Reference Services and Instruction
Rebecca Graff, Col. Ed.

Teachable Moments in Reference

Rebecca Graff and Matthew Torrence

Libraries, particularly libraries that have a teaching mission, should take advantage of teachable moments during reference interactions. Teachable moments occur when people are open to learning. Reference encounters, in many instances, should be approached as a chance to help someone learn, rather than simply providing them with information. This column will give practical applications of when to help library users learn during a reference interaction.

Library workers often take advantage of the teachable moment in person, taking people's requests for information as an opportunity to teach them how to conduct research for themselves. Similarly, teachable moments in virtual reference can provide information literacy instruction and guide users in their research process, rather than solely answering their immediate questions. Helping someone learn offers a chance to show users how to arrive at answers themselves, thereby strengthening their research skills.

Additionally, a reference interaction might be the only opportunity to teach information literacy skills to a person, making it crucial for librarians to take advantage of the moment. While it can be challenging to provide the same level of instruction as in face-to-face settings, virtual reference offers unique ways to engage students in learning. For example, librarians and service providers can make their thought processes transparent by using clear techniques to explain their search strategies and resource evaluation and use "show, don't tell" by co-browsing, pushing URLs, or guiding users through steps in real time.[1]

Sometimes it's easy to identify a teachable moment. If someone is confused and you can provide clarification, then use that uncertainty to help them. Whether in-person or online, pay attention not only to what the person is saying but also to what they aren't. These opportunities to share information may not be obvious, so we look for and create teachable moments. However, before inserting instruction into your reference interview, ask yourself whether it truly is a teachable moment. In other words, is the person receptive to learning? If they are, leverage the opportunity. If not, don't force it.

During reference interactions, we respond to questions, but not always with answers. Often, our help is most needed when crafting a complex search or identifying search terms. When demonstrating what you are doing, clarify your choices. Explain why you used quotation marks around a phrase, how you identified and limited to subject terms, and when, as well as why, to use

Matthew Torrence is Associate Librarian for the School of Geosciences and the Patel College of Global Sustainability, University of South Florida Libraries, Tampa, torrence@usf.edu, https://orcid.org/0000-0003-0015-3907.
Correspondence concerning this column should be directed to Rebecca Graff, Coordinator of SMU Libraries Intern Program and Humanities Research Librarian, Southern Methodist University Libraries, email: regraff@smu.edu.

a truncation symbol. This type of introduction may be extended to the basics of subject heading systems that assist with more advanced searching and the user's level of information need and scope of their paper, project, or other endeavor. Consider each decision as a chance to expand and scaffold learning. If you are responding to a complicated question initiated via chat, ask if the person is open to joining you through video. Co-browsing is great for demonstration, comprehension, and education.

Along those lines, explain your choice of a particular database by saying why a selected resource includes information likely to complete the project or assignment. It is also relevant to cover access and instruct the person on what to do if the article, chapter, or other material is not available. This is another good opportunity to explain how an ideal reference may be available in another source despite only having an abstract or citation in the database initially searched. Microteaching moments provide personalized instances for serendipitous instruction.

For example, many people are reluctant to use a book as a source because they believe they must read the whole thing. So, it's worthwhile to share how to use a book's table of contents, chapter titles, and index to help individuals take advantage of the pieces that might be applicable to their question. Remember to suggest that they should look at the bibliography to find additional relevant sources. Before you send someone off to get a book, double check to see if they are familiar with reading call numbers. If not, this is an opportunity to teach them whatever system your library uses.

Asynchronous reference encounters, in particular via email or fillable form, allow a user the time to submit a written request for help that has the potential to be very detailed. Correspondingly, they allow a librarian the time to submit a thoughtful, thorough response, often with links to resources that could provide more help, offering a chance to improve the user's information literacy skills.[2] These interactions can provide a librarian with both an idea of a user's level of information literacy and a chance to help the person improve. Asynchronous email reference may also be used for incremental instruction on the user's preferred time frame. Some studies have successfully mapped virtual reference interactions to the ACRL Framework for Information Literacy, demonstrating the feasibility of teaching these concepts asynchronously and at the point of need.[3] Creating and using shared templates in email reference can also standardize the delivery of fundamental information literacy concepts.

Similarly, standardized templates as a follow-up to research consultations allow library workers to reiterate and elaborate on instruction that took place during the session, furthering the teachable moment. Consultations typically offer individual instruction and provide the chance for the information professional and the person to explore a specific project in detail and take into account the user's needs. Teachable moments are authentic, as the person has a specific project and questions, making the instruction timely and relevant. These learning opportunities are especially valuable as they occur naturally when the user is actively engaged in research and most receptive to learning.

Avoiding assumptions is another good way to find teachable moments. When helping someone identify useful articles, ask them if they are familiar with abstracts before telling them to look at an abstract. Then, explain that they can help you get a better idea of what the article is about before reading the whole thing. Clarifying library jargon is essential for making teachable moments. If you are going to suggest that someone use Interlibrary Loan, then explain what it is first. Don't assume knowledge not in evidence. Moreover, make sure to call it Interlibrary Loan first, before referring to it as ILL. The abbreviation is common knowledge to librarians and library staff but may be new to the information seeker.

Another good reminder for teachable moments is "don't just know it, show it." Point to information sources (as one should as a *reference* worker) rather than simply supplying information. If someone asks for the library's hours, don't just give the hours, share the webpage with that information. Instead of only copying the text from an FAQ when responding to chat or email, provide the URL so they can learn to take advantage of the FAQ themselves.

As the RUSA Behavioral Guidelines indicate, "Rather than simply being transactional, library workers can support and enable meaningful, co-created interactions."[4] Reference providers should be mindful of the potential for teachable moments within all interactions and strive to guide users toward greater information literacy abilities whenever possible. This type of approach to using teachable moments may even encourage return visitors and ensure good word-of-mouth promotion of your library's services.

Endnotes

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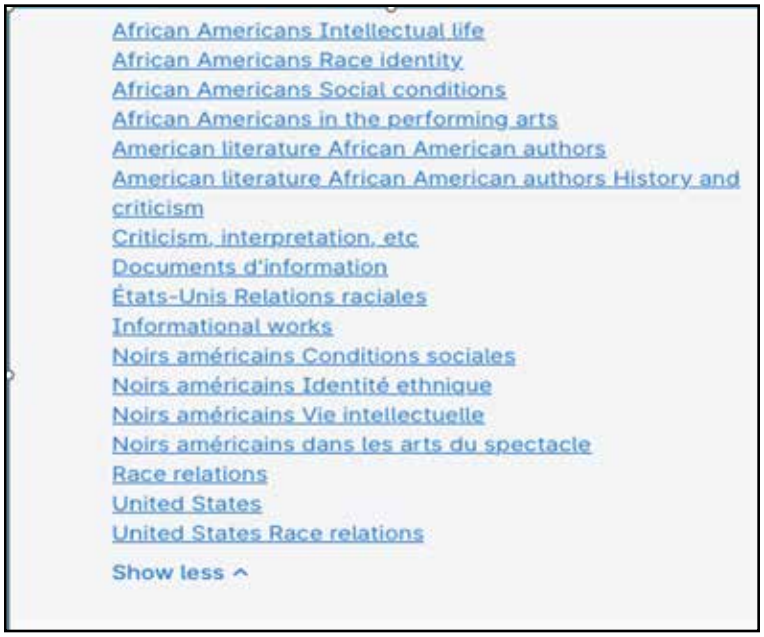
2. Renirie, Rebecca Hill. "Instruction through Virtual Reference: Mapping the ACRL Framework." *Reference Services Review* 48, no. 2 (January 10, 2020): 243–57. https://doi.org/10.1108/RSR-09-2019-0060.
3. Vogus, Brad. "Examining Virtual Reference Services in Academic Libraries." *Public Services Quarterly* 16, no. 4 (October 1, 2020): 249–53. https://doi.org/10.1080/15228959.2020.1818664.
4. Reference and User Services Association. "Guidelines for Behavioral Performance of Reference and Information Service Providers." (2023). https://www.ala.org/rusa/resources/guidelines/guidelinesbehavioral.

Readers' Advisory
Craig Clark, Col. Ed.

RA TOOLBOX – Nonfiction: Inside the Book

The inspiration for this article came to me as I was in my car listening to Hanif Abdurraqib's Carnegie winning essays: *A Little Devil in America: Notes in Praise of Black Performa*nce (2021). Nearly every chapter is brimming with fascinating characters of American history, and I was continually sending text messages to myself, including, "Look up Josephine Baker," "Early Black magicians," "Watch the *Chappelle Show*," "Don't watch the *Chappelle Show*." The list was endless. Abdurraqib's poetic essays are filled with pop culture references from his youth and adulthood, as well as often overlooked or misunderstood Black historical figures in American culture. Noting the internal references of Abdurraquib's writing provides an opportunity to expand on the traditional readers' advisory (RA) strategies of appeal through topic, format, and style and create a "companion" appeal to a book to offer readers more choices beyond read-alikes. This is not a new idea; in 2006, Neal Wyatt in her *Library Journal* article "Reading Maps Remake RA: Re-create a book's entire universe online and transform readers' advisory" made the case for "Whole Collection RA," a broad and varied approach that incorporated fiction, nonfiction, and other formats such as video and music. This article will examine the basic entry points for nonfiction RA, take a brief look at the origins of appeal-based nonfiction readers' advisory, and explore the possibilities of Whole Collection RA through an example of "companion references" with Abdurraquib's book.

Figure 1. WorldCat subject headings for *A Little Devil in America*



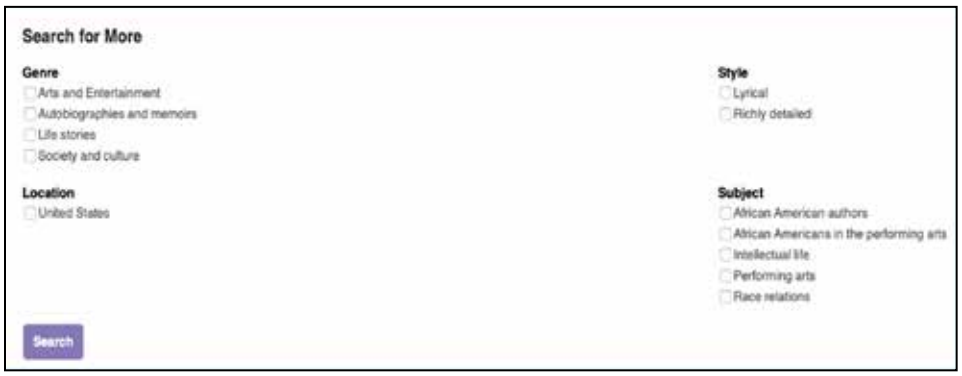
At its most basic level, nonfiction RA is built into our classification systems and online catalogs. In a title search for Abdurraquib's book in WorldCat (Figure 1), the subjects listed reflected the broad topics of the book, but they understandably do not approach the appeal of a particular work. A patron looking for essays about African American intellectual life, race identity, or the performing arts would be perfectly satisfied clicking on the links to find other essays or books, but Abdurraqib's writing delves into a variety of topics, spanning time, place, and tone,

Correspondence to this column should be addressed to **Craig Clark** e-mail: cclark125@gmail.com.

and compiling possible titles for readers within the book certainly can be used to expand beyond simple subject headings.

Traditional RA techniques do a more thorough job of identifying a book's appeal based on format, style, and subject. Nonfiction RA theory and practice follows closely to guidelines set in Joyce Saricks's work *Readers' Advisory Service in the Public Library*, currently on its third edition published in 2005. Saricks provided suggestions for determining appeal factors through reviews and other resources to "develop a vocabulary that builds on the way we naturally think about books and allows us to share them more easily" (p.72). Sandwiched between Saricks's second and third editions, Robert Burgin edited a series of essays entitled *Nonfiction Readers' Advisory*, 2004. Various authors analyzed and described styles of nonfiction writing, subgenres within nonfiction, and the motivations of readers. The volume also includes an informative and entertaining article about the history of RA in librarianship (pp 3-22) that should be required reading to new librarians eager to understand the past and possible futures of RA in the public library. Continuing the work of Burgin and Saricks, Neal Wyatt provided guidance on RA on a variety of subject areas in *The Readers' Advisory Guide to Nonfiction* (2007). In the *Library Journal* article prior to her book's publication "Exploring Nonfiction...," Wyatt stressed the "four new concepts of nonfiction RA: narrative, appeal, subject, and type" (p. 33). Again, like previous RA theory, the focus relies on appeal and subject, connecting readers to their books. These groundbreaking authors all provided an organized and scholarly approach to integrating nonfiction RA services into a more holistic approach to a field that previously concentrated on fiction.

