols.html; Taylor R. Genovese, "Decolonizing Archival Methodology: Combating Hegemony and Moving towards a Collaborative Archival Environment," *AlterNative: An International Journal of Indigenous Peoples* 12, no. 1 (2016): 32–42, https://doi.org/10.20507%2FAlterNative.2016.12.1.3; Jennifer R. O'Neal, "'The Right to Know': Decolonizing Native American Archives," *Journal of Western Archives* 6, no. 1 (2015): 1–17, https://doi.org/10.26077/fc99-b022; Sue McKemmish et al., "Decolonizing Recordkeeping and Archival Praxis in Childhood Out-of-Home Care and Indigenous Archival Collections," *Archival Science* 20, no. 1 (2020): 21–49, https://doi.org/10.1007/s10502-019-09321-z.

29. "Go Rogue! Information Literacy's Role in Decolonising the Curriculum," *Information Literacy Spaces* (December 17, 2018), https://informationliteracyspaces.wordpress.com/2018/12/17/go-rogue-information-literacys-role-in-decolonising-the-curriculum; Rynnelle Wiebe and Dinesh Rathi, "A Review of Library Associations Websites to Learn about Decolonizing Efforts," in *Proceedings of the Annual Conference of CAIS/Actes du congrès annuel de l'ACSI* (Edmonton: University of Alberta, 2020), https://doi.org/10.29173/cais1137; Kirsten Thorpe, "Transformative Praxis-building Spaces for Indigenous Self-determination in Libraries and Archives," *In the Library with the Lead Pipe* (January 23, 2019), www.inthelibrarywiththeleadpipe.org/2019/transformative-praxis.

30. Sharon Gray Weiner, "The History of Academic Libraries in the United States: A Review of the Literature," *Library Philosophy and Practice* 58, no. 2 (2005): 1–12, https://digitalcommons.unl.edu/libphilprac/58; Nina de Jesus, "Locating the Library in Institutional Oppression," *In the Library With the Lead Pipe* (September 24, 2014), https://www.inthelibrarywiththeleadpipe.org/2014/locating-the-library-in-institutional-oppression.

31. Nicola Andrews, "Reflections on Resistance, Decolonization, and the Historical Trauma of Libraries and Academia," in *The Politics of Theory and the Practice of Critical Librarianship*, eds. Karen P. Nicholson and Maura Seale (Sacramento, CA: Library Juice Press, 2018), 181–92, 183.

32. Millicent Fullmer, "Are We There Yet? Visualizing Indigenous Culture in Today's Library," *IFLA Journal* 47, no. 3 (2021): 313–20, https://doi.org/10.1177/0340035220987577.

33. Hannah Turner, "Decolonizing Ethnographic Documentation: A Critical History of the Early Museum Catalogs at the Smithsonian's National Museum of Natural History," *Cataloging & Classification Quarterly* 53, no. 5/6 (2015): 658–76, https://doi.org/10.1080/01639374.2015.1010112.

34. Kimberly Christen, "On Not Looking: Economies of Visuality in Digital Museums," in *The International Handbooks of Museum Studies: Museum Transformations*, eds. Annie E. Coombes and Ruth B. Phillips (Chichester, West Sussex: Oxford Press, 2015), 365–86; Kimberly Christen, "Tribal Archives, Traditional Knowledge, and Local

Contexts: Why the 's' Matters," *Journal of Western Archives* 6, no. 1 (2015): 1–19, https://doi.org/10.26077/78d5-47cf.

35. Jane Anderson, *Access and Control of Indigenous Knowledge in Libraries and Archives: Ownership and Future Use* (Washington, DC: The MacArthur Foundation and the American Library Association, 2005).

36. *Handbook of Critical and Indigenous Methodologies*, eds. Norman K. Denzin, Yvonna S. Lincoln, and Linda Tuhiwai Smith (Los Angeles, CA: Sage, 2008), 2.

37. Sandy Grande, "Red Pedagogy: The Un-Methodology," in *Handbook of Critical and Indigenous Methodologies*, eds. Norman K. Denzin, Yvonna S. Lincoln, and Linda Tuhiwai Smith (Los Angeles, CA: Sage, 2008), 233–54, 233, https://doi.org/10.4135/9781483385686, accessed at https://jasonzuzga.com/wp-content/uploads/2020/02/2handbook-of-critical-and-indigenous-methodologies.pdf.

38. Shaneen Pete, "100 Ways: Indigenizing & Decolonizing Academic Programs," *Aborignal Policy Studies* 6, no. 1 (2016): 81–89, https://doi.org/10.5663/aps.v6i1.27455; "A Brief Definition of Decolonization and Indigenization," Working Effectively with Indigenous Peoples Blog, Indigenous Corporate Trainings Inc. (March 29, 2017), https://www.ictinc.ca/blog/a-brief-definition-of-decolonization-and-indigenization; Michelle Pidgeon, "More than a Checklist: Meaningful Indigenous Inclusion in Higher Education," *Social Inclusion* 4, no. 1 (2016): 77–91, https://www.cogitatiopress.com/socialinclusion/article/viewFile/436/436.

39. Ian Cull et al., *Pulling Together: A Guide for Indigenization of Post-Secondary Institutions* (Victoria, BC: BCcampus, 2018), https://opentextbc.ca/indigenizationfrontlineworkers.

40. *Handbook of Critical and Indigenous Methodologies*, eds. Norman K. Denzin, Yvonna S. Lincoln, and Linda Tuhiwai Smith (Thousand Oaks, CA: SAGE Publications, Inc., 2014).

41. Gregory Lowan-Trudeau, "Narrating a Critical Indigenous Pedagogy of Place: A Literary Métissage," *Educational Theory* 67, no. 4 (2017): 509–25, https://doi.org/10.1111/edth.12261; Jay T. Johnson, "Place-based Learning and Knowing: Critical Pedagogies Grounded in Indigeneity," *GeoJournal* 77, no. 6 (2012): 829–36, https://link.springer.com/article/10.1007/s10708-010-9379-1; Susan Page, Michelle Trudgett, and Gawaian Bodkin-Andrews, "Creating a Degree-Focused Pedagogical Framework to Guide Indigenous Graduate Attribute Curriculum Development," *Higher Education* 78, no. 1 (2019): 1–15, https://doi.org/10.1007/s10734-018-0324-4; Tiffany S. Lee and Teresa L. McCarty, "Upholding Indigenous Education Sovereignty through Critical Culturally Sustaining/Revitalizing Pedagogy," in *Culturally Sustaining Pedagogies: Teaching and Learning for Justice in a Changing World*, eds. Django Paris, H. Samy Alim, and Celia Genishi (New York, NY: Teachers College Press, 2017), 61–82; Heather L. Burns, "Transformative Sustainability Pedagogy: Learning from Ecological Systems and Indigenous Wisdom," *Journal of Transformative Education* 13, no. 3 (2015): 259–76, https://doi.org/10.1177%2F1541344615584683; Bryan McKinley Jones Brayboy, "Toward a Tribal Critical Race Theory in Education," *Urban Review* 37, no. 5 (2005): 425–46, https://doi.org/10.1007/s11256-005-0018-y.

42. Sandy Grande, "Refusing the University," in *Toward What Justice? Describing Diverse Dreams of Justice in Education*, eds. E. Tuck and K.W. Yang (New York, NY: Routledge, 2018), 47–65; N. Martin Nakata et al., "Decolonial Goals and Pedagogies for Indigenous Studies," *Decolonization: Indigeneity, Education & Society* 1, no. 1 (2012): 120–40, https://jps.library.utoronto.ca/index.php/des/article/view/18628; Melanie Bowman and María Rebolleda-Gómez, "Uprooting Narratives: Legacies of Colonialism in the Neoliberal University," *Hypatia* 35, no. 1 (2020): 18–40, https://doi.org/10.1017/hyp.2019.13, 19; Stewart-Ambo, "We Can Do Better."

43. Nakata et al., "Decolonial Goals and Pedagogies for Indigenous Studies."

44. Dynahlee Padilla, "Preserving Indigenous Cultures: In Addition to Research, Native American Studies Programs Focus on Leadership Development, Community Building," *Diverse Issues in Higher Education* 37, no. 19 (2020): 16–17.

45. Stewart-Ambo, "We Can Do Better."

46. Brooke Duffy, Kelleen Maluski, and Gina Levitan, "Framing the Guides: Transforming LibGuides Creation through Conceptual Integration with the ACRL Framework," in *Envisioning the Framework: A Graphic Guide to Information Literacy*, ed. Jannette L. Finch (Chicago, IL: ACRL, 2021), 23–41; Yolanda Bergstrom-Lynch, "LibGuides by Design: Using Instructional Design Principles and User-Centered Studies to Develop Best Practices," *Public Services Quarterly* 15, no. 3 (2019): 205–23, https://doi.org/10.1080/15228959.2019.1632245.

47. Jon C. Giullian and Ernest A. Zitser, "Beyond LibGuides: The Past, Present, and Future of Online Research Guides," *Slavic & East European Information Resources* 16, no. 4 (2015): 170–80, https://doi.org/10.1080/15228886.2015.1094718; Alison Hicks, "LibGuides: Pedagogy to Oppress?" *Hybrid Pedagogy* (April 15, 2015), https://hybridpedagogy.org/libguides-pedagogy-to-oppress; Elizabeth German and Stephanie Graves, "Infusing Pedagogy into LibGuides," in *Integrating LibGuides into Library Websites*, eds. Aaron W. Dobbs and Ryan L. Sittler (Lanham, MD: Rowman & Littlefield Publishers, 2016): 177–88.

48. Amy E.G. Barker and Ashley T. Hoffman, "Student-Centered Design: Creating LibGuides Students Can Actually Use," *College & Research Libraries* 82, no. 1 (2021), https://crl.acrl.org/index.php/crl/article/view/24754/32577; Gabriela Castro Gessner, Adam Chandler, and Wendy Sue Wilcox, "Are You Reaching Your Audience?" *Refer-*

ence Services Review 43, no. 3 (2015): 491–508, https://doi.org/10.1108/RSR-02-2015-0010.

49. Dobbs, Sittler, and Cook, *Using LibGuides to Enhance Library Services*.

50. Aaron Bowen, "LibGuides and Web-Based Library Guides in Comparison: Is There a Pedagogical Advantage?" *Journal of Web Librarianship* 8, no. 2 (2014): 147–71, https://doi.org/10.1080/19322909.2014.903709.

51. "Top 5 (of all time) LibGuides Tips & Tricks: Digitally Remastered," Springshare (March 2016), https://buzz.springshare.com/springynews/news-30/tips.

52. Candice Dahl, "Electronic Pathfinders in Academic Libraries: An Analysis of Their Content and Form," *College & Research Libraries* 62, no. 3 (2001): 227–37, https://doi.org/10.5860/crl.62.3.227; Vicky Duncan, Shannon Lucky, and Jaclyn McLean, "Implementing LibGuides 2: An Academic Case Study," *Journal of Electronic Resources Librarianship* 27, no. 4 (2015): 248–58, https://doi.org/10.1080/1941126X.2015.1092351; Dana Ouellette, "Subject Guides in Academic Libraries: A User-Centred Study of Uses and Perceptions/Les Guides Par Sujets Dans Les Bibliothèques Académiques: Une étude Des Utilisations et Des Perceptions Centrée Sur L'utilisateur," *Canadian Journal of Information and Library Science* 35, no. 4 (2011): 436–51, https://doi.org/10.1353/ils.2011.0024; Alec Sonsteby and Jennifer DeJonghe, "Usability Testing, User-Centered Design, and LibGuides Subject Guides: A Case Study," *Journal of Web Librarianship* 7, no. 1 (2013): 83–94, https://doi.org/10.1080/19322909.2013.747366.

53. Christian Bauer and Arno Scharl, "Quantitative Evaluation of Web Site Content and Structure," *Internet Research* 10, no. 1 (2000): 31–44, https://doi.org/10.1108/10662240010312138; Klaus Krippendorff, *Content Analysis: An Introduction to its Methodology* (Thousand Oaks, CA: Sage Publications, 2018).

54. Inhwa Kim and Jasna Kuljis, "Applying Content Analysis to Web Based Content," *Journal of Computing and Information Technology* 18, no. 4 (2010): 369–75, https://doi.org/10.2498/cit.1001924, 370.

55. Suzanna Conrad and Christy Stevens, "'Am I on the Library Website?': A LibGuides Usability Study," *Information Technology and Libraries* 38, no. 3 (2019): 49–91, https://doi.org/10.6017/ital.v38i3.10977; Angela K. Horne et al., "Do the Outcomes Justify the Buzz? An Assessment of LibGuides at Cornell University and Princeton University," in *Proceedings of the 2009 ACRL National Conference* (Seattle, Washington, March 12–15, 2009).

56. Todd Enoch, "Getting on the Same Page: Aligning ERM and LibGuides Content," *Serials Librarian* 80, no. 1/4 (2021):112–16, https://doi.org/10.1080/0361526X.2021.1872015; Judith Logan and Michelle Spence, "Content Strategy in LibGuides: An Exploratory Study," *Journal of Academic Librarianship* 47, no. 1 (2021), https://doi.org/10.1016/j.acalib.2020.102282.

57. Rebecca Blakiston, "Developing a Content Strategy for an Academic Library Website," *Journal of Electronic Resources Librarianship* 25, no. 3 (2013): 175–91, https://doi.org/10.1080/1941126X.2013.813295.

58. Nestor L. Osorio, "Content Analysis of Engineering LibGuides" (paper given June 15, 2014), *121st ASEE Annual Conference & Exposition* (Indianapolis, IN), https://peer.asee.org/content-analysis-of-engineering-libguides.pdf; Tony Stankus and Martha A. Parker, "The Anatomy of Nursing LibGuides," *Science & Technology Libraries* 31, no. 2 (2012): 242–55, https://doi.org/10.1080/0194262X.2012.678222.

59. Hsuanwei Michelle Chen, "Information Visualization Skills for Academic Librarians: A Content Analysis of Publications and Online LibGuides in the Digital Humanities," *Library Hi Tech* 37, no. 3 (2019): 591–603, https://doi.org/10.1108/LHT-01-2018-0012.

60. Gemmicka Piper, Mahasin Ameen, and M. Sara Lowe, "An Investigation of Anti-Black Racism LibGuides at ARL Member Institutions," *Communications in Information Literacy* 15, no. 2 (2021): 188–207, https://doi.org/10.15760/comminfolit.2021.15.2.3.