Figure 2. NoveList appeal factors for *A Little Devil in America*



Today, EBSCO's NoveList provides the most current and flexible access to nonfiction read-alikes with prescribed terms, curated genre guides, and input from users.

However, it follows limited prescribed appeal factors related to genre, location, style, and subject (see Figure 2). A sidebar on the screen offers read-alikes that are generated by human input and these additions do offer the beginnings of companion titles that may not show up by selecting the check boxes to search traditional appeal. For instance, one user suggested *Footnotes: The Black Artists Who Rewrote the Rules of the Great White Way* by Caseen Gaines (2021). Another suggested *Josephine Baker* (2017) by Jose-Louis Bocquet, a French graphic novel that would have not otherwise shown up in traditional RA appeal read-alikes because Abdurraqib devoted only a part of one section to Baker. While some readers may want only titles about a particular subject or style of writing, others read nonfiction to learn about topics and may want to explore, as Neal Wyatt puts it, "experiencing the world of a book or exploring its references" (Reading Maps p.38). Wyatt asserts that some books don't lend themselves to easy read-alikes because they may be too distinctive or intricate for simple appeal matching, especially with nonfiction. The example she uses is Suzanna Clarke's *Jonathan Strange and Mr. Norrell* (2004), a book that I recall being matched with the Harry Potter series to a mostly tepid response. Wyatt's idea to brainstorm and map links to time and place

led to a "reading map" that included Dickens, Regency England, Faeries in British literature, and others (p. 40). The idea of a reading map format, accessible on the web with clickable links to books and web pages was ambitious and time consuming, although with the advances in technology and ease of web design, it should be revisited to engage readers and further RA service. My idea for a companion list is manageable and requires that RA professionals read the book and extracts tangential topics to create a group of titles that will appeal to a reader's interests.

That brings me back to Hanif Abdurraqib's *A Little Devil in America: Notes in Praise of Black Performance*. As I was listening, I continued to compile the subjects that he described in his writing. The people and places he wrote about were easy to document and I found books on many of the topics, although I could not find a book on the pianist Don Shirley which surprised me. I also didn't approach the myriad movies and musical references in the book which were too numerous to compile but would make a great listening or watching list on their own. Below is a sample companion list:

A Little Devil in America: Notes in Praise of Black Performance by Hanif Abdurraqib

A Companion Reading List

Movement I: Performing Miracles

Black TV: Five Decades of Groundbreaking Television from Soul Train to Black-ish and Beyond by Bethonie Buter. Black Dog & Leventhal. 2023

Isn't Her Grace Amazing!: The Women Who Changed Gospel Music by Cheryl Wills. Amistad 35. 2022.

Movement II: Suspending Disbelief

The Prestige by Christopher Priest. Tor. 1995

"Overlooked No More: Ellen Armstrong, 'Marvelous, Mystifying' Magician of Mirth" by Vanessa Armstrong. *New York Times*. September 20, 2024. https://www.nytimes.com/2024/09/20/obituaries/ellen-armstrong-overlooked.html

Didn't We Almost Have It All: In Defense of Whitney Houston by Gerrick Kennedy. Abrams. 2022.

Magically Black and Other Essays by Jerald Walker. Amistad. 2024.

America Diva: Extraordinary, Unruly, Fabulous by Deborah Parédez. W.W. Norton and Company. 2024

What Have We Here?: Portraits of a Life by Billy Dee Williams. Alfred A. Knopf. 2024

Afrofuturism: A History of Black Futures by The National Museum of African American History and Culture, Kevin Strait, and Kinshasha Holman Conwill. Smithsonian Books. 2023.

The Black Fantastic: 20 Afrofuturist Stories edited by André M. Carrington. 2025

Movement III: On Matters of Country / Provenance

Fearless and Free: A Memoir by Josephine Baker, translated by Anam Zafar and Sophie Lewis. Tiny Reparations Books. 2025.

The Negro Motorist Green Book Compendium by Victor H. Green. About Comics. 2019.

Words for my Comrades: A Political History of Tupac Shakur by Dean Van Nguyen. Doubleday. 2025.

Movement IV: Anatomy of Closeness // Chasing Blood

Showtime at the Apollo: The Epic Tale of Harlem's Legendary Theatre by Ted Fox. Abrams ComicArts. 2018.

The Last Great Fight: The extraordinary Tale of Two Men and How One Fight Changed Their Lives Forever by Joseph Layden. 2007.

Movement V: Performing Miracles

Rise of Killah: My Life in the Wu-Tang Clan by Ghostface Killah. St. Martin's Press. 2024

From the Streets of Shaolin: The Wu-Tang Clan Saga by S.H. Fernando Jr. Hachette Books. 2021.

Black Punk Now: Fiction, Non-Fiction and Comics edited by James S. Spooner and Chris L Terry. Soft Skull Press. 2023

Whole collection RA and companion reading lists widen the opportunity to bring interesting titles to readers and can open a dialogue to better determine a reader's interests. Fiction titles that defy easy read-alikes and popular nonfiction books that cover a variety of topics are often difficult to categorize with appeal or subject based on catalog entries and reviews. By looking into the book RA librarians can create compelling lists to assist readers and provide yet another way to match a person with their books.

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Management
Julia Martin, Col. Ed.

Library Cyberslacking

Some Suggestions

Karl Bridges

A story about a man, a computer, and an aardvark. First, though, let's talk about our bosses.

Supervisors in libraries prefer to believe their employees are working. When I was a library administrator, I liked the idea that my employees were cataloging or buying books or whatever else it was I was paying them to do. It made me feel good as a manager—and gave me something to talk about with my boss. The reality—I knew, my boss knew, and my employees certainly knew even though we all pretended otherwise—was different. People were gossiping, chatting, visiting, drinking coffee, and making excuses to visit their friends in other offices—presumably to drink yet more coffee. I'm not saying lots and lots of work wasn't getting accomplished. It was. It's just other things were happening, including playing on the computer. There's a word for that: cyberslacking.

Research in 2011 by Vitak, Crouse, and LaRose established the term "cyberslacking," stating, "Cyberslacking (also referred to as cyberloafing, non-work-related computing, cyber deviance, personal use at work, Internet abuse, workplace Internet leisure browsing, and junk computing) is the use of Internet and mobile technology during work hours for personal purposes."[1]

For the record, as a manager, aside from the stuff our computer use policy banned, which was a compliance/enforcement issue that I had to deal with, I never especially cared whether people on work time were buying shoes on Zappos or watching CNN or checking their retirement accounts as long as the work was getting done—an opinion I feel many managers don't share. All I can say is my view is that micromanagement of employees guarantees misery for everyone involved.

I understand productivity is an issue. Your monthly management meetings go ever so much better if you can convince your boss, even slightly, perhaps using fuzzy statistics, that your unit is indeed doing what they (and you) are being paid to accomplish. The nature of library work means that it is sometimes hard to track. Some productivity, like number of books bought, can be measured. Other aspects, not so much. Many librarians aren't closely supervised on a daily basis, making slacking easy. The question for managers becomes whether cyberslacking is a detrimental time and money wasting deviant behavior that drags down the organization, or if it can contribute positively towards better employee morale, creativity, and job satisfaction.

Karl Bridges, MLS, is an Associate Professor at Eli M. Oboler Library, Idaho State University, Pocatello, Idaho.
Correspondence concerning this column should be addressed to Julia Martin, Director of Reference and Instruction, University of Toledo Libraries, Toledo, OH, email: Julia.Martin@utoledo.edu.

Contributing Factors to Employee Cyberslacking Behaviors in Libraries

There is probably no way to make a completely inclusive list of all reasons for cyberslacking since there are probably as many individual rationalizations as there are employees. The top three seem to be—based on my totally unscientific observations and casual reading of the literature (casual anything is all I do anymore…I burned my ties):

Procrastination

J.N. Choi et al. in 2009 made a useful definition by stating, "*Passive procrastinators* are traditional procrastinators who postpone their tasks until the last minute because of an inability to make the decision to act in a timely manner. In contrast, *active procrastinators* make intentional decisions to procrastinate, using their strong motivation under time pressure, and they are able to complete tasks before deadlines and achieve satisfactory outcomes."[2] In short, why work on the tedious annual report when you can be doing something (anything) that's more interesting?

Boredom

Some tasks are boring. Let's face it, libraries have many tasks, like weeding collections, which are just tedious. They fall under the category of what my mother Karen used to say, "You don't have to like it, you just have to do it." For me, this included homework, working in the garden, and washing the car, but I digress. At some point, most people will have task avoidance whether that is a long lunch hour, daydreaming, or playing on the computer. I once considered a library job where I was told that I would be spending every Saturday night until midnight alone in a remote facility in west Texas—a renovated cosmetics factory next to a truck repair facility—in case there was a telephone reference question. If someone told me they cyberslack from boredom, I understand.

Moral distress

Moral distress was developed in 1984 by Andrew Jameton, who defined it as "when one knows the right thing to do, but institutional constraints make it nearly impossible to pursue the right course of action."[3] At some point, employees realize what the reality of their organization is as opposed to whatever their bosses (or marketing) say it is. The next step is to realize there's nothing that they can do about it. Brown and Gillespie state that over time, the difficulties encountered by employees in exercising moral agency in their ability to make change due to challenges such as financial issues or poor leadership ultimately can result in an individual "feeling it is too futile to act, or that it will take too great an effort to counter an ethically disturbing practice, we end up doing nothing."[4]

George Orwell once stated that he had no objections to people driving Rolls Royces, but felt it was bad for morale. Moral distress seems a modern statement of the same idea. It seems reasonable to suggest that librarians, especially those in positions with limited opportunities to exercise moral agency, such as entry level employees or those from traditionally underrepresented groups, may be prone to cyberslacking. *Playing World of Warcraft* on company time becomes a kind of protest against the system. Plus, you get to kill orcs.

Personalism as One Approach to Cyberslacking in the Library Workplace

Workers in libraries are encouraged to be constantly productive, which would seem to argue against allowing cyberslacking, a particularly problematic issue for people in telecommuting environments where the possibility of workplace interruptions by domestic events could be an issue. ("Kami – you're a good cat, but please take that squirrel outside." "No. I caught it. I did the hard work. YOU take it outside.") It used to be easier. There's an old library management book, which I no longer remember the title of, that advised library managers to have offices where the reference desk was clearly visible so an eye could be kept on all employees. Not necessarily a bad thing. As a young librarian, I found having Kathy Jenkins or Milton Crouch within eyesight to be reassuring.

One idea from the management literature is personalism. Personalism emphasizes the uniqueness of the individual, seeing personality as a central concept. It asserts the importance of community while rejecting the exploitation of the individual. The background for personalism is long reaching from Plato to management practices at AT&T. In short, it suggests treating employees decently and getting buy-in to policies gets better outcomes than telling people, "My way or the highway."

A library manager can make people's lives easier just by being flexible or forgetful. I once had a new hire come in on their first day at 8 a.m. to tell me she had to quit. I asked why. She said she hadn't been able to find childcare for her special needs child. I reminded her that her start date was next Monday. We quickly agreed that, indeed, we had both "misunderstood" the start date was a week later, which, totally coincidentally, was the length of time she required to find child care. In another instance, I simply paid an employee's parking tickets out of my own pocket. A wonderful person who spent their spare time and money on animal rescue. ("Yea!!!" says Kami the Cat. "Can I keep the squirrel? I brought it inside to say I love you. Really. Like lots." "No. Outside. Now.")

Making sure that employees understand the why of policies is important

Library managers can benefit from studying servant leader management principles, and perhaps the wider philosophical concepts of personalism, to find ideas that can produce better positive outcomes in relation to cyberslacking behavior. Use the *why*. I recently dealt with a paperwork issue where I was told the reasoning for me signing off, which included some draconian penalties possibly, was "policy." I didn't sign; I asked "why" and the problem went away since, as it turned out, it was a misunderstanding by someone else. The fact is, people are more likely to go along with things if they understand why they are being asked to go on the trip rather than just being stuffed in the trunk of the car. Why matters.