61. Logan and Spence, "Content Strategy in LibGuides."

62. Darcy Del Bosque and Sara E. Morris, "LibGuide Standards: Loose Regulations and Lax Enforcement," *Reference Librarian* 62, no. 1 (2021): 1–22, https://doi.org/10.1080/02763877.2020.1862022; Mandi Goodsett, Marsha Miles, and Theresa Nawalaniec, "Reimagining Research Guidance: Using a Comprehensive Literature Review to Establish Best Practices for Developing LibGuides," *Evidence Based Library and Information Practice* 15, no. 1 (2020): 218–25, https://doi.org/10.18438/eblip29679; Alisa C. Gonzalez and Theresa Westbrock, "Reaching Out with LibGuides: Establishing a Working Set of Best Practices," *Journal of Library Administration* 50, no. 5/6 (2010): 638–56, https://doi.org/10.1080/01930826.2010.488941; Sandra Gall Urban, "Internal Documentation of Library Policies and Practices with LibGuides: A Survey and Analysis," *Journal of Electronic Resources Librarianship* 32, no. 3 (2020): 182–94, https://doi.org/10.1080/1941126X.2020.1790947; Christine Tawatoa et al., *LibGuides Usability Testing: Customizing a Product to Work for Your Users* (Seattle, WA: University of Washington Libraries, 2010), http://hdl.handle.net/1773/17101.

63. Alec Sonsteby and Jennifer DeJonghe, "Usability Testing, User-Centered Design, and LibGuides Subject Guides: A Case Study," *Journal of Web Librarianship* 7, no. 1 (2013): 83–94, https://doi.org/10.1080/19322909.2013.747366; Norma Almeida and Junior Tidal, "Mixed Methods not Mixed Messages: Improving LibGuides with Student Usability Data," *Evidence Based Library and Information Practice* 12, no. 4 (2017): 62–77, https://doi.org/10.18438/B8CD4T; Melanie Griffin and Tomaro I. Taylor, "Employing Analytics to Guide a Data-Driven Review of Lib-

Guides," *Journal of Web Librarianship* 12, no. 3 (2018): 147–59, https://doi.org/10.1080/19322909.2018.1487191.

64. Aaron Bowen, Jake Ellis, and Barbara Chaparro, "Long Nav or Short Nav? Student Responses to Two Different Navigational Interface Designs in LibGuides Version 2," *Journal of Academic Librarianship* 44, no. 3 (2018): 391–403, https://doi.org/10.1016/j.acalib.2018.03.002; Chris Neuhaus et al., "To the Side, to the Side: Academic Libraries and LibGuides Layout Adoption," *Reference Librarian* 62, no. 3/4 (2021): 207–20, https://doi.org/10.1080/02763877.2021.1986876.

65. Kate Meyer, "Flat Design: Its Origins, Its Problems, and Why Flat 2.0 is Better for Users," Nielson Norman Group, 2015, https://www.nngroup.com/articles/flat-design; Kate Meyer, "The Characteristics of Minimalism in Web Design," Nielson Norman Group (2015), https://www.nngroup.com/articles/characteristics-minimalism.

66. J.J. Pionke and Jaena Manson, "Creating Disability LibGuides with Accessibility in Mind," *Journal of Web Librarianship* 12, no. 1 (2018): 63–79, https://doi.org/10.1080/19322909.2017.1396277.

67. Conrad and Stevens, "Am I On the Library Website?"

68. "Web Content Accessibility Guidelines (WCAG) 2.0.," Web Accessibility Initiative (2016), https://www.w3.org/TR/WCAG20.

69. Gricel Dominguez, Sarah J. Hammill, and Ava Iuliano Brillat, "Toward a Usable Academic Library Web Site: A Case Study of Tried and Tested Usability Practices," *Journal of Web Librarianship* 9, no. 2/3 (2015): 99–120, https://doi.org/10.1080/19322909.2015.1076710.

70. Glenda Sims and Wilco Fiers, *A11Y Wars: The Accessibility Interpretation Problem* (May 2018), http://bit.ly/a11ypeace.

71. ARL, "Member Institutions."

72. Springshare, "LibGuides Community."

73. "Native American Studies Programs," Association on American Indian Affairs, https://www.indian-affairs.org/native-studies-list.html [accessed 15 January 2022].

74. Kennedy et al., *International Indigenous Design Charter.* Step 10 was omitted as it refers to use of the charter itself.

75. "Voyant Tools is a web-based reading and analysis environment for digital texts," https://voyant-tools.org.

76. Kennedy et al., *International Indigenous Design Charter,* 8.

77. Government of British Columbia (n.d.), Writing Guide for Indigenous Content, https://www2.gov.bc.ca/gov/content/governments/services-for-government/service-experience-digital-delivery/web-content-development-guides/web-style-guide/writing-guide/writing-guide-for-indigenous-content.

78. First Archivist Circle, "Protocols for Native American Archival Materials" (2007), https://www2.nau.edu/libnap-p/protocols.html.

79. Lorisia MacLeod, "More Than Personal Communication: Templates for Citing Indigenous Elders and Knowledge Keepers," *KULA: Knowledge Creation, Dissemination, and Preservation Studies* 5, no. 1 (2021), https://doi.org/10.18357/kula.135.

80. Kennedy et al., *International Indigenous Design Charter.*

81. "Missing and Murdered Indigenous Women, Girls, & Two-Spirit (MMIWG2S)," University of British Columbia (last modified August 18, 2021), https://guides.library.ubc.ca/mmiwg.

82. "Standing Rock Teach-In," University of Kansas Libraries (last modified September 4, 2018), https://guides.lib.ku.edu/StandingRockTeachIn.

83. Protocol definitions are taken verbatim from: Kennedy et al., *International Indigenous Design Charter.*

84. Hicks, "LibGuides: Pedagogy to Oppress?"

85. Dennis Foley, "Indigenous Epistemology and Indigenous Standpoint Theory," *Social Alternatives* 22, no. 1: (2003): 44–52.

86. Margus Pedaste et al., "Phases of Inquiry-based Learning: Definitions and the Inquiry Cycle," *Educational Research Review* 14 (2015): 47–61, https://doi.org/10.1016/j.edurev.2015.02.003.

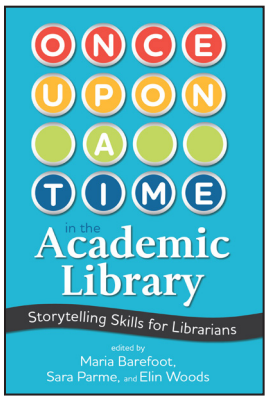
87. *Handbook of Critical and Indigenous Methodologies*, eds. Denzin, Lincoln, and Tuhiwai Smith.

88. *Handbook of Critical and Indigenous Methodologies*, eds. Denzin, Lincoln, and Tuhiwai Smith, 2.

89. Jessie Loyer, "Indigenous Information Literacy: nêhiyaw Kinship Enabling Self-Care in Research," in *The Politics of Theory and the Practice of Critical Librarianship*, eds. Karen P. Nicholson and Maura Seale (Sacramento, CA: Library Juice Press, 2018), 145–56, 155.

Book Reviews

Once Upon a Time in the Academic Library: Storytelling Skills for Librarians. Maria Barefoot, Sara Parme, and Elin Woods, eds. Chicago, IL: Association of College & Research Libraries, 2022. 166p. Paper, $56.00 ($50.40 ALA Members) (ISBN: 978-0-8389-3860-7).



The value of *Once Upon a Time in the Academic Library: Storytelling Skills for Librarians* lies in its practical suggestions to improve the student's experience with and knowledge of the library and their information literacy skills through the use of stories. The idea that librarians can use stories to teach information literacy, promote their services and collections, and make connections with students is not new. The book's value lies in the practical suggestions for doing so.

The theme of social justice appears prominently throughout. For example, those interested in creating antiracist libraries may find the suggestions in the book of particular interest. The authors consider issues of race, gender, class, sexuality, and privilege in stories told and not told in libraries. They discuss the ways middle-class American whiteness is often centered; consequently, the perspectives of many students are typically left out. Thus, marginalized students often feel unwelcome in the library.

At 166 pages, the book is a quick read. This is not a rigorous academic work or research study on using stories. Rather, it is a story about telling stories. The book is written in a conversational style that is simple and flows well. After an introduction, the book has 10 chapters written by different authors. In each chapter, librarians share their personal stories about telling stories in their everyday work. Most of the chapters are about using stories with undergraduate students during information literacy sessions. Each chapter includes an introduction to the story, the storytelling goal, the audience, the theory, the cultural considerations (the ways authors "were or were not using stories outside of their own space" [13]), and practical examples (including reproductions of exercises, handouts, emails, transcripts, and other details enabling you to replicate the lesson or service at your library). Instruction librarians will find these valuable.

One limitation of the book is that, despite their enthusiasm in the power of stories, the authors do not provide adequate evidence that stories are effective. The evidence consists of assertions, anecdotal observations, testimonials, and theoretical insights into storytelling rather than data. While the testimonials provided sound like the individual student or faculty who offered it benefited, can we be sure absent any other data? This is a recurring problem with the book as we are introduced to examples of storytelling with no statistical evidence showing their effectiveness. If any improvement or benefit is pointed out, the authors infer causality and attribute it to the stories without examining the possibility that other factors are causing the desired behavior.

In the introduction, the editors present one of their important themes—their ideas on counterstorytelling. They write this is "a method of telling the stories of those people whose experiences are not often told, including people of color, the poor, and members of the LGBTQ

community" (16). This is important because it enables those in marginal positions to challenge dominant stories. While the book encourages the use of counterstories, it does offer much guidance around the tensions that may emerge when members of the majority work with marginalized stories.

In her chapter "Call and Response: Delicate Conversations in Collection Development," Alexis L. Pavenick gets closest to doing this when she tells the story of inviting members of the LGBTQIA+ community to make book purchase recommendations on LGBTQIA+-related content. She shares her thought process when considering the recommendation to purchase the book *Leathersex: A Guide for the Curious Outsider and the Serious Player* by Joseph W. Bean, "a well-known figure in the gay bondage scene and its related communities in the US" (107). Concerned about the book's tone, approach, and fit for the general collection, she chose not to buy it.

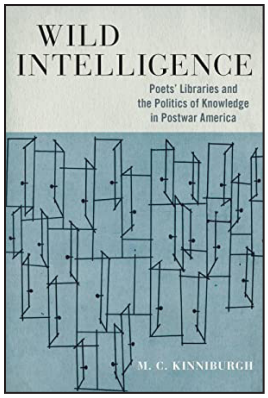
Pavenick does not inform us if she is or is not a member of the LGBTQIA+ community. If she is not, what reasons does she have in rejecting the request, especially after she invited members of that marginalized community to suggest purchases? When she reveals "at the end of the day, I'm in charge of the collection," (109) it appears to be a professional right that is ultimately tied to institutional power rather than a marginalized lived experience. Her concern about the book's alignment with the general collection is based on criteria produced by dominant institutions. In this way, selections based on established traditions reinforce the stories of the majority and can prevent the addition of counterstories because they are not like the books already in the collection.

The editors and authors of this book, who appear to be largely from the majority, do not consider the possibility that minority students may not want or welcome the use of their counterstories to teach information literacy or to promote libraries. Nor do they seem to consider the possibility that librarians may have to prepare for conflict, controversy, and argument if they increasingly weave race, gender, sexuality, indigeneity, privilege, and other potentially emotional issues into their lessons. What right and expertise do white librarians, for instance, have for using or developing stories about indigenous people? The point of this objection is not to discourage librarians from seeking out ignored stories, but that doing so may be more complicated than *Once Upon a Time in the Academic Library* suggests. The book would benefit from more attention to the complexity and tensions that may emerge when librarians work with stories that are not their own.

Despite these problems, *Once Upon a Time in the Academic Library* provides readers with a nice introduction to librarians using stories in their everyday work. Ideally, the book will spread the awareness of storytelling in libraries and inspire librarians to try it. If every librarian has a story to tell, we can look forward to a lot more stories.—*David J. Brier, University of Hawai'i at Mānoa*

M.C. Kinniburgh. *Wild Intelligence: Poets' Libraries and the Politics of Knowledge in Postwar America.* Amherst, MA: University of Massachusetts Press, 2022. 224p. Paper, $28.95 (ISBN: 978-1625346551).

The poet's reading is integral to the poet's writing. Yet the relative importance any particular subject material may hold in the poet's work may appear elusive, often only to be revealed by way of keen-eyed archival digging. Thus, as M.C. Kinniburgh argues in *Wild Intelligence: Poets' Libraries and the Politics of Knowledge in Postwar America,* "The poet's library as an ar-



chival genre is just as significant a historical tool as literary papers" (48). Kinniburgh has multifaceted experience with such matters. As a former archivist and rare book librarian at New York Public Library, and now rare book dealer and small press publisher with Granary Books, she has witnessed how "institutional practices shape our expectations of the use and value of poets' libraries, just as they shape our understanding of the archival materials and research collections that they house." (151) Firmly believing re-envisioning the relationship between institutional policies and private collections holds possibilities for redefining broader cultural values (that is to say that better understanding and acceptance of the fringe areas—Anarchist/occult leanings—at which these poets and their work operate might lead to direct societal change across-the-board—away from current capitalist, neoliberal global hegemony), Kinniburgh doesn't shy away from acknowledging her commitment to elevating the political and social aspects at play within her research:

> the crux of my argument: that poets' libraries are not just book collections but are rather a distinctive type of archival collection that reflects a *poetics* of information. And that in the twentieth century, this task of collecting and organizing has specific political valence for poets who worked outside of mainstream contexts: who were harassed by government organizations, denied the resources of traditional institutions, or otherwise registered on a scale of unfashionable to dangerous in an era of conformity. In this sense, poets' libraries offer us an alternative history of information management during the same century that saw this practice rise to the prominence of an accredited profession in the United States. (x)

Kinniburgh's intriguing, reader-friendly take looks at the libraries of four poets: Charles Olson, Audre Lorde, Diane di Prima, and Gerrit Lansing, expanding the conversation around current approaches to archival practice. Her work opens up fresh, incisive lines for inquiry. She focuses her attention upon "libraries that are wild in their intelligence, and have thus far evaded the legibility of being ingested into a formal institution or offered to the literary marketplace" (xi). In part, Kinniburgh is attracted by the way "the libraries of these poets still exist on the peripheries, because that's where they were created" (xi).