Filippa Anzalone in a 2007 article about the use of personalism gives several good examples of where personalism could be useful. She suggests getting employee input to decisions, like setting library hours, rather than just dictating them. Another example she gives is addressing behavioral issues in a positive way rather than as simply part of a discipline process.[5]

Persuasion is seen as preferable to coercion, an ancient idea that goes back at least as far as Cicero's *On Moral Duties* in 44 BCE. In my own experience, I used to have a co-worker who routinely showed up late to the reference desk. I could have complained to my boss, but instead I just quietly spoke with the person's best friend, who was able to explain to the person what an issue this was.

Problem solved. In another instance, we had a new employee with performance problems. My supervisor finally asked me what to do as they were out of ideas. I gently explained the person is a new employee. Yet you let them work at home on projects they are picking themselves with no oversight. Of course they have no sense of being part of the group so they don't care what effect their actions have on the rest of us. Person starts working in house on projects with measurables and, more importantly, other people. Problem solved. In both instances the solution is about people, not policy enforcement. Plus, in the latter instance, I was gently correcting my boss in a way that didn't get me fired or upset them – personalism applied all round.

Job descriptions often are deficient. These can be vague. They can include language that states "Other duties as assigned." Vague, undefined, and rarely reviewed job descriptions where they have little input create issues for employees. With language like "other duties as assigned," they may end up doing boring and repetitive tasks, which they see as being meaningless and not leading anywhere. Job descriptions that are specific, engage the employee in their creation, and which are regularly reviewed, would result in better outcomes.

Evaluations can be problematic. The reality of leadership is that upper management has to depend on the judgment of department managers. A busy unit head can write a lukewarm review which does not aid the employee in their career. Issues like cyberslacking as an impact on employee productivity could be mentioned in evaluations. A 2018 article by researchers Stilling et al. on library performance appraisals found defects with current evaluation systems, including lack of feedback and a need to move the system towards positivity aimed at employee improvement. They noted, "It is more useful to view PA systems in libraries as a preventive health system (including an annual preventive health checkup) than a disease.[6]

It seems unlikely an average employee review would be questioned. Obviously, if an employee is "meeting expectations," they are doing what they were hired to do. However, it's an answer that does not answer whether the employee is happy or engaged. It seems reasonable to have policies where a certain percentage of employee evaluations are flagged annually for review. Perhaps with a desk audit to see if their tasks actually matched their job descriptions. As one example of an alternative method of evaluation that works in the direction of a desk audit system, the library of Northern Kentucky University adopted a point-based evaluation system for faculty that resulted in both better management outcomes and higher levels of faculty performance.[7]

Clearly stated expectations by means of an internet use policy is one way to manage cyberslacking. Researcher Steven Grover found that users preferred paper computer use guidelines, preferably administered remotely as opposed to by their direct supervisors, with a relaxed view towards compliance.[8] The preference for the human monitor to be more distant and for the policy agreement to be in paper form seem useful conclusions that can help IT and human resource professionals to better design and implement internet usage policies. It seems like it would be better to, aside from clearly stated policies, to have discussions with employees so they understand that, while we know cyberslacking happens, they need to keep it within limits. As a manager, I don't care if you listen to a YouTube video or a podcast while you do something else, but when you start acting like that's the job, it's an issue.

Integrating cyberslacking into the job might be useful. Having someone scour YouTube for useful instruction videos could be valuable. Or adjusting their job assignments so they have some role in the social media component of the library. More importantly, give them public recognition and credit for their accomplishments. Having employees integrate research and application of such tools

into their jobs seems a good thing. Cyberslacking behavior is going to happen. Channeling it into a proper outlet seems an appropriate way to handle this.

Conclusion

Library managers should be taking cyberslacking seriously, using clear written policies and increasing accountability of employees through well-enforced computer use policies. Create a climate of well-understood organizational expectations about behavior. Orient with ideas about the role of the servant leader which have been widely used in business for many years with success.

Engage employees in both the development of policies and activities that enhance the organization and their own careers. Don't make the job a boring slog from hiring to retiring. The alternative would seem, if proactive action is not taken, to be that the larger organization, which might not have an extensive background in library services, might impose institution wide policies and/or procedures. Possibly in the name of risk management, such as the use of keystroke monitoring or Internet filters, which may not serve the library well.

Wait…you're still here? The column is over. Go listen to Jeremiah Babe or drink coffee. Oh. What about the aardvark you ask?

In the mid-1970s, newspapers were converting from using paper to computer systems. In a major metropolitan newspaper, reporters and editors wrote their stories, which were then sent downstairs to be printed, produced with huge expensive German presses that took five years of training to operate and could be ruined by dropping a bottle cap in the works. These press operators, many grizzled veterans of Anzio or the D-Day Landings, didn't like people messing with their Well-Paid Union Job.

The workflow for a morning paper meant the editors' and reporters' work was mostly done by 1 a.m., after which they stayed for another hour in case there was a problem or a late news story. One night, they are standing around, and the conversation went, I imagine, sort of along these lines:

> Reporter: Hey Editor Bill I have a question.
>
> Editor Bill: Yes. That is what the paper pays you for.
>
> Reporter: This new system has search and replace right?
>
> Editor Bill: Yes. And a handy feature it is.
>
> Reporter: What would happen if we replaced every occurrence of the letter "e" in today's paper with the word "aardvark."
>
> Editor Bill: I have no idea.
>
> (General discussion ensues. Finally, consensus reached. Button pushed. System locks up. Lights flash. Sounds of doom and error messages come from computer terminals.
>
> Screams heard from basement where the printing presses are. Sounds of angry printers rushing to elevators prepared to storm newsroom.)
>
> Reporter (paging through manual feverishly): Uhh…doesn't look good guys.
>
> Editor Bill (Being a good Baptist): Jesus is coming. Look busy.
>
> Reporters take hint and find tasks—even the atheists.

> Elevator dings. Doors open. Editor Bill talks printers off ledge. And more importantly from throwing reporters off ledge. Order is restored. Newspaper is printed on time.

Perhaps the earliest known instance of cyberslacking. It shows it's nothing new. The newspaper survived. Libraries will too.

(Kami the Cat: "Aardvark? Is that like a squirrel? Can I…?" "No, absolutely not. Get on your hassock and take a nap—after you take the squirrel OUTSIDE !!" "Ah, you're no fun." Purr, Purr, low muttering about how hard it is to find good Human Servants. Sn…oo…ze…..)

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Amplify Your Impact
Yvonne Dooley, Col. Ed.

Promoting Libraries Through Inclusive and Impactful Environments

Johanna Bjork, Ellie Dworak, and Georgann Kurtz-Shaw

In the movie *Field of Dreams* (1989), Kevin Costner's character hears the phrase "If you build it, he will come" whispered to him in a cornfield in Iowa. The phrase refers to the character Shoeless Joe Jackson and other baseball greats from the early 20th century coming back from the dead to play ball. In much the same way, if libraries "build it," the people will come. The academic library of today is not the academic library of the past. These differences hinge on population, staffing, community, and shifts in vision. As a result, many academic libraries have expanded their focus beyond just research to include holistic programming to support the well-being of students, faculty, and staff. These initiatives foster community, reduce stress, increase research opportunities, and boost campus community morale. However, limited staffing, budgets, and resources continue to pose challenges to their implementation. Two academic libraries in Idaho—Lewis-Clark State College and Boise State University—are transforming how they serve the needs of their users.

Jung Mi Scoulas discusses aspects of determining student population and catering to students in the article "College students' perceptions on sense of belonging and inclusion at the academic library during COVID-19." Scoulas recommends three strategies that their library adopted "to promote and strengthen the University Library's role as 'the hub of intellectual activity'" on their campus:

1. Build seamless, comprehensive, and consistent access to global collections, instruction, and services, whether digital or physical.
2. Create and sustain an inclusive culture and a welcoming environment for all.
3. Expand integration of the Library into faculty and students' research life cycles.

While Scoulas wrote their article for the *The Journal of Academic Librarianship* during a time of unprecedented change in academic libraries, many aspects still hold true.

Johanna Bjork is the Library Director at Lewis-Clark State College, Lewiston, ID; **Ellie Dworak**, is Professor and Research Data Librarian at the Albertsons Library, Boise State University, Boise, ID; **Georgann Kurtz-Shaw** is Head of Instruction and Research Services, the Albertsons Library, Boise State University, Boise, ID.
Correspondence concerning this column should be directed to Yvonne Dooley, Business Librarian and Copyright Specialist, University of North Texas Libraries, Denton, TX, email: yvonnedooley@creighton.edu.

Lewis-Clark State College Library Approach

Lewis-Clark State College, located in Idaho's Panhandle, serves a smaller college community and prioritizes undergraduate student support. They embrace "Small college, big results," and the library leverages creative strategies to support library program development and the success of the student population due to staffing and funding limitations.

Since 2017, the library has been hosting events designed to align with the institution's mission and address student needs. Funding, advertising, and staffing, however, remain challenges. To navigate these obstacles, the library utilizes several effective strategies:

1. Understand Your Population

The Lewis-Clark State College Library tailors programming to meet the needs of their campus community, with students being the primary focus. Students have a voice in providing input via the Library Advisory Committee and through programming feedback forms. Library student workers drive events based on recommendations and facilitate the success of library events and services. One key aspect is to determine who your library is serving: is it first-generation students, incoming freshmen, graduating seniors, or graduate-level researchers completing their PhDs? Identifying your audience ensures that programs are relevant and impactful. No matter who your student population turns out to be, one constant remains—they are all college students pursuing higher education. "Attending college places unique demands and pressures that may make students more susceptible to psychological distress; students' lifestyles and relationships can change dramatically, as can their eating and sleeping habits, to say nothing about the academic and financial challenges many encounter" (Bladek, citing Conley, Travers, & Bryant, 2013; Ibrahim, Kelly, Adams, & Glazebrook, 2013). To better understand your campus population, consider reaching out to your Institutional Research Department for relevant data. Additionally, student workers in the library can offer valuable insights into student demographics and their evolving needs.

Communication avenues:

Library Advisory Committee: This committee is critical for streamlining communication amongst divisions, departments, and the student population. A Library Advisory Committee can be any size, including any part of the college's population. Just make sure it has ample representation. Having a clearly defined mission is key, and changing attendees every few years brings in new diverse thoughts and insights into the community structure.

Student Feedback/Input: When collecting student input, if it is from surveys or a student representative on your Library Advisory Committee, always credit the student or group that offered the input. Let your students know they are heard and valued.

Libraries Student Advisory Board: While the Lewis-Clark State College Library does not have a committee, other institutions have Student Advisory Boards that support the growth of the library.

Library Director or Library Liaisons: The Library Director has multiple opportunities to communicate through formal channels such as the Chairs Council and Division and Cabinet meetings. Librarians also serve as liaisons, providing relevant information to their respective divisions.

Campus Signage: Digital signage is a valuable tool, but traditional tabletop signage remains an effective option for communication, particularly at Lewis-Clark State College.

Campus Calendars: All campuses have some form of calendar system to inform the campus community concerning event scheduling. Also, double check that your events do not conflict with other significant events on campus.

Faculty/Divisions: The academic library is here to provide resources to all campus groups, but most specifically students. Communication with faculty and divisions regarding prospective events is critical. Many Lewis-Clark State College Library displays are driven by faculty and class-related work. The Moby-Dick Reading Marathon originated with a humanities class. In addition, provide a clear, definitive platform for classes to design and develop programming and displays as part of course work. This is a win for the students. They receive a grade, learn how to efficiently organize an event, and take the stress off the Library staff regarding event planning.

Administration: Always keep administration in the loop regarding events and follow institutional policies and guidelines.

Whatever communication method that works best with your institution, always keep the communication two-way and provide feedback and credit to those that developed the idea. Ownership of "an idea" adds value. When students, faculty, and staff know they have been "heard," this will increase collaboration, event growth, and student support.

2. Leverage Your Team's Skills

Your employees have skills! Maybe someone likes to make origami, knit, paint, or do yoga. Give them time and space to develop programming that can be incorporated into the campus community. This also includes your student workers, interns, and work scholars. Your team or event planner should take ownership of event(s). As a supervisor, it is important to provide the tools and support they need while allowing them to develop initiatives, while remembering to follow institutional policies.

Language: Be mindful of "stop words" such as "no." An employee may present a brilliant idea that might not fit the current time or place, but it's important not to shut it down completely. The idea may need refinement, but fostering an environment of encouragement and growth is crucial. Remember, the idea "belongs" to the person who shared it. Support its development rather than dismiss it.