Kinniburgh's accounts are for the most part first-hand. While she was of course unable to meet with long-deceased poets Lorde and Olson, she spent significant time in Gloucester, MA at the Maud/Olson Library (a recreation of Olson's book collection created by Olson scholar Ralph Maud now housed in the poet's longtime adopted hometown). And, describing her role as being "to help, and be of service," she met extensively in person with di Prima, paying several visits to the poet's San Francisco home to go through her library of occult books and ephemera. She also met multiple times with Lansing at his home in Gloucester, MA, prior to each poet's recent passing.

Wild Intelligence provides a descriptive guide to these poets' libraries while also meditating upon the problematic nature of any institutional incorporation of such collections. Particularly in relation to how institutional bias, intentional as well as perhaps not, has neglected and outright shunned marginal groups with which these poets are affiliated. Kinniburgh draws attention to the paradox of how these "very same institutions" now embrace these collections.

Drawing direct ties to "antiracist practices at institutions that interrogate the ways in which materials created by Black or Indigenous people, as well as people of color, exist at institutions that historically marginalized or excluded these same voices."

Kinniburgh's discussion of Lorde, who worked as a librarian, and much of whose personal library was destroyed by a hurricane on St. Croix, explores the racial prejudice that shaped her work as a Black librarian and her path to becoming a full-time poet. Lorde immersed herself within the "information infrastructure of libraries," but took the full-time "turn to poetry to augment the aspects of professional library infrastructure that she found inadequate to her work" (54). While still using tools of librarianship, she actualized a different calling in her life: "For Lorde, 'information' is a basic unit of observation or sensation that can be acknowledged and filed for future use, and is deeply tied to both verbal and nonverbal forms of communication. … Lorde's definition of 'information' is acquired through distinctly intuitive means" (68).

Looking to the sensibilities of these poets, Kinniburgh highlights opportunities for rethinking common understandings and practices. She points to the meaning of bibliography for Olson, suggesting that it "functions not as evidence of reading that has been accomplished but rather as mapping the contours of what can be known … based on textual evidence at a certain point in time" (34). Mapping the rough thematic contours of books arranged on the numerous bookshelves sprawling throughout Lansing's home, Kinniburgh describes a spiral-like path entering from the kitchen's back door swooping through the front rooms to wind up the central staircase to the upper floor's office and bedroom: "Lansing's careful placement of books in particular rooms adds to the specific tension that gives shape to the library on the whole" (126). And she emphasizes the necessity of understanding the preoccupations underlining di Prima's reading and gathering, describing the ways that "questions of sources and research are essential to contextualizing di Prima's intellectual genealogy and the importance of her library, particularly in relation to her reworking of 'the progression of European thought' as a means of answering the question of how historical knowledge can be activated in the present moment" (90–91).

For Kinniburgh, libraries, archives, and other memory institutions play a role in preserving the "wild intelligence" of collections *as* collections. She adventurously suggests that there is value in "initial encounters and unmediated approaches" (112) alongside the selected and curated presentation of the poet's papers. Beyond merely engaging devoted fans of the poets, *Wild Intelligence* provides a critical lens by which to measure and continue to reshape the manner in which the library-as-institution engages with collections such as these.—*Patrick James Dunagan, University of San Francisco*

Jo Angela Oehrli. *Practical Academic Library Instruction: Learner-Centered Techniques*. Chicago, IL: American Library Association, 2022. 124p. Paper, $64.99 (ALA members) (ISBN: 978-0-8389-3642-9).

Jo Angela Oerhli has distilled much of her experience, practical advice, and wisdom into this easy-to-use and well-organized library instruction manual. Her passion and enthusiasm for teaching, information literacy, and student-centered learning come through loud and clear. Recent research addresses the lack of preparation and guidance for teaching faced by many librarians whose responsibilities include instruction, especially those at the beginning of their careers. With a growing focus on information literacy and the teaching role of librarians, this practical volume fills an important niche for both new and experienced librarians.

The focus of the book is to highlight some of the major pedagogical issues that librarians may encounter and to offer practical solutions and learner-centered activities to improve instruction and student learning. Notes at the end of each chapter and a bibliography provide excellent suggestions for further professional development.

The organization of the book follows the sequence of a typical class instruction session. This framework makes the content very practical, versatile, and easy to use. Part I, "The Basics," articulates guiding principles including learner-centered techniques, respect for the student, and the importance of positive expectations. The content highlights educational research and points to sources for further investigation such as Paulo Freire's *Pedagogy of the Oppressed,* research by Tracey Tokuhama-Espinosa, metacognitive techniques, and John Keller's ARCS (Attention, Relevance, Learner Confidence, and Learner Satisfaction). The inclusion of so many excellent sources for professional development is a strong feature.

Part II, "Starting Point of Class," provides tips on being organized, lesson planning, setting and stating goals up front, establishing rapport with students, and generating activities for student engagement. These strategies include ice breakers, promoting a positive classroom climate, generating class discussion, and pivoting with new content and instructional techniques. The importance of formative assessment is addressed in discussions of backward design as developed by Grant Wiggins and Jay McTighe, the ADDIE Method of Lesson Planning, and Madeline Hunter's work on creating instructional objectives and lesson plans. Project CORAL (Collection of Information Literacy Related Research Assignments) and the ACRL Framework for Information Literacy sandbox are highlighted for additional ideas.

Part III, "The Middle of Class," focuses on metacognition, assessment, and guided reflection on teaching. Both formative and summative assessment are discussed for their importance in improving learning. Think-pair-share, use of pivot techniques, and techniques of KWL (What I already know, What I want to know, and What I have learned) and TPE (Think, Puzzle, Explore) for making thinking visible are tested instructional techniques. Active learning techniques such as problem solving, role playing, and teaching the use of a database are included. More inspiration can be found in the "Top Twenty List" devised by the ALA Library Instruction Round Table (LIRT).

Oehrli also offers solutions to classroom distractions such as whispering, bored expressions, texting, and disengagement, including options such as proximity (walking around the classroom and engaging with students), pivoting the lesson content through introduction of new material or skills, and changing up the task.

Part IV, "Looking Back and Forward on Your Library Instruction" centers on the importance of summative assessment and reflective practice to improve teaching and increase student learning. Summative assessment, which helps evaluate what students have learned, might include testing skills in performing tasks modeled in instruction or writing a short response about content learned. Reflective practice involves evaluating current instructional practices. It is a very important activity, although it is not always well understood or practiced. The author wisely notes the impact of external factors such as institutional climate, cultural issues, diversity, curriculum, funding, personal attributes, and other considerations on reflection.

The end of an instruction session provides an important opportunity to summarize instructional content. It is also an opportunity to provide contact information for further research

assistance and to share additional content not included in the class session. Oehrli describes a class slideshow as one way to achieve this goal. A Libguide would also work well.

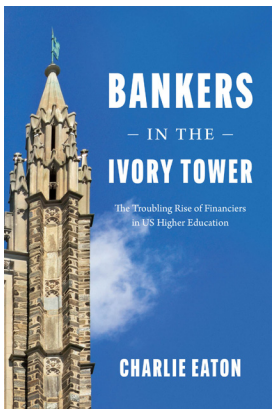
An important factor in library instruction is the physical environment. Although the importance of classroom design is mentioned, it is not a focus in this book. Given its importance and the fact that it is often overlooked, some discussion of facilities design might have been included. Most classrooms, large lecture halls, and library labs have stationery seating arranged in traditional rows. The lack of flexibility imposed by this arrangement can be a definite limitation, especially when designing active learning exercises and group work.

Another crucial element is time constraints. The principles, research, and activities described in this book are innovative and student centered. However, the time factor, especially for "one-shot" instructional sessions, can often be a hindrance to meaningful library instruction outcomes and could have been usefully addressed by Oehrli.

Using a range of pedagogical approaches and creating meaningful contacts are essential to teaching students who are different from each other and learn in different ways. The current professional focus on diversity, equity, and inclusion must take into account not only the fact that students learn in different ways, but that they come from different backgrounds, bring different experiences to the classroom, and often have varying learning expectations. Accommodating diversity and accessibility in the instructional classroom likely calls for additional work on this subject that goes beyond this title.

Practical Academic Library Instruction is an excellent manual that librarians will want to have in their personal library. It achieves the goal of being a go-to source for face-to-face instruction. With its clear and compelling organization and easy-to-use layout, listings of specific tools, and techniques, practical advice, and suggestions for further reading, this book will be used often.—*Carolyn Filippelli, University of Arkansas–Fort Smith*

Charlie Eaton. *Bankers in the Ivory Tower: The Troubling Rise of Financiers in US Higher Education*. Chicago, IL: University of Chicago Press, 2022. 203p. Hardcover, $23.30 (ISBN: 978-0-226-72042-5).



Charlie Eaton has written a book exploring a topic many of us are aware of and probably appalled by—the insidious relationship between high finance and higher education. What Eaton has done, however, is put names to the connections and provided plenty of data to back up his assertions in *Bankers in the Ivory Tower*. This is a text that anyone connected to academia, including librarians, alumni, and the unfortunate group of debt-ridden nongraduates, can benefit from. In this well-documented book, where the data never becomes too intrusive, Eaton shines a light on people in high finance (private equity bankers and hedge fund investors) both emerging from and then influencing the Ivies and most selective universities. Their influence also extends to the for-profit university system (referred to as "the bottom") and what Eaton calls "the middle" or the less-selective public universities. While the author's conclusions are not as far-reaching as the situation demands, he makes an argument for collective action to combat widening socioeconomic inequality that disproportionately harms Black and brown folks.

Eaton, a professor of sociology, begins by describing how the most elite universities developed the largest endowments. He connects the dots from financial deregulation that

began in the 1970s, accelerated in the 1980s, and led to incredible investment returns for endowments until 2008. An accumulation of wealth in endowments is partially maintained by an explosion of student debt at the other pole. Eaton deploys a new vocabulary to describe these processes. He uses the "social circuitry of finance" to describe financial ideas and institutions permeating all aspects of society, with financiers acting as "transistors" (3). By emphasizing that this is a *social* system, the author reminds us that there is nothing natural or robotic about the contemporary American university. Colloquial terms like the old-boy network are dressed up in phrases like "private information" and "intimate ties" and are used to describe how financiers emerge from the most elite universities and then go on to exercise control over their alma maters' endowments (26–28). A group of bankers were able to steer endowment money into their own hedge funds and collect hefty commissions. A notable case is that of billionaire and future presidential candidate Tom Steyer convincing his alma mater (Yale) to provide a third of his investment firm's capital (31). The most elite schools manufacture inequality by accumulating wealth in their endowments and holding their enrollment relatively flat. With more assets per student and selective admissions, it is no surprise that only 2 percent of Harvard's students take federal loans (1). The ties between bankers and elite universities deepen as high endowment returns and donations lead to appointment of financiers to boards of trustees. Once they are in positions of power inside the university, bankers increase the marketization of the institution while more easily reproducing themselves among new graduates.

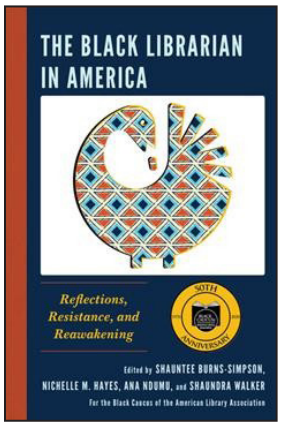
Bankers in the Ivory Tower covers a fair bit of territory for a relatively short book. Eaton easily follows a discussion of the sociology of gifts—how donors expect appreciation, reciprocity, and increased social status—with details showing that the wealthy donate less relative to poor folks (70). Despite donating a smaller portion of their income, wealthy parents grab benefits such as increased admissions for their children, tax reductions, and spots at the top of the social hierarchy. Eaton carefully selects examples to illustrate his claims. He details, for example, how bankers were able to get an exemption from Michigan's public reporting requirements at the state's flagship university, essentially hiding how the public university was investing in private equity and hedge funds (62).

The chapters on for-profit colleges and public universities illustrate how high finance captured all strata of academia. Private equity and hedge funds purchased and expanded for-profit colleges with capital partially raised from elite universities. Bankers hid behind aggressive recruiters and the logic of "shareholder value" to enrich themselves at the expense of students of color. These students often fail to graduate from for-profits and leave saddled with student loans. Eaton uses the University of California (UC) system to further depict the neoliberalization of public universities. Bankers convinced the universities to increase bond borrowing, which in turn increased student debt. Flat enrollment at the more prestigious UC campuses pushed qualified students to the California State University and community college systems. Bond borrowing receives less scrutiny than tuition increases, and that led to more freedom and power for the UC board and administration. This included construction of a new UC Berkeley football stadium while freezing enrollment and passing on bond interest to students. Importantly, Eaton debunks the argument that high tuition rates can be used to subsidize tuition for poorer students (119). His research shows that most public schools don't have the stature to attract enough wealthy students to make that scheme work as wealthy parents would rather pay high tuition at an elite private school.

Bankers in the Ivory Tower ends with Eaton conveying a personal narrative of fighting for change while he was a student at UC Berkeley. He introduces less than useful vocabulary such as "bargaining with bankers" to describe a broad coalition of organizations including unions and student groups that lobbied legislators to pass a millionaire's tax in California. Eaton favors this tactic (which Paulo Freire would probably call bargaining with the oppressor) over what he calls the "big bang" or debt cancellation. A legislative victory is subject to being weakened and reversed, whereas debt cancellation could provide immediate and more durable impacts. While Eaton advocates for collective action, he fails to note that the President has the power to cancel federal student debt unilaterally. The author favors a regulatory and policy approach and speaks little of changing the hierarchy of academia or ending private, for-profit banking.

Academic librarians, many of us burdened by student loans and working with students taking on such debt, will find *Bankers in the Ivory Tower* a useful book to wage counterpropaganda. While Eaton's conclusions aren't strong enough to match the harm he describes, there are plenty of data, evidence, and anecdotes that could be used in a collective fightback. The Debt Collective's *Can't Pay, Won't Pay* may be worth picking up as well, especially considering the influence they have had on policy makers during the pandemic.—*Dave S. Ghamandi, University of Virginia*

The Black Librarian in America: Reflections, Resistance, and Reawakening. Shauntee Burns-Simpson, Nichelle M. Hayes, Ana Ndumu, and Shaundra Walker, eds. Washington, DC: Rowman & Littlefield, 2022. 288p. Hardback, $105 (ISBN: 978-1-5381-5266-9).