Skills Adaptation: When employees change, it's important to recognize that past practices, no matter how successful, should not dictate a new employee's approach. They may bring fresh perspectives or different ideas on how to support the library community, and embracing this flexibility can lead to innovation and growth.

Give "Space" for Creative Growth: It is important to discuss the event planning with the employee or group of organizers, and you can offer guidance, but when an event idea is presented to you, do not completely rewrite the event to meet "your" expectations. The concept may be foreign to you, but if they are following institutional policies, remember this is "their" event.

Time: If an employee facilitates an event beyond their normally scheduled hours, make sure they have appropriate time off during the week. Just because they are doing something that is "fun," they are still working. For example, if your employee facilitates the success of the Library Book reading event on a weekend (beyond their normal scheduled hours), make sure they have time away from the office during that week, making sure to follow campus policies. Being cautious of an employee's work hours lets them know they are valuable and that you support their work-life balance.

Student-Driven Events

Student-driven events are essential in creating an engaging library environment. Students are often the best resource for identifying trends and interests among their peers, and developing student-led initiatives can be highly effective and increase event attendance and participation.

Unlike top-down programming, student-led events generate excitement, encourage word-of-mouth promotion, and foster a sense of ownership. Some successful student-led events at Lewis-Clark State College Library have included origami making, pumpkin painting, game nights, puzzles, button making, Lego building contests, mini painting pop-up art events, movie nights, and de-stress coloring events. These have included creative activities like cupcake decorating, the Lewis-Clark State College Library Moby-Dick Reading Marathon, Murder Mysteries, and "Ghosts in the Library," where students search for hidden ghosts to win prizes. Adaptability, collaboration, and innovation remain central to shaping the Lewis-Clark State College Library environment that actively supports student success.

Some Lewis-Clark State College Library events are purely for "fun" and to "de-stress," while others have been developed specifically for academic and scholarly support. These events have included Academic support events, including Rock the Finals and Rock the Midterms; the Midterm Motivation Waffle Event (attended by over 150 students); and the Dead Week Snack Cart, a collaboration with the Lewis-Clark State College Administration that provides snacks during finals. Both Rock the Finals/Rock the Midterms and the Midterm Motivation Waffle events were developed through campus collaboration amongst departments that included tutors, Student Success, Accessibility, Associated Students of Lewis-Clark State College (ASLCSC), administration, faculty, and Academic Advising.

The Lewis-Clark State College Library has progressively grown to participate in many campus events. 2022 marked a significant shift toward holistic student support. In addition to housing the Writing Center, the Library became home to the Food Pantry, Student Success, and tutoring services. This required shared spaces, relocating resources, and repurposing study spaces. As a result, library usage surged, transforming it into a dynamic hub of student engagement, academic resources, and essential support services for the Lewis-Clark State College community.

Ongoing Benefits of Holistic Programming

Academic libraries that prioritize student wellbeing contribute significantly to their overall development by fostering a sense of community. These initiatives offer several benefits:

- **Improved Academic Performance:** Students who receive mental and emotional support are better equipped to manage stress, focus, and achieve stronger academic outcomes.
- **Higher Graduation Rates:** A supportive environment enhances student retention, increasing the likelihood of degree completion.
- **Enhanced Sense of Belonging:** Libraries play a crucial role in creating a welcoming atmosphere where students feel valued and connected to their campus community.

Funding Strategies

Smaller institutions like the Lewis-Clark State College Library often face financial constraints when organizing holistic student events, but several strategies can help navigate these challenges:

- **Collaboration:** Partnering with departments, campus organizations, clubs, student government, divisions, and approved community groups enables collaboration on resources and event staffing. For example, the Lewis-Clark State College Library collaborates with humanities instructors to host game nights.
- **Foundation Funding:** Institutional foundations may offer funding opportunities to support event initiatives.
- **Grants:** Exploring national and local grants can provide additional funding. The Idaho Commission for Libraries, for instance, offers smaller grants tailored to Idaho-based libraries.

When applying for grants, it is essential to work with the Institutional Research Department and adhere to institutional policies.

Marketing and Outreach
Effective marketing ensures strong attendance and engagement. Student-driven events provide word-of-mouth promotion and are a key marketing tool. Lewis-Clark State College Library utilizes several social media platforms, including Instagram and Facebook. Always be cautious how these social media platforms are utilized. Usage should always align with institutional policies. Additionally, the College maintains two event calendars: "Do More," which is student-focused, and a general campus calendar for broader visibility.

Adapting to Change and Evaluating Success
Continuous evaluation is essential for long-term success. Events should be assessed annually to determine their effectiveness. Key questions include:

- Are attendance numbers declining?
- Is the event still meeting student needs?
- Has marketing been clear and effective, avoiding jargon and ensuring accessibility?
- Administration loves data. Are you sending out surveys, or determining how to collect usage data?

Some events may fail, but failure is not the absence of success—it is an opportunity for re-evaluation. If an event does not meet expectations, it is essential to evaluate whether it serves the community's needs, review marketing strategy, and refine future approaches. By embracing change and learning from setbacks, the Lewis-Clark State College Library continues to provide meaningful, student-centered programming that enhances engagement and academic success now and into the future.

The Boise State Approach

Large institutions have their own challenges for students who may feel like small fish in a big, overwhelming pond. Boise State Library approached this challenge in a number of ways, including initiatives to co-create library services and spaces with students, partnering with other campus student services units, and targeted support for parenting students.

Co-creating With Students

In 2014, Boise State's Albertsons Library opened a makerspace dedicated to 3D printing and other maker technologies such as Arduinos (simple electronics platforms), Raspberry Pi (barebones computers used to learn programming), sewing machines, soldering equipment, and vinyl cutters. From the start, founder Amy Vecchione's vision was to create a space that empowered students who might not otherwise have access to these tools. Amy developed a unique staffing strategy where students who had been trained to use the equipment would serve as volunteer coaches in exchange for access to the equipment during hours when the space was not available to other students. Amy said that "when we allowed students to write on a white board wall, or make vinyl cut stickers and objects that reflected their identities (like Pokémon), it allowed them to feel belonging."

More recently, the Library made changes to the first floor to provide students other opportunities for co-creation. In addition to making, students group around gaming stations and puzzles to unwind, record podcasts in our sound studio, and print posters on our plotter printer. In response to

student feedback that the Library study rooms were "sterile," Access Services staff inexpensively decorated some upper floor study rooms with creative lighting and ceiling and wall hangings. Students overwhelmingly responded that they loved the decorated rooms, and many said they especially appreciated the lower lighting option added in some of the individual study rooms.

A simple strategy for signaling to students that they belong in the Library is to place whiteboards in heavily trafficked locations asking for questions or feedback. For example, during Bronco Welcome Week, students were asked what they were curious about. The whiteboards are quite popular, and usually fill up with responses on both sides of the board. The Library has also hosted a fan art exhibit, where students, staff, and faculty at Boise State were invited to submit their renditions of artwork related to a particular work of fiction, such as a book, movie, television show, video game, or comic. The Library displayed the pieces on the first floor and hosted a lively opening reception. While most of the artwork submitted was created by students, many staff and faculty members also submitted artwork.

Coupled with efforts to create a more welcoming environment for students, Library staff prioritized better integration of student employees into the shared mission of the Library. New student employees now receive a nametag in the same style as other Library staff. They are also allotted three seats on the Library's new advisory council, giving them an opportunity to hear what is happening and share their perspectives. In order to support them beyond the Library, the Library purchased a meal plan from the campus food service for spring 2025. It allows each library student employee to eat one meal per week on campus free of charge. While one meal a week will not ensure their food security, they are taking advantage of this opportunity and have expressed gratitude, saying that it allows them to fit in a meal on busy days when they otherwise would not have been able to do that.

Partnerships

The Library recognizes that partnerships with university support service units are crucial to efforts to welcome and support students. Instead of a traditional reference desk, Instruction and Research Services librarians collaborated with our university's Advising and Academic Support Services (AASS) to develop a Bronco Learning Commons (BLC) on the Library's first floor. Throughout the week, students come to the BLC to work with librarians on research questions, and academic consultants on course assignments and exam preparation. In conjunction with AASS, First Year Writing, and the Writing Center, librarians hosted several Writers' Block Workshops. These events provided students opportunities to work one-on-one with a librarian or writing specialist to improve their research and writing projects.

The Library regularly collaborates with other campus units to host special events. Once a year in October after the Library closes at 10:00 p.m., students from campus residence halls take over the building for a few hours for the popular Nightmare on Cesar Chavez (the street where the Library is located) event. Students make Halloween crafts and play games that range from standard board games to hide-and-seek in the dark on the top floor. The Games, Interactive Media, and Mobile Technology Department, housed in the Library, hosts an overnight event for their students toward the end of each semester. During this time, they work on team-based projects, eat a lot, and generally have a good time making sure everything for the semester is wrapped up. University health services and BroncoFit encourage student mental and physical health by providing vaccine clinics throughout the year, and healthy snacks and activities at stressful times of the semester.

Recognizing that one of the primary reasons that students leave college is a lack of funds, the Library has partnered with the Office of Student Financial Services to promote financial wellness workshops for students. At the start of the 2024-2025 academic year, a rollout to changes to the Free Application for Federal Student Aid (FAFSA) system was delayed, and once made available was plagued by technical glitches. This presented challenges for students seeking financial assistance for college. In order to support students in getting their FAFSA applications completed, the Library partnered with the Financial Aid office to host drop-in sessions where students could get help completing the application. Seeking to support students undergoing stress due to the situation, Library staff worked with a local organization to have visiting emotional support dogs available at the events. Needless to say, these have been very popular with students and staff alike.

Supporting Student Parents

The Library at Boise State has made efforts to support parenting students in a couple of ways. First, backpacks with age-appropriate toys and learning materials are available for parents to check out at the front desk to use while they are in the Library. Several age ranges were targeted, from six months to twelve years. Materials in the backpacks are selected to be self-explanatory and allow for independent play so that parents can tend to their research and study needs. These backpacks are quite popular. A second initiative is a family study room that parents can book in advance or use on a walk-in basis. The space utilizes an existing group study room and contains toys, books, and children's furniture, along with an adult-sized rocking chair and computer workstation for parents to utilize as their children play. While the amount of use is not as high as we would like, the students who comment on the impact of the space make clear that it is a necessary and appreciated offering.

Final Thoughts

Boise State University and Lewis-Clark State College have both developed hospitable environments to support their students' needs. By implementing a "therapeutic landscape" approach in education, these institutions have created welcoming and collaborative library spaces that foster student engagement and growth. Additionally, they provide a platform for students and library users to voice their perspectives and lead the library into the future. This overview highlights how two Idaho academic libraries of different sizes have adapted to enhance student research experiences and contribute to their overall growth. What works for us, might work for you. Please "borrow" our ideas. We are still growing and moving forward and through collaboration we will create the academic Library of the future.

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How Academic Libraries Support Systematic Reviews and Evidence Syntheses

A Comparison between R1 and R2 Institutions

Alyssa C. Borozan, Bonnie L. Fong, and Siobhan K. McCarthy

As more faculty and graduate students conduct systematic reviews and other evidence/knowledge syntheses, it can be helpful for academic libraries to provide services and resources to support this type of research. This study identifies trends in evidence/knowledge synthesis support services among (thirty-six) selected institutions with Carnegie classifications of R1 or R2. Data about services and resources was collected from research guides, webpages, and via communications with library employees. There are many similarities between how R1 and R2 institutions are providing support, with a higher incidence of more comprehensive services among R1 universities. Most R1 institutions in our sample provide a systematic review service consisting of both consultation and co-authorship levels of support, supplemented by synchronous workshops and asynchronous materials (e.g., research guides). Systematic review services among R2 institutions are less prevalent, although those with medical or health sciences libraries were more likely to provide similar support as R1 institutions. Interestingly, the number of librarians supporting systematic reviews research is generally comparable across the two types of institutions, except at the upper end of the range, which is dominated by R1 institutions. Observed trends are expected to be useful for informing strategic planning, librarian training, and systematic review service development for libraries across R1 and R2 Carnegie classifications.

Introduction

In recent years, there has been increased interest from faculty and graduate students at many colleges and universities in conducting systematic reviews and related evidence/knowledge synthesis in a variety of disciplines. Lê, Neilson and Winkler define systematic reviews and other types of knowledge synthesis as "a research methodology that attempt[s] to find all available evidence on a topic to help answer specific questions."[1] For the purposes of this study, we will use the term "systematic reviews" in the broadest sense to describe the different types of evidence/knowledge synthesis, including scoping reviews, meta-analyses, and more. As enthusiasm builds, libraries are creating formal services to support this type of research, expanding from the health sciences (where they are more common) into the physical sciences, social sciences, humanities, and more.[2]

Systematic review service models in health sciences libraries and other academic libraries show considerable variation. This may depend on institutional factors and resources available. As faculty

Alyssa C. Borozan is Sprague Library Graduate Assistant, Montclair State University, Montclair, NJ; **Bonnie L. Fong** (email: fongb@montclair.edu) is Head for Research and Reference Services, Montclair State University, Montclair, NJ; **Siobhan K. McCarth**y is Scholarly Communications Librarian, Montclair State University, Montclair, NJ.

and students request more assistance from librarians to conduct systematic reviews, this has the potential to affect staffing, services, and other resources. University and library administrators must consider the extent to which librarians will be involved with faculty research versus student research, what training and mentoring is required, what the time commitment would be, how it would affect librarian workloads, whether fees should be charged, and how this work would count towards tenure and promotion applications.[3] While researching existing models, Lackey, Greenberg, and Rethlefsen came across libraries with differing levels of commitment by librarians, including where one or more librarians' main responsibility was to contribute to systematic reviews; where teams of librarians spend small portions of their time supporting systematic reviews; and where liaison librarians support this type of research within their usual duties rather than as a separate service.[4] At some universities, libraries manage demand by providing distinct levels of service to different groups, such as offering only guidance or consultations to students, and more in-depth support to faculty researchers.[5] When there was an increase in the number of requests from faculty and students for assistance with systematic review search methodology at the University of Minnesota, Riegelman and Kocher realized that only some librarians had been trained on this level of research synthesis, whereas others felt insufficiently prepared, which led to recommendations to formalize their library's systematic review service and train library staff specifically to support systematic reviews.[6]

Librarians might assume a wide range of roles when supporting systematic reviews. As research and publication related to systematic reviews rise, libraries continue to define their role and develop service models that take into consideration their capacity for supporting these time-intensive activities.[7] This might include assistance with question formulation, protocol development, citation management, technological and analytical tools, documentation and reporting, collaboration, and/or planning.[8] Spencer and Eldredge identified eighteen roles for librarians, from the more traditional expert searcher and teacher, to the less common ones of planner and documenter.[9] Typically, the more involved a librarian is, the more credit they receive for their contributions, sometimes resulting in their being listed as a co-author for published work.

This study explores the systematic review support services provided by institutions with Carnegie Classifications of R1 and R2. The Carnegie Classification of Institutions of Higher Education is determined by The American Council on Education and categorizes institutions by levels of research activity. An R1 institution is defined as a doctoral-granting university with very high research activity, and an R2 institution is defined as a doctoral-granting university with high research activity.[10] The authors sought to compare what services specific R1 and R2 institutions provide, and to identify any apparent service trends between the two. Our research questions were:

1. What types of services and resources have been commonly adopted by R1 versus R2 universities to support systematic review services?
2. Are there differences in how academic libraries at R1 versus R2 institutions support systematic reviews?
3. How many librarians are available to support systematic review services in R1 versus R2 institutions?

The hope was that this research would inform us as we consider how to support systematic reviews research at our R2 institution. We expect other academic libraries will also find our study helpful as they create or improve upon their own systematic review services.

Methods

To determine the types of services and related resources libraries at R1 and R2 institutions provide to support systematic reviews research, we looked at the websites and research guides of a selection of college and university libraries in the United States. While this approach is similar to the environmental scan performed by Kallaher et al.,[11] our research differs in that we identified support services with the intent to further identify the types and formats of specific synchronous support (e.g., consultations, co-authorship, workshops) and asynchronous learning objects. Our research began in the fall of 2022 when we were tasked by our library administration to explore the feasibility of offering a systematic review service to our faculty and possibly students. As such, the focus was to review our university's NJ IPEDS (Integrated Postsecondary Education Data System) Peers[12] and aspirant peers, as well as selected additional institutions in the United States with established systematic review services (see Table 1). The additional institutions were identified via a Google

Table 1. Institutions Studied

NJ IPEDS Peers	Aspirant Peers	Additional Institutions
The College of New Jersey [M1]	Florida International University [R1]	Cornell University [R1]
Kean University [D/PU]	George Mason University [R1]	Dartmouth College [R1]
Montclair State University [R2]	Georgia State University [R1]	George Washington University [R1]
New Jersey City University [M1]	Indiana University Indianapolis [R1]	Harvard University [R1]
New Jersey Institute of Technology [R1]	Miami University (OH) [R2]	Pennsylvania State University [R1]
Ramapo College of New Jersey [M1]	Northern Arizona University [R2]	Princeton University [R1]
Rowan University [R2]	San Diego University [R2]	Temple University [R1]
Rutgers University-Camden [R2]	University at Buffalo-SUNY [R1]	University of Alabama at Birmingham [R1]
Rutgers University-Newark [R2]	University of Central Florida [R1]	University of California San Diego [R1]
Rutgers University-New Brunswick [R1]	University of Massachusetts Boston [R2]	University of Chicago [R1]
Stockton University [D/PU]	University of North Carolina Greensboro [R2]	University of Kansas [R1]
William Paterson University [M1]		University of Maryland [R1]
		University of Minnesota [R1]
		University of Pennsylvania [R1]
		University of Virginia [R1]
		Washington University School of Medicine [R1]
		Bowling Green State University [R2]
		East Carolina University [R2]
		East Tennessee State University [R2]

search for "systematic review service" AND "site:.edu". Since our research questions focused on R1 and R2 institutions, those that did not have these Carnegie Classifications were excluded from our study, resulting in a sample size of thirty-six.

We collected information about services and resources pertaining to systematic reviews in two ways. First, we thoroughly examined the libraries' website and research guides to find relevant workshops, videos, tutorials, or modules, and to determine if they offered a systematic review service. When information about the number of librarians committed to supporting systematic reviews was not readily available online, we reached out to library representatives via email or utilized their chat service to gain more insight into this. All data sources are listed in Appendix A.

Results

To address our research questions, we compared how libraries at twenty-four R1 institutions and twelve R2 institutions in the United States support systematic reviews research in the form of services and resources. Data collected from research guides, webpages, and communications with library employees is summarized in Tables 2 and 3. All but three of the thirty-six institutions

Table 2. Systematic Review Services and Resources at R1 Institutions

University Name	Librarians Supporting Systematic Reviews	Consultation	Co-authorship	Workshops	Research Guide	Systematic Review Webpage	Videos	Tutorials/ Modules	Medical/Health Science Library
Cornell University	3	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dartmouth College	2-3	Yes	Yes	Yes	Yes				Yes
Florida International University	4	Yes		Yes	Yes			Yes	Yes
George Mason University	2	Yes			Yes		Yes		
Georgia State University	3-8	Yes		Yes	Yes		Yes	Yes	
George Washington University	5	Yes	Yes		Yes				Yes
Harvard University	8-10	Yes	Yes	Yes	Yes	Yes			Yes
Indiana University Indianapolis	20-22	Yes	Yes		Yes			Yes	Yes
New Jersey Institute of Technology	0								
Pennsylvania State University	4-7	Yes	Yes		Yes	Yes			Yes
Princeton University	3	Yes	Yes		Yes				
Rutgers University-New Brunswick	4	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Temple University	3	Yes	Yes	Yes	Yes	Yes			Yes
University of Alabama at Birmingham	4-8	Yes	Yes	Yes	Yes				Yes
University at Buffalo-SUNY	8	Yes	Yes	Yes	Yes		Yes		Yes
University of California San Diego	4	Yes			Yes	Yes			Yes
University of Central Florida	2	Yes			Yes		Yes		Yes
University of Chicago	2	Yes	Yes		Yes				Yes
University of Kansas	3	Yes	Yes	Yes	Yes	Yes			Yes
University of Maryland	7	Yes	Yes	Yes	Yes			Yes	Yes
University of Minnesota	12	Yes	Yes	Yes	Yes	Yes			Yes
University of Pennsylvania	14	Yes	Yes	Yes	Yes				Yes
University of Virginia	5	Yes	Yes		Yes				Yes
Washington University School of Medicine	6	Yes	Yes		Yes	Yes			Yes

Table 3. Systematic Review Services and Resources at R2 Institutions

University Name	Librarians Supporting Systematic Reviews	Consultation	Co-authorship	Workshops	Research Guide	Systematic Review Webpage	Videos	Tutorials/ Modules	Medical/Health Science Library
Bowling Green State University	2	Yes			Yes		Yes		
East Carolina University	6	Yes	Yes	Yes	Yes				Yes
East Tennessee State University	5	Yes	Yes			Yes			Yes
Miami University	5	Yes			Yes				
Montclair State University	1	Yes		Yes	Yes				
Northern Arizona University[a]	4-9	Yes		Yes	Yes		Yes		
Rowan University	3	Yes	Yes	Yes	Yes		Yes		Yes
Rutgers University-Camden	0								
Rutgers University-Newark	0								
San Diego State University	3	Yes		Yes	Yes				
University of Massachusetts Boston	5	Yes							
University of North Carolina Greensboro	2-7	Yes			Yes				

[a] *A pilot systematic review service was launched in 2018 and there is mention of librarians helping to find appropriate literature for systematic reviews, so we interpreted this to mean they offer consultations.*

provided either a synchronous service or asynchronous support manifested as a research guide or webpage focused on systematic reviews.

Consultation vs. Co-authorship

The distinction between consultations and co-authorship levels of service were generally similar across universities. Considered the first level of service, consultations often consist of providing information and other resources about the systematic review process; helping with research question formulation appropriate for the different types of evidence syntheses; recommending search strategies and how to document them; recommending where to search (e.g., specific databases); recommending protocol registration platforms appropriate for their discipline (or where to search for existing protocols on their project idea); and/or providing training on citation management tools. The co-authorship level of service is sometimes referred to as collaboration in the literature and involves a much greater investment of time from the librarian. It goes beyond the initial consultation to include providing input on the protocol; identifying databases and grey literature resources to search; constructing a robust search strategy; translating the search strategy across databases and other search platforms; conducting searches and exporting them to citation management software, then performing deduplication; gathering full-text and setting up article screening software; and writing up the part of the methods section related to searching. Given this level of contribution to the project, the expectation is that the librarian would be listed as a co-author. For consultations, some libraries explicitly state that librarians should be included in the "Acknowledgements" section of a paper.

In our sample, a much larger percentage of R1 institutions (75% of 23) provide both consultation and co-authorship services compared to R2 institutions (25% of 13) (see Tables 2 and 3). An additional 21% of R1 institutions and 58% of R2 institutions offer consultations only, with some as part of established systematic review services. We found that institutions with a medical or health science library usually provide consultation and/or co-authorship services. This was the case for 100% of the 20 relevant R1 institutions and the 3 relevant R2 institutions. Princeton University Library (R1) was the only one to offer both levels of systematic review services even though it does not have a medical or health sciences library.

Workshops

At both R1 and R2 institutions, offering workshops about systematic reviews is not as ubiquitous as providing consultations or co-authorship services. Libraries are more likely to offer workshops if they have a systematic review service or have a medical or health science library (see Tables 2 and 3). Approximately 54% of the R1 institutions and 42% of R2 institutions in our sample offer workshops related to systematic reviews, with 62% and 80% of those, respectively, being introductory or overview-type workshops (see Appendix B). At R1 institutions, the remaining more advanced or in-depth workshops cover topics such as the overall systematic research process, how to conduct the different types of reviews (e.g., scoping, systematic), protocols, developing a comprehensive search, systematic review tools, or how to conduct reviews in specific fields of study (e.g., social sciences, health sciences). At the sole R2 institution offering a more advanced skill workshop, the focus was on using Covidence for systematic review management.

Resources

Generally, when libraries had both a webpage and research guide about systematic reviews, the webpage focused on services and the guide focused on resources. Libraries typically describe the type of support librarians provide for systematic reviews and who they offer these services to on their webpage. On their research guide, they post videos, tutorials, or modules. Appendix A includes

the URLs for the systematic review service webpages and research guides for all the institutions in our study.