It was with delight that I accepted the offer to write a review for the latest iteration of *The Black Librarian in America*. As a proud Black librarian in America and a lifetime member of the Black Caucus of the American Library Association (BCALA), I have read the previous versions of this collection hungrily, inspired by the stories of other librarians whose experiences overlap, differ, and connect in power to my own. This latest edition of the collection marks the 50th anniversary of both the first edition, edited by the renowned Dr. E.J. Josey, cofounder and first chair of BCALA, and of BCALA itself. This reflective and celebratory edition comes at yet another pivotal moment in Black history and life (among so many), when the last few years have seen a global pandemic that disproportionately affects Black, Indigenous, and People of Color (BIPOC) communities and demands for racial justice have reached interesting new plateaus. In many ways, the world for Black Americans in 2020–2022 is very similar to the world faced by Black Americans, and Black librarians, in the 1970s. Yet, as this edition of *The Black Librarian in America* can attest, there are important changes and new challenges, yes, but also new opportunities to move the work of the ancestors forward in service for the generations to come.

This edition is the first to be wholly edited by Black women—Shauntee Burns-Simpson, Nichelle M. Hayes, Dr. Ana Ndumu, and Dr. Shaundra Walker—and features a foreword by the first Black and woman Librarian of Congress, Dr. Carla Hayden. These Black women seek to provide an intersectional view of Black librarianship that reflects the richness of the Black heritages and Black communities from which we come and which we serve. There are notable gaps in the collection's coverage, gaps that even the editors attest to, such as the distinct lack of representation of the Black LGBTQIA+ perspective. These gaps must be contended with as

readers, per the volume's guidance, engage in "reflection, resistance, and reawakening." It was undoubtedly challenging soliciting a wide range of contributions in the midst of a pandemic. Nonetheless, the wealth of wisdom and lived experience of the stories that are represented in this volume are invaluable.

Divided into four parts, the book takes us from "A Rich Heritage: Black Librarian History"; leads us to "Celebrating Collective and Individual Identity"; exposes us to "Black Librarians across Settings"; and finally guides us to "Moving Forward: Antiracism, Activism, and Allyship." While any one of the parts—or even any one of the individual chapters—could stand on its own, the whole is woven together into a multifaceted tapestry representing many elements of what it means to be a Black library worker in America. In "Part I: A Rich Heritage: Black Librarian History," chapters by Rhonda Evans and Dr. Aisha Johnson, show us the powerful examples of forebears advocating for library education, services, and workplace promotion for Black people over the years. These chapters are joined by pieces by Dr. Ana Ndumu and Dr. Shaundra Walker, profiling two Black library heroes: Dr. Robert Wedgeworth, the first Black executive director of the American Library Association (ALA), and Adella Hunt Logan, the first librarian for the Tuskegee Institute, a historically Black college and university (HBCU).

"Part II: Celebrating Collective and Individual Identity" opens with an inspiring reflection on Black library work as a labor of love in Jina DuVernay's chapter. James Allen Davis Jr. and Roland Barksdale-Hall add chapters on librarianship in the Western United States and activist librarianship for collective empowerment, respectively. These chapters explore the lived experiences of two Black cis-male librarians, a group that is notably numerically underrepresented in librarianship. While it would have been useful for these chapters to include an analysis of power in their analysis of gender representation—a feminized profession is by no means a fem-empowered profession—the stories from these Black men librarians are nonetheless crucial to the overarching exploration of Black librarianship identity. Rounding out this section are two powerful chapters on marginalized Black librarian identities: the first, by Twanna Hodge, Kelsa Bartley, and Kenya Flash; and the second, by Kai Alexis Smith. Hodge, Bartley, and Flash's chapter gives visibility and voice to their experiences as Afro-Caribbean librarians working in the United States where all Black experience is often equated with, and therefore flattened to, African-American experience. They provide their narratives as a counter to the ways in which their Black Caribbean heritages are often rendered invisible in library work and in broader life in America. Smith's chapter speaks to the experiences of Black library and archives workers with neurodivergence and other disabilities, bringing Black disability studies, disability justice, and trauma-informed pedagogy into dialogue with library and information studies.

In "Part III: Black Librarians across Settings," Shannon Bland and LaQuanda Onyemeh walk us through what it means to build digital communities for Black library workers through their creation of @BlackLibrarians and WOC+Lib, respectively. Chapters by Teresa A. Quick, Dr. Cheryl R. Small, and Amalia Butler and by Bethany McGowan and Jahala Simuel explore the work of Black librarians with STEM. Quick, Small, and Butler describe the use of culturally reflective services to introduce youth to STEM in public and school libraries, while McGowan and Simuel reveal the experiences of Black library leaders in the health sciences. Continuing the thread on Black library leaders, Deloice Holliday and Michele Fenton's chapter discusses the challenges facing Black library leaders in general. Finally, Jamillah Scott-Branch, Vernice Riddick Faison, and Danielle Colbert-Lewis round out this section with their chapter on the challenges facing all librarians, regardless of positional leadership, at HBCUs.

The final section, "Part IV: Moving Forward: Antiracism, Activism, and Allyship," starts with chapters on Black librarian recruitment from Satia M. Orange and Tracie D. Hall and from Vivian Bordeaux and Jahala Simuel. Orange, a prior director of ALA's former Office for Literacy and Outreach Services, and Hall, ALA's current and first Black woman executive director, reflect on their longstanding mentoring relationship and the power of strong mentoring connections. Relatedly, Bordeaux and Simuel explore the recruitment of Black MLIS students and issue a call to action for removing barriers into the field. In their chapter, Taliah Abdullah, Hadiyah Evans, and Regina Renee Ward describe ways to use public libraries as spaces for healing community dialogue in post-2020 America; and Angiah L. Davis and Michele E. Jones share thoughts on sustaining academic libraries in a pandemic world. The final contribution of this final section rests with keondra bills freemyn and her exploration of the work of digital content creators to expand Black narratives and archival collections beyond the violence of institutions.

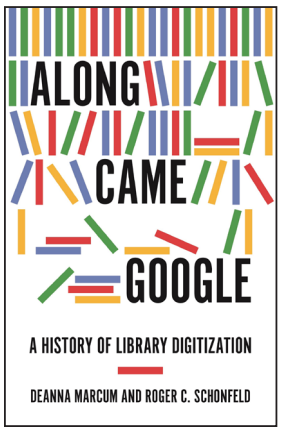
The volume closes with an afterword by former ALA president Julius C. Jefferson Jr. that reflects on the "State of Black Librarianship" in the 50 years since the first edition of the volume and the founding of BCALA. This brief moment of looking back to look forward is a fitting end to a collection that encourages readers to do just that, as symbolized by the Sankofa bird[1] design on the cover. *The Black Librarian in America: Reflections, Resistance, and Reawakening* is a powerful reminder of all that Black librarianship has endured and is enduring, as well as a joyful celebration of survival and empowerment for the steps that are to come. Not much and so much has changed in 50 years for Black library workers; but, as always, hope for the future lies in careful reflection on the past.—*April M. Hathcock, New York University*

Note

1. Sankofa comes from the Twi language of Ghana and roughly means "go back to get it." The concept of Sankofa is symbolized by a bird with its head twisted backward as its body faces forward. See *The Power of Sankofa: Know History*, Carter G. Woodson Center website, Berea College, accessed June 21, 2022, https://www.berea.edu/cgwc/the-power-of-sankofa/.