More R1 institutions (96%) than R2 institutions (75%) in our sample had either a research guide or webpage with information about the systematic review process or service (see Tables 2 and 3). Due to the nature of how many of the R1 institutions came to be included in our study, this is unsurprising. Approximately 25% of the R1 and R2 institutions posted videos on the topic of systematic reviews, with a mix of content created by their own library, as well as by others. Many of the videos for R1 institutions went more in-depth into the steps involved in completing a systematic review (e.g., how to formulate a research question for a systematic review), whereas videos for R2 institutions focused more on describing systematic reviews in general and explaining the search process involved. One-quarter of R1 institutions posted tutorials or modules on their sites. In general, these tutorials and modules covered the systematic review process or provided an overview of the different types of evidence/knowledge syntheses.

Librarians

While some libraries clearly identify the number of librarians and/or name the specific individuals who participate in systematic review services, this information can be more ambiguous at other institutions, especially as additional librarians undergo training to provide this type of support. We found the number of librarians participating in these services ranged from 0-22 for R1 institutions, with a median of 4.5, and a mean of 5.7 (see Table 2). At R2 institutions, this number ranged from 0-9, with a median of 3.8, and a mean of 3.4 (see Table 3). Notably, the number of librarians supporting systematic review research is comparable across the two types of institutions, with the exception being that R1 institutions dominate the higher end of the range.

At some institutions, health science librarians may assist researchers from other disciplines with systematic review projects even if they are not in their liaison areas, whereas at others, science and social science librarians provide support in addition to medical and health science librarians. With institutions that do not have medical or health science libraries, the number of librarians supporting systematic review services were similar across R1 and R2 classifications (i.e., 0-8 librarians supporting systematic review research at R1 institutions, and 0-9 supporting them at R2 institutions). This is likely due to more liaison librarians being trained to consult on systematic reviews research, with the occasional library having trained all librarians to do so.

Discussion

This study looks at how librarians at R1 and R2 institutions are supporting systematic reviews research. As interest in this type of research grows among faculty and graduate students, it follows that there will be more demand for libraries and librarians to support it. There are many similarities between how R1 and R2 institutions provide support, with a higher incidence of more comprehensive services among R1 universities. The difference likely comes from availability of resources and possibly demand for services. Almost all libraries at R1 institutions offering both consultation and co-authorship services are more likely to provide workshops as well as supplemental resources such as videos, modules, and tutorials. R1 institutions with very high research activity might also be more likely to have access to the databases, citation management tools, and systematic reviews software, as well as graduate students who serve on the research team—all of which would make it easier for researchers to complete a systematic review. R1

institutions may also have more librarians on staff, and possibly more librarians per FTE students who have been trained to conduct systematic reviews. These details could be topics of future study.

Although many R1 institutions may be more well-resourced to run a full systematic review service, some of the R2 institutions studied were able to provide a similar level of service. This may depend on institutional factors such as university needs, available funding, administrative support, librarian capacity, and librarian and researcher training. For example, those with medical or health science libraries may have more dedicated resources to support systematic reviews. When R1 or R2 institutions are not able to provide co-authorship levels of service, they may only offer consultations or teach workshops. Those unable to dedicate enough librarians to support synchronous systematic review services might create asynchronous research guides, webpages, or other online modules that introduce researchers to the systematic review process, with the option to provide guidance to researchers to conduct their reviews independently. Many libraries at R2 institutions recommend the same resources as R1 institutions, providing links to helpful external resources such as the *Cochrane Handbook for Systematic Reviews of Interventions*,[13] Campbell Library: The Production of a Systematic Review,[14] the Cornell University Systematic Review Decision Tree,[15] PRISMA protocols,[16] and articles such as Grant & Booth's, "A typology of reviews: An analysis of 14 review types and associated methodologies."[17]

As mentioned previously, while systematic reviews have historically been common in the health sciences, this type of research has seen recent growth in other subject areas. All R1 and R2 institutions in our study with a medical or health science library support systematic review research. However, the libraries at Cornell University, University of Minnesota, and University of Arizona designed additional services for the non-health sciences.[18] Although only three of the R2 institutions we looked at have medical or health science libraries, ten of these institutions support systematic reviews. This may be the result of more liaison librarians being trained at R2 institutions to consult on systematic reviews research. Considering the steep learning curve for systematic reviews research, it may be possible for the more experienced health sciences librarians to mentor and help train liaison librarians in other disciplines, although standards do vary depending on the field. Perhaps a librarian new to systematic reviews could initially serve as an apprentice on one or more reviews to learn from more experienced librarians and researchers.[19] This would lead to a greater number of librarians trained to provide support for this type of research in the future.

While the information from this study can be useful, we recognize its limitations. Our method for identifying institutions to study was initially limited to peer institutions in our home state and our aspirant peers. Google searches to identify additional institutions that offer systematic review services yielded more R1 than R2 institutions. Although this could mean that there are simply more R1 institutions that offer such services, it is possible that these institutions are ranked higher by Google's search algorithm than R2 institutions, so they show up higher on the results list. Given the nature of how we identified the additional institutions, it is highly probable that our sample of libraries are more likely to support systematic reviews than are representative of R1 and R2 institutions in general. Still, we believe our findings provide good insight into how those R1 and R2 institutions that are currently supporting this type of research are doing so. Further study is needed to determine if our sample of R1 and R2 institutions is an accurate reflection.

As previously acknowledged, the number of librarians who participate in their library's systematic review services is sometimes ambiguous. At some institutions, there is no clear distinction between whether librarians support systematic reviews through a specified service or through individual librarian support. For example, many libraries state that faculty and students can request

a consultation, but do not clarify if this consultation is part of an established systematic review service with a librarian who has been trained in that process or is simply a meeting with a liaison librarian who may be knowledgeable about systematic reviews, but not formally trained in it. The number of librarians supporting systematic reviews might increase as librarians complete their training for providing systematic review services, or it may decrease as librarians leave their positions. It could also change as library and university priorities change, or as demand for these services evolve. Some libraries state that once they reach capacity, they may not be able to provide systematic review support to all researchers.

Individual institutions may find it helpful to perform a needs assessment to determine what type of support their researchers in the different disciplines require and what levels of support their libraries are able to provide. Slebodnik, Pardon, and Hermer found some similarities in standards between the health sciences and non-health sciences, but they were not universally or consistently adhered to.[20] If libraries want to start slowly, they could begin with a research guide linking out to some of the more popular existing training materials such as videos or tutorials. We found the Cornell University, University of Minnesota, and University of Maryland guides particularly helpful and prevalent among the research guides and web pages reviewed in this study. In addition, the Evidence Synthesis Institute coordinated by librarians from the University of Minnesota, Cornell University, and Carnegie Mellon University, can be extremely beneficial for those outside of the health sciences; those unable to attend the Institute can access materials from the program online.[21] Libraries might offer an introductory-level workshop such as one about the differences between the various types of evidence/knowledge syntheses. Perhaps librarians can provide consultations if they are unable to support co-authorship levels of service. If limited staffing is a concern, they might consider beginning with a service for specific groups, such as those with grant funding. Charging fees may also be a solution to help manage growth. Of course, when groups are excluded from a service, it is important to consider how libraries can still serve them equitably.[22]

Future research about how universities and libraries prioritize the types of researchers they serve and types of systematic reviews services they support could be enlightening. This might include examining who is served (e.g., faculty, graduate students, undergraduate students, administrators), which disciplines have access to these services, and which librarians are trained and/or explicitly have evidence synthesis responsibilities. Further investigation might also explore how libraries determine whether to offer consultation or co-authorship levels of service, teach workshops, provide software support (e.g., Covidence, Rayyan), or acquire databases or other resources necessary for performing systematic reviews. How do libraries prioritize when faced with high demand? Is it based on a first-come, first-served model? Are grant recipients prioritized? Or is there a more nuanced approach? These insights would contribute to a deeper understanding of how academic libraries are responding to the growing demand for systematic review support and help them make decisions around resource allocation and appropriate service models.

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Appendix A. Data Sources

R1 Institutions

Cornell University

- Research Guide: https://guides.library.cornell.edu/evidence-synthesis/steps
- Systematic Review Page: https://www.library.cornell.edu/services/evidence-synthesis
- Cornell University Librarian (personal communication, Spring 2023)

Dartmouth College

- Research Guide: https://researchguides.dartmouth.edu/sys-reviews
- Systematic Review Page: https://www.dartmouth.edu/library/biomed/services/systematic-review-service.html
- Dartmouth College Librarian (personal communication, Spring 2023)

Florida International University

- Research Guide: https://library.fiu.edu/systematicreviews
- Florida International University Librarian (personal communication, Spring 2025)

George Mason University

- Research Guide: https://infoguides.gmu.edu/SR
- George Mason University Librarians (personal communications, Spring 2025)

Georgia State University

- Research Guide: https://research.library.gsu.edu/systematicreview
- Georgia State University Librarian (personal communication, Spring 2025)

George Washington University

- Research Guide: https://guides.himmelfarb.gwu.edu/systematic-review-service

Harvard University

- Research Guide: https://guides.library.harvard.edu/meta-analysis
- Systematic Review Page: https://countway.harvard.edu/research-instruction-team/review-service
- Harvard University Librarians (personal communication, Spring 2025)

Indiana University Indianapolis

- Research Guide: https://iu.libguides.com/EvidenceSynthesis
- Indiana University Indianapolis Librarian (personal communication, Spring 2025)

New Jersey Institute of Technology

- Research Guide: none available
- New Jersey Institute of Technology University Librarian (personal communication, Spring 2025)

Pennsylvania State University

- Research Guide: https://guides.libraries.psu.edu/edpsyreviews
- Systematic Review Page: https://hershey.libraries.psu.edu/services/systematic-review
- Pennsylvania State University Librarian (personal communication, Spring 2025)

Princeton University

- Research Guide: https://libguides.princeton.edu/systematicreview

Rutgers University-New Brunswick

- Research Guide (Health Sciences): https://libguides.rutgers.edu/Systematic_Reviews
- Research Guide (Social Sciences): https://libguides.rutgers.edu/es_social/librarian

Temple University

- Research Guide: https://guides.temple.edu/systematicreviews/systematicreviewservice
- Systematic Review Page: https://library.temple.edu/services/systematic-review-service
- Temple University Librarian (personal communication, Spring 2025)

University of Alabama at Birmingham

- Research Guide: https://guides.library.uab.edu/systematicreviews/libraryservices

University at Buffalo-SUNY

- Research Guide: https://research.lib.buffalo.edu/systematicreviews
- Research Guide: https://research.lib.buffalo.edu/evidence-synthesis

University of California, San Diego

- Research Guide: https://ucsd.libguides.com/systematic-review
- Systematic Review Page: https://library.ucsd.edu/research-and-collections/systematic-reviews.html
- University of California of San Diego Librarian (personal communication, Spring 2025)

University of Central Florida

- Research Guide: https://guides.med.ucf.edu/SystematicReviews

University of Chicago

- Research Guide: https://guides.lib.uchicago.edu/systematicreviewservice
- University of Chicago Librarian (personal communication, Spring 2023)

University of Kansas

- Research Guide: https://guides.lib.ku.edu/SR
- Systematic Review Page: https://lib.ku.edu/services/research/systematic-reviews
- Kansas University Librarian (personal communication, Spring 2023)

University of Maryland

- Research Guide: https://guides.hshsl.umaryland.edu/EvidenceSynthesis
- University of Maryland Librarian (personal communication, Spring 2025)

University of Minnesota

- Research Guide: https://libguides.umn.edu/c.php?g=1264119&p=9269094
- Systematic Review Page: https://www.lib.umn.edu/services/systematic-reviews

University of Pennsylvania

- Research Guide: https://guides.library.upenn.edu/SR/service

University of Virginia

- Research Guide: https://guides.hsl.virginia.edu/sys-review-resources

Washington University School of Medicine

- Research Guide: https://libguides.wustl.edu/brownschoollibrarysystematicreviews/home
- Systematic Review Page: https://becker.wustl.edu/services/systematic-scoping-review-service/

R2 Institutions

Bowling Green State University

- Research Guide: https://libguides.bgsu.edu/evidencesynthesis
- Bowling Green State University Librarian (personal communication, Spring 2023)

East Carolina University

- Research Guide: https://libguides.ecu.edu/systematicreviewservice
- East Carolina University Librarian (personal communication, Spring 2025)

East Tennessee State University

- Systematic Review Page: https://www.etsu.edu/medlib/services/systemic-review.php

Miami University

- Research Guide: https://libguides.lib.miamioh.edu/systematicreviews
- Miami University Librarian (personal communication, Spring 2025)

Montclair State University:

- Research Guide: https://montclair.libguides.com/c.php?g=1024622&p=8419692

Northern Arizona University

- Research Guide: https://libraryguides.nau.edu/pbclibrary/systematicreviews

- Northern Arizona University Librarian (personal communication, Spring 2025)

Rowan University

- Research Guide: https://rowanmed.libguides.com/systematicreviews
- Systematic Review Service Page: https://rowanmed.libguides.com/SystematicReviewService
- Rowan University Libraries Associate Director (personal communication, Spring 2025)

Rutgers University-Camden

- Research Guide: none available
- Rutgers University-Camden Librarian (personal communication, Spring 2025)

Rutgers University-Newark

- Research Guide: none available
- Rutgers University-Newark Librarian (personal communication, Spring 2025)

San Diego State University

- Research Guide: https://libguides.sdsu.edu/LitReview
- San Diego State University Librarian (personal communication, Spring 2025)

University of Massachusetts Boston

- Research Guide: none available
- University of Massachusetts Boston Librarian (personal communication, Spring 2025)

University of North Carolina Greensboro

- Research Guide: https://uncg.libguides.com/systematicreviews

Appendix B. Workshops

R1 Institutions

Cornell University

- An Introduction to Evidence Synthesis

Dartmouth College

- So You Want to do a Systematic Review? (Intro)
- Protocol 101
- Developing a Comprehensive Search (parts 1, 2, and 3)
- What Happens Next?: Criteria Screening and Risk of Bias

Florida International University

- Systematic Review Workshop (overview)

Georgia State University

- Literature Searching for Systematic Reviews

Harvard University

- Introduction to Systematic Reviews

Rutgers University-New Brunswick

- Institute for Comprehensive Systematic Review
- Systematic, Scoping, and Literature Reviews, Oh My!
- Introduction to Systematic / Scoping Reviews
- An Introduction to Evidence Synthesis in the Social Sciences
- Evidence Synthesis in the Social Sciences
- So You're Writing a Social Science Scoping Review: An Overview of the Process
- So You're Writing a Social Science Systematic Review: An Overview of the Process
- So You're Crafting Your Search Strategy: A Workshop for Systematic and Scoping Review Writers in the Social Sciences
- How to Use a Citation Management Tool to Manage References for Systematic / Scoping Reviews
- How to Use JBI SUMARI to Manage Systematic / Scoping Reviews
- How to Use Rayyan to Screen References for Systematic / Scoping Reviews

Temple University

- Systematic Review Tools and Introduction to Systematic Reviews

University of Alabama Birmingham

- Systematic Review Tools, The Research Process for Systematic Reviews

University at Buffalo-SUNY

- Introduction to Systematic Review Methodology

University of Kansas

- Introduction to Systematic Reviews

University of Maryland

- Systematic Review Overview (for faculty only)

University of Minnesota

- The Evidence Synthesis Institute

University of Pennsylvania

- Introduction to Systematic Reviews and Literature Searching for Systematic Reviews

R2 Institutions

East Carolina University

- Brief educational introductory sessions to systematic reviews

Montclair State University

- Critically Reading Systematic Reviews

Northern Arizona University

- Intro to Covidence for Systematic Review Management

Rowan University

- Conduct Systematic Reviews in the Health Sciences

San Diego State University

- Systematic and Scoping Review Workshop (overview)

Advancing AI Literacy

An Analysis of AI Library Research Guides at R1 Universities

Daniela Solomon, Shatha Baydoun, and Thilani Samarakoon

The introduction of ChatGPT in 2022 renewed interest in Artificial Intelligence (AI), sparking a wave of integration of AI technologies across higher education. However, many users still lack AI literacy competencies essential for the effective use of these tools. This study employed a mixed-method approach to examine AI library research guides at R1 institutions, focusing on their content and coverage. By analyzing 102 research guides, the study uncovered significant variability, with many guides failing to address critical topics in AI literacy, such as prompt engineering, AI biases, and the ethics of AI use. This paper argues that well-designed library guides are essential for promoting information literacy and offer best practices for developing effective AI library guides in academic libraries.

Introduction

Since the emergence of ChatGPT in 2022, interest in Artificial Intelligence (AI) has surged, especially in its applications within higher education and academic libraries. However, despite this growing interest, a significant gap in AI literacy persists among students and faculty. To address this issue, a comprehensive study was conducted to analyze AI-related research guides at R1 institutions. This study assessed 102 research guides, focusing on their coverage of essential AI literacy components such as knowledge, application, and analysis. The findings revealed substantial variations in content, with many guides failing to address critical topics like prompt engineering, inherent biases in AI, and ethical use of AI. This study argues that well-crafted library guides are crucial in promoting responsible AI technology use in higher education and presents best practices for developing effective AI-focused library research guides aimed at fostering responsible AI usage in academic settings.

Literature Review

In 2016, Yoko introduced the concept of AI literacy as a subset of digital literacy.[1] As a nascent, interdisciplinary, and evolving field, AI literacy still lacks consensus on its definitions and frameworks. AI literacy entails more than just knowing AI applications[2] and AI capabilities.[3] It also requires an understanding of AI's ethical and societal implications[4] and an ability to apply AI responsibly, creatively, and efficiently.[5]

Long and Magerko broadly defined AI literacy as a set of digital competencies necessary for AI to transform the "way that we communicate, work, and live with each other and with machines."[6] In their literature review grounded in Bloom's Taxonomy,[7] Ng et al. identified four key competencies that provide students with the ability to use, evaluate, and design with AI in different scenarios

Daniela Solomon (email: dxs594@case.edu) is Research and Engagement Librarian, Kelvin Smith Library, Case Western Reserve University, Cleveland, OH; **Shatha Baydoun** (email: sbaydoun@bu.edu) is Head Librarian, Arts and Humanities, Boston University, Mugar Memorial Library,Boston, MA; **Thilani Samarakoon** (email: thilani.samarakoon@miami.edu) is Biomedical Data Librarian, Otto G. Richter Library, University of Miami, Coral Gables, FL.

and applications while integrating principles of fairness, accountability, transparency, ethics, and safety.[8] More recently, a framework was introduced for AI literacy in academic libraries, focusing on seven key competencies.[9] These competencies focus on guiding students toward understanding the capabilities and limitations of AI, identifying and evaluating potential AI applications in library settings, and effectively utilizing AI tools.[10] Furthermore, the framework underscored the importance of critically evaluating AI for quality, biases, and ethical considerations; engaging in informed discussions and collaborations regarding AI; acknowledging data privacy and security concerns; and anticipating the impacts of AI on library stakeholders.[11]

The promotion of AI literacy in academic libraries has potential benefits, including fostering creativity, improving critical thinking skills, and preparing students for work in the digital era.[12] The inconsistent incorporation of AI into curricula, especially in non-STEM fields, underscores the importance of pedagogies and curricula that promote AI literacy across various disciplines.[13] Moreover, concerns exist about the widening digital divide and the challenges in ensuring equitable access to AI education and resources, particularly in higher and adult education settings.[14] This divide disproportionately impacts marginalized groups, such as low-income individuals and rural communities by limiting access to technology and internet connectivity and the overall utilization of AI tools.

Methodology

In this study, we analyzed library research guides on AI at R1 institutions, as classified by the Carnegie Classification of Higher Education Institutions. AI refers to technology that enables computers and machines to replicate human-like problem-solving and cognitive abilities. Generative AI is a subset that specifically focuses on creating new content such as text, images, music, or coding—based on patterns it has learned from existing data. Since most AI guides focused on Generative AI or Gen AI, we excluded those focused on general artificial intelligence resources. This approach streamlined data collection and analysis, ensuring consistency in evaluating Gen AI resources.

Using a mixed-method approach, the data collection process was conducted in two phases: the initial phase spanned from November to December 2023, with a subsequent revisit between January and February 2024 to minimize the risk of missing any guides. The final data set for our investigation was completed on February 29, 2024. To reduce bias, data was collected by three authors in two iterative rounds, with each author checking the data on a different section of the spreadsheet and reaching an agreement on contentious items.

During data collection, we evaluated whether the guides stood as standalone entities or if AI topics were integrated as sections within other guides. We also examined the presence of multiple guides addressing AI topics within the institutional libraries, analyzed the creators of these guides, and identified their intended audience. Additionally, our data collection encompassed the multifaceted dimensions of AI literacy coding delineated by Ng et al. to include knowledge, application, evaluation, and creation, along with the ethics of AI use.[15] The data was then summarized in terms of frequencies and percentages.

Results

We analyzed research guides from 146 R1 institutions, including multiple AI guides from the same institutions, resulting in assessing a total of 102 guides. Of these, 74 guides (72.6%) were found

to be tailored for a general audience, 20 guides (19.6%) were specifically aimed at students, and 8 guides (7.8%) were designed for faculty members. This is reflective of general norms since library research guides play a vital role in fostering information literacy and enhancing the academic and professional capabilities of student users. Additionally, 70 (68.6%) of the guides were stand-alone, while 32 (31.4%) were part of another research guide.

In our exploration of AI literacy, we categorized the topics into several key areas. The first area, "Knowing AI," focused on whether the guides mentioned multiple AI tools, providing foundational understandings beyond ChatGPT. The second area, "Applying AI," examined whether the guides delved into practicalities such as prompt engineering, which is essential for effectively utilizing AI in various contexts. The third area, "Evaluating and Creating AI," assessed whether the guides addressed critical issues such as misinformation, disinformation, deepfakes, hallucinations, and biases, including racial biases, algorithmic transparency, along with selection and training biases. These discussions are crucial for understanding the potential pitfalls of using AI. Lastly, the "AI Ethics" section evaluated whether the guides covered important topics like academic integrity and citation, copyright, accessibility, digital divide, data privacy, and data security. These ethical considerations ensure that students use AI responsibly and equitably.

Knowledge of AI

The coverage of AI tools in the guides prominently featured ChatGPT, with a significant focus on its capabilities and applications. Specifically, 31 guides, accounting for 30.4% of the total guides, concentrated on ChatGPT, underscoring its popularity and widespread use among students. As the data in Table 1 shows, multiple AI tools were highlighted in 64 of the guides, representing 62.7% of the total, with ChatGPT being the most frequently referenced tool.

Table 1. Coverage of AI Tools

Coverage of AI Tools	Count (n=102)
Text	31 (30.4%)
Multiple	64 (62.7%)
None	7 (6.9%)

AI Application

Prompt engineering is also crucial for AI literacy, particularly for students, as it empowers them to effectively interact with AI models, ensuring they can extract accurate and relevant information.

Table 2 shows that out of the 102 research guides, 36 (35.3%) discussed prompt engineering, with some guides defining prompts[16] and providing examples. For instance, the guide from Florida International University defined a prompt as a "set of instructions used to ask a language model to perform a task," while the University of California-Irvine guide defined a prompt as a topic that guides the writing content.[17]

Table 2. Coverage of Prompt Engineering

Prompt Engineering	Count (n=102)
Included	36 (35.29%)
Not included	66 (64.71%)

AI Analysis and Evaluation

In our evaluation of the guides, we focused on how they addressed the critical issues of misinformation, hallucinations, and deepfakes. Hallucinations and misinformation were more frequently discussed than deepfakes, highlighting the prevalent concerns surrounding the accuracy and reliability of AI-generated content. Specifically, hallucinations, which refer to instances where AI models generate incorrect or nonsensical information, were mentioned in 51 guides, accounting for 50.0% of the total (Table 3). Misinformation or disinformation, involving the spread of false or misleading information, was addressed in 59 guides, or 57.8%, reflecting its significant impact on public perception and trust in AI. In contrast, deepfakes, which involve the creation of realistic but fabricated media, were mentioned in only 19 guides, representing 18.6% of the total. This disparity suggests that while deepfakes are a concern, the immediate challenges posed by hallucinations and misinformation/disinformation are perceived as more pressing issues in the context of AI literacy.

Table 3. Coverage of Misinformation, Deepfake, and Hallucinations

Topic	Included	Not Included
Misinformation (n=102)	59 (57.8%)	43 (42.2%)
Deepfake (n=102)	19 (18.6%)	83 (81.4%)
Hallucinations (n=102)	51 (50.0%)	51 (50.0%)

Evaluation of machine bias was crucial in library guides to ensure accuracy since this significantly impacts AI-generated outcomes. Biases can arise from several factors, including algorithmic transparency, selection and training processes, and racial biases. making them essential to address fostering trust and equity in AI tools.