Deanna Marcum and Roger C. Schonfeld. *Along Came Google: A History of Library Digitization.* Princeton, NJ: Princeton University Press, 2021. 232p. Hardcover, $25.99 (ISBN: 978-0691172712).

The impact of digital technology on academic libraries has been discussed and debated a great deal over the years, but the elephant in the room often remains Google. Whether more formally or less, contributions to the professional conversation that take the long view and consider the full, ongoing range of Google's impact seem hard to find, even as that impact is ubiquitous and undeniable. On the backends of their systems, in the interstices of their workflows, and on the front lines of their services, research libraries depend on and deploy any number of the company's apps, tools, and projects, to say nothing of the consequences and influence of Google search itself. It is therefore a welcome and valuable contribution to the professional literature that Deanna Marcum and Roger C. Schonfeld make in their work, *Along Came Google: A History of Library Digitization*. As the subtitle suggests, the authors offer a perspective based on the passage of time—call it recent



history, and in some sense official history too, as the heart of this book derives from interviews conducted by Marcum and Schonfeld (both of Ithaka S+R) with the key players in what was originally called Google Print (now Google Books). This is an interesting inside story of how Google came to partner nearly two decades ago with a handful of major research libraries to digitize their scholarly collections. It does not avoid the shortcomings of a top-down history, including the tendency to speak in the voice of Silicon Valley promotion, but it is a timely and apt primer on the significance of what happened then and what may yet follow.

The authors convey their leanings toward Google from the start. "For nearly a decade," they write, alluding to the years beginning in 2002, "Google and its partners aggressively pursued the dream of a digital universal library" (6). Libraries on the one hand and publishers on the other were Google's crucial partners. Among the former, the library of the University of Michigan was most important, and it would furnish the primary track for Google's efforts to digitize library books. Publishers and, in time, authors felt increasingly troubled by Google's plans with libraries. Lawsuits over intellectual property ensued, followed by what seemed to the main entities a promising settlement agreement that was then dismissed in court in 2011. Officially thus ended the dream of a "universal digital library," but the notion still animates Marcum and Schonfeld's book, and the phrase frequently hovers ("universal" generally coming before "digital") throughout their text.

The first two chapters set the stage. Chapter 1 provides a useful, wide-ranging overview of predigital efforts among research libraries to create networks of shared information and resources. Chapter 2 is called "The Dreamers," and it presents a series of brief sketches of librarians, technologists, and others who embraced digital technology and the idea of mass digitization of the scholarly record. As an inside story, *Along Came Google* truly commences with chapter 3, in which we learn about the private conversations and meetings that particularly led Google and the University of Michigan to work together. Especially important here—and for the story as a whole—is material drawn from interviews with Michigan's Paul Courant (then provost) and John Wilkin (then associate librarian), as well as the salient background fact that Google's Larry Page was a Michigan graduate, explaining this historical contingency in the first place. The information in this chapter (and more to follow in the rest of the book) demonstrates the validity of what Marcum and Schonfeld say in their very acknowledgments: "The real strength of this history is that so many key figures in book digitization were willing to talk with us so candidly" (vii).

Chapter 4 is quite brief and somewhat tenuously connected to the rest of the narrative. It reads perhaps as though a manuscript reviewer suggested the authors address the issue of open access, or the authors themselves wished to discuss it; but, in the absence of a better fit elsewhere, they simply decided to insert some of their thoughts here, as a bridge between chapter 3 (which detailed the lead-up to the Google/Michigan partnership) and chapter 5 (entitled "The Academy Protests"). Here, the authors delve into the fallout from the previous, effectively showing the challenges of accomplishing mass digitization without the resources of a Google. Philanthropic organizations (like the Mellon Foundation), universities besides Michigan (for instance, Harvard), and newly formed nonprofits (one example would be Brewster Kahle's Open Content Alliance) all may have wished and tried for a path toward digitization outside Google's corporate orbit, but ultimately such approaches were, as the chapter's concluding subheading declares: "No Match for Google" (125).

Chapters 6 and 7 insightfully add to the story. Publishers' reactions gradually coalesced to oppose Google, which had proceeded to digitize what would ultimately be millions of books from library collections without first securing copyright permission. A settlement that appeared to satisfy Google, publishers, and authors alike was eventually put forward. The ALA, ACRL, and ARL all cautioned against it. The U.S. Department of Justice advised the same, and finally the court denied it, but in parallel developments over the previous several years had materialized the planning and will among academic institutions (led by Michigan) to create a "library-controlled platform" (165) for mass digitized books. This took the form of HathiTrust, and chapter 7 recounts its emergence, including its emphasis on digital preservation and significance as a discovery platform.

The book concludes with an intriguing chapter reflecting on what the Google Print/Books era still means and might augur for the future. "Through today's lens," the authors write, "many are now asking if the major research libraries are actually representative enough of American history, culture, and scholarship to serve as a comprehensive digital library" (190). Marcum and Schonfeld in turn offer a revised definition of their guiding principle, or, that is, "another model for the universal library: one that is *the accumulation of many efforts, all of them ultimately incomplete, controlled by an array of different actors*" (194, italics in the original). This is agreeable enough, and certainly closer to the realities of scholarship and collecting, but whether it represents a "universal" library, and whether such a library is (or ever was) desirable, will be for each to decide.

This book is worth reading and will no doubt help librarians to understand where we are in today's research landscape and what brought us here. But rendering judgment on the underlying tensions between libraries and Google—which is to say, the tensions between culture and commerce—it might have displayed a little more balance when speaking of libraries and librarians, who tend to appear in clichéd fashion as mostly tradition-minded professionals reluctant to engage with the digital future. At one point, even those library leaders admired by Marcum and Schonfeld seem paradoxically to have less agency than the book's other protagonists, for they "were constrained by their organizational perspective from recognizing the transformational, and in some cases disruptive, potential that accompanied the vision they were pursuing" (40).

That the book is couched in the language of Silicon Valley optimism is to some degree understandable, given its source interviews with key players who partnered together from Google, Michigan, Stanford, and the like (a complete list of which interviews would have made for a useful appendix). Still, the evidence from the interviews themselves is telling. Marcum and Schonfeld learn that Google's discussions with its partner libraries were "steeped in secrecy" (82), with nondisclosure agreements preventing each library from speaking frankly with the others. Ultimately, if librarians expressed hesitation about Google's aims and actions, then perhaps this had more to do with observable power imbalances and wariness toward Google's domination of search, rather than with an inability to grasp technology's potential. It is fascinating, at any rate, to look back at the Google Book Search beta site, where there appeared, early on, a reposted series of blurbs in favor of the project, juxtaposed with the publisher and author counterarguments. Among the favorable blurbs was one from Tim Wu in *Slate*: "In the end, it is just a search, not a replacement product." Nearly 20 years later, it now seems fair to ask whether search has indeed become the product, though that is subject matter for another book on Google.—*James Kessenides, Yale University Library*