The results from Table 4 show that many guides failed to address these categories adequately. Only a third of the guides mentioned selection, training, and racial biases, and only 22 (21.6%) guides discussed algorithmic transparency.

Table 4. Coverage of Racial Biases, Algorithmic Transparency, Selection/Training Biases

Topic	Included	Not Included
Racial biases (n=102)	32 (31.4%)	70 (68.6%)
Algorithmic transparency (n=102)	22 (21.6%)	80 (78.4%)
Selection/training biases (n=102)	30 (29.4%)	72 (70.6%)

Ethical AI Use

The results from Table 5 show that out of the 102 library guides, academic integrity and citations were addressed in 78 guides (76.5%), while copyright was mentioned in 43 guides (42.2%).

Table 5. Coverage of Academic Integrity and Copyright

Topic	Included	Not Included
Academic Integrity/Citation (n=102)	78 (76.5%)	24 (23.5%)
Copyright (n=102)	43 (42.2%)	59 (57.8%)

The researchers in this study also looked at accessibility, digital divide, data privacy, and data security (Table 6). While the digital divide was the least addressed topic, with only 9 guides (8.8%) covering the issue, 42 guides (41.2%) focused on the ethical implications of data privacy, making it the most addressed topic.

Table 6. Coverage of Accessibility, Digital Divide, Data Privacy and Security

Topic	Included	Not Included
Security (n=102)	21 (20.6%)	81 (79.4%)
Accessibility (n=102)	13 (12.8%)	89 (87.2%)
Data privacy (n=102)	42 (41.2%)	60 (58.8%)
Digital divide (n=102)	9 (8.8%)	93 (91.2%)

Discussion

The analysis of library guides from R1 universities revealed diverse approaches to presenting information on AI. Most guides are designed with the general audience in mind. However, only eight library guides specifically targeted faculty, a gap that can be explained by the availability of curated faculty resources from campus offices like writing centers or teaching and learning centers. Interestingly, thirty-two AI-related guides are integrated with other subject guides, suggesting that not all librarians felt comfortable with being the library's AI specialist.

Understanding AI terminology is also critical for incorporating AI into learning and research, as it avoids misinterpretation and promotes accessibility. While some guides include a glossary of AI terms, most of the guides we studied needed improvement in this area (see APPENDIX A for our glossary). Additionally, many guides are designed around ChatGPT, which is the most frequently cited AI chatbot. However, other AI tools are useful in enhancing learning, streamlining the research process, and improving overall academic performance. Therefore, a careful curation of AI tools needs to be considered. To optimize the use of AI tools, guides should categorize these tools by functionality and provide brief descriptions of each tool.

Another notable observation was the limited discussion on prompt engineering, a critical part of interacting with AI tools. Effective prompt engineering is essential for using AI tools, yet few guides addressed this topic. This omission highlights a significant gap in the resources provided by the library, potentially affecting users' ability to leverage AI tools effectively. Most guides also failed to give examples of prompt engineering which can provide users with clarity and guidance and help users understand how to frame their questions for effective responses.

In contrast, misinformation or disinformation resulting from AI use was a topic addressed by many guides. The prevalence of misinformation is a critical issue for AI tools that can propagate false information. The relatively high number of guides covering this topic underscores its importance and enforces the library's commitment to educating users about the risks and management of misinformation and disinformation. In contrast, very few guides discussed the topic of deepfakes, which involves the manipulation of media files to create false but convincing media. Deepfakes represent a significant and growing challenge in AI use. The limited coverage of this topic suggests that more comprehensive resources are needed to educate users about the risks and detection of deepfakes.

Multiple guides also addressed the issues of AI hallucinations. The relatively frequent mention of hallucinations in the library guides indicates a growing recognition of the diverse challenges posed by AI use, especially among students. However, as hallucinations are a less understood phenomenon, more comprehensive coverage and resources are needed. Library guides should provide detailed explanations and examples of AI hallucinations to help users identify and mitigate these occurrences.

Limitations

Researchers established a timeline to identify research guides, aiming to conclude by February 2024, with data extraction completed by June 2024. However, the rapid advancements in the AI field meant that some data quickly became outdated. Librarians regularly update guides as new information and tools emerge, which could lead to discrepancies between our data and the currently available guides, potentially impacting the relevance of the study's findings over time. The lack of standardization among the guides resulting in divergent formats, structures, and content posed a significant limitation. This variability required considerable time for data extraction, bias rectification, and management of individual researcher subjectivity. To address these challenges, researchers used a pre-discussed data extraction form and resolved disparities through discussion.

Additionally, the limited number of guides focused on faculty prevented comparisons between student and faculty guides. The study only examined guides created by the library, excluding those from teaching and writing centers or other campus institutions, as they were beyond the scope of the study's aims. The variability among the guides necessitated significant time for data extraction, and the diverse perspectives and expertise of individual researchers introduced potential bias and subjectivity. To minimize these factors, researchers employed a pre-discussed data extraction form, involving multiple researchers in the process, and resolved discrepancies through discussion.

Best Practices for AI Research Guides

Improving the structure and clarity of AI library guides involves focusing on content, design, and usability. While the best practices mentioned here are specific to guides on generative AI, many are also applicable to library research guides in general.

Content: AI-related library research guides should prioritize clear and concise content with well-defined learning objectives that highlight resources at the library or institution. Suggested pages include "Getting Started with AI Research," "AI Tools for Research," "AI in Library Databases," and the "Ethical Consideration of AI Use." Creating separate tabs for "Students" and "Faculty" in a generative AI research guide ensures tailored information, addressing the distinct needs and concerns of each group. Defining key terms such as generative AI, large language models (LLMs), and ChatGPT is crucial for giving students, regardless of prior knowledge, a foundational understanding of AI concepts. This practice also demystifies complex ideas and empowers students to confidently use AI tools. During usability testing, Bergstrom-Lynch found that students expressed frustration with inconsistent and unclear terminology. Therefore, AI guides should avoid using jargon, and should instead use plain language.[18] Lastly, the "Student" page must include detailed information on ethical AI use, discussing machine and human biases, as well as the general limitations of AI output. Copyright information, citing AI-generated content, AI assistance disclosure, and evaluative methods of AI output must also be included in the "Student" section.

A dedicated "Faculty" section or tab in an AI research guide should list resources for integrating AI tools into curriculum design and promoting AI literacy. Specifically, guides that thoroughly explain concepts like prompt engineering equip faculty with the knowledge to use and understand AI tools. Moreover, guides that explore the ethical and legal implications of AI—addressing issues like data security, hallucinations, and racial bias—are crucial for a well-rounded understanding of AI. Lastly, the "Faculty" section should list relevant library databases and university resources so faculty can integrate these resources into their teaching and research practices.

Structure, Design, and Organization: Applying cognitive load theory to guide design is a general best practice because it fosters effective instructional materials.[19] Cognitive load theory asserts that learning is restricted by our limited cognitive capacity, and learners may become overwhelmed when required to process numerous informational elements and their interactions simultaneously. The theory underscores the importance of implementing strategies that reduce the load on working memory, enabling the efficient storage of information and its processes in long-term memory.[20] Specifically, reducing the content load and maintaining a consistent layout for text and graphics generates clear cues for the users and provides a more engaging learning experience.[21] For AI-related library research guides, we recommend a simple and clean layout comprising five to seven tabs. For better browsing, Bergstrom-Lynch suggests one or two-column layouts with left-hand side navigation. This design is in line with users' expectations for web content and their natural reading habits.[22] To further enhance user experience, AI research guides should also include "Previous" and "Next" buttons at the bottom of each page. This allows for a seamless progression of the guide's content, encouraging users to explore all the listed resources.

Focused and easily digestible sections in AI guides that strike a balance between brevity and comprehensiveness improve the user experience. Concise bullet lists instead of lengthy text blocks significantly improve readability and information retention. This formatting lets users scan and absorb key points, enhancing accessibility and usability. Furthermore, Burchfield and Possinger suggest incorporating images, icons, and brief explanations to cater to students' preferences.[23] The most effective guides, for example, included an infographic that listed AI literacy competencies. Alternatively, multimedia elements such as video tutorials resulted in guides that were more accessible and engaging. Indeed, visual resources quickly communicate complex ideas and relationships, making them particularly valuable in topics like generative AI.

Usability: Prioritizing user experience is key when creating generative AI library research guides. Therefore, it is crucial to focus on usability, usefulness, desirability, and value. Students often expect to find the most important information under the 'Home' tab, so including links to key resources like AI tools improves usability. As Bergstrom-Lynch notes, placing relevant database links prominently on the landing page is effective, since the homepage and database page receive the heaviest use.[24]

It is also important to periodically check links and curate new content to maintain user satisfaction and engagement. Broken links and outdated information can negatively impact users, particularly in the rapidly evolving field of AI. Moreover, regular updates ensure that the guide remains a valuable resource, providing the latest insights and tools in generative AI.

Conclusion

Libraries play a crucial role in advancing AI literacy by providing well-curated and accessible resources that cater to the diverse needs of students, researchers, and faculty members. To be effective, libraries must carefully curate relevant resources and adhere to best practices, ensuring

that guides are not only informative but also accessible and practical. Well-designed guides should feature clearly defined learning objectives, concise content, straightforward language, and a logical structure that facilitates easy navigation and comprehension. Indeed, a well-designed library guide promotes AI literacy by covering key topics and providing information on AI applications and tools. Furthermore, guides that thoroughly articulate the ethical, social, and legal concerns of AI promote critical thinking and equip users to use, apply, and evaluate AI tools responsibly. By incorporating interdisciplinary perspectives and interactive elements, AI library guides can support users with informed decision-making and adapt to the ongoing developments in the AI landscape. Additionally, maintaining current and user-focused content is crucial for fostering AI literacy in a rapidly evolving field. Incorporating user feedback along with insights from stakeholders is also vital since this ensures that library guides remain relevant and responsive to the needs of the audience.

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24. Bergstrom-Lynch, *LibGuides by Design*, 212.

APPENDIX 1: GLOSSARY

Academic Integrity/Citations: Referred to the mention of the need to cite AI tools and/or the role of AI in academic integrity policy.

Accessibility: Referred to guides that discuss any of the issues related to accessibility (physical, sensory, cognitive, or neurological capabilities) of AI tools.

AI Tools: Referred to software applications or platforms that utilize artificial intelligence and machine learning techniques to perform specific tasks or solve a particular problem. The most famous of these are text-based AI tools like Chat GPT or Perplexity. However, AI tools for video, images, and text-to-voice, along with others are also listed.

Algorithmic Transparency: Referred to Algorithmic transparency is openness about the purpose, structure, and underlying actions of the algorithms used to search for, process, and deliver information https://www.techtarget.com/searchenterpriseai/definition/algorithmic-transparency.

Audience: Referred to the intended audience or users or the guide whether students, faculty, or multi-users.

Copyright: Referred to guides that address copyright infringement concerning the data used for training artificial intelligence.

Creators: Referred to the main content creators of the guides including library or librarians or outside the library like the Writing/English Centers, Teaching and Learning Centers, or other units at the institutional level.

Data Privacy: Referred to guides that discuss the lack of protection of individual's personal data and the preservation of their privacy rights in the context of AI tools.

Data Security: Referred to guides that discuss the protection of individuals' personal information and privacy when interacting with AI.

Deepfake: Referred to an image or recording that has been convincingly altered and manipulated to misrepresent someone as doing or saying something that was not actually done or said https://www.merriam-webster.com/dictionary/deepfake.

Digital divide: Referred to guides that discussed the differences in access to AI tools and the impact on skills, education, opportunities, and the benefits derived from AI-driven innovations.

Hallucination: Referred to a plausible but false or misleading response generated by an artificial intelligence algorithm (https://www.merriam-webster.com/dictionary/hallucinati).

Misinformation: Referred to incorrect or misleading information https://www.merriam-webster.com/dictionary/misinformation.

Multiple Libraries: Referred to multiple guides within the same library system either within the main library or through branches like law, medicine, etc.

Prompt Design: Referred to the process of creating prompts that elicit the desired response from language models.

Racial bias: Referred to the personal and sometimes unreasoned judgment made solely on an individual's race https://link.springer.com/referenceworkentry/10.1007/978-0-387-79061-9_329.

Selection/Training Bias: Referred to a type of error in which certain elements of a dataset are more heavily weighted and/or represented than others https://www.telusinternational.com/insights/ai-data/article/7-types-of-data-bias-in-machine-learning.

Stand Alone: Referred to guides that are independent and not part of a set or series of pages.