STEM Outreach Activities in Academic Libraries: Planning Strategies, COVID's Impact, and Future Considerations

ARTICLE

Cori Biddle
Penn State Altoona

Elise Gowen
Smith College

ABSTRACT

Outreach in academic libraries is an important aspect of their mission to support campus communities, but the nature of these activities, and the steps taken to plan them, is not fully understood at the profession-wide level. This study aimed to start the process of gathering data on outreach, especially among those who serve STEM-related constituents, and to begin recording the effects of COVID on library programming and events. In the summer of 2022, surveys were sent to representative librarians from Association of Academic Universities (AAU) members asking about their current outreach offerings and whether they utilized a formal outreach document to help plan and evaluate their efforts. Though all reported engaging in some sort of outreach, most shared that they had an informal approach to outreach planning. A majority reported that COVID required a shift in outreach, with staffing continuing to be a concern. Survey results are offered, along with a discussion of the findings and thoughts on the next steps towards a clearer understanding of the effects outreach has, as well as its role in academic libraries post COVID.

KEYWORDS

academic libraries, STEM, outreach, outreach plans, campus engagement

O utreach has become an increasingly important part of academic library activities as they strive to demonstrate their value to communities (LeMire et al. 2018, 2). This shift towards outreach as a core responsibility has led to a growing body of literature discussing applied outreach practices and outcomes. Few studies have called for systematic outreach planning, though Farrell and Mastrel (2016) note that "outreach is most effective when tied to institutional goals." Even fewer have directed research towards whether and how libraries actually attempt this systematic planning. LeMire and Graves (2019) suggest that this may reflect libraries' continued ad hoc approach to outreach, in contrast with their more intentional approach to library instruction, which often reflects more planning and long-term goals (273).

Along with the lack of literature on systematic planning, Wainwright and Mitola (2019) observed that "there are not robust examples in the library literature of assessing co-curricular outreach activities and programs" (315). LeMire et al. (2018) also note that most library outreach assessment focuses on individual events and is limited to headcounts, collaborator feedback,

and comments from attendees (8). Assessment such as this is rarely programmatic and, with its limited scope, cannot be applied much beyond an event-level reflection.

To present, The Outreach and Engagement ARL Spec Kit 361 (LeMire et al. 2018) may be the most thorough examination of academic library outreach. The project surveyed ARL (Association of Research Libraries) institutions, collecting information on outreach missions and outcomes, approaches to planning, and administrative support. The survey revealed that most respondents took some steps to plan outreach on a yearly basis and to align outreach goals with the library's strategic plan. However, "most respondents indicated that goals were set at the individual librarian (40, or 73 percent) or unit (39, or 71 percent) level. Only 18 (33 percent) said that they had goals or outcomes for their overall outreach program" (5). The study also found that definitions of outreach were often inconsistent, and many respondents lacked a clear view of outreach beyond their own responsibilities (2–3). The effects of this lack of clarity were also seen by Carter and Seaman (2011), who found that some librarians felt hampered by the lack of a position dedicated to marketing or outreach, or the lack of a formal outreach plan (166).

Based on their findings, LeMire et al. (2018) ultimately recommended a systematic plan for library outreach: "a programmatic approach that includes a clear definition, meaningful and measurable outreach outcomes and goals, a defined budget, and utilization of various assessment methods" (10). Hallmark, Schwartz, and Roy (2007) also advised that any document outlining an outreach plan incorporate institutional benchmarking, assessment strategies, funding needs, and consideration of strengths, weaknesses, and opportunities for the library (92).

Concrete examples of such systematic plans are not widely seen in the literature. However, Bastone (2020) outlined the development of such a formal plan at the University of Tennessee, and Del Bosque et al. (2017) and Wainwright and Mitola (2019) both discussed the implementation of systematic outreach plans at the University of Nevada, Las Vegas. The University of Tennessee case study noted how the plan added intentionality to outreach events, like when budgeting in advance for larger events and strategically targeting certain audiences. At the University of Nevada, Las Vegas, their systematic outreach plan utilized student surveys to plan outreach events, gauge audiences, and track user need (Del Bosque et al. 2017). This allowed them to provide outreach aligned with the library's strategic plan and other campus events (Wainwright and Mitola 2019). All three case studies shared that successful formal outreach plans should be allowed to grow and change in response to changing circumstances and assessment (Bastone 2020, 29; Del Bosque et al. 2017, 14; Wainwright and Mitola 2019, 321).

Literature concerning outreach to STEM patrons in particular rarely touches on questions of systematic planning and has been largely limited to discussion of the specific marketing and outreach materials used by STEM libraries (Slebodnik 2006) and case studies of outreach at STEM libraries (Duong 2010; Flash et al. 2017; Mack, Ruffin, and Barajas 2014). In discussing the overall goals of outreach, and once again emphasizing the importance of flexibility, Wilson (2013) uses the image of the octopus to illustrate what STEM library outreach should be. "Octopi are known as being very intelligent creatures with obvious mobility and flexibility in both physical and behavioral ways. We constantly adjust to the rapidly changing landscape efficiently and productively in order to remain relevant to our users" (72–73).

Outreach planning faces challenges in the wake of the COVID pandemic, which upended many traditional library events. Surbaugh (2021) noted

**STEM Outreach
Activities in Academic
Libraries: Planning
Strategies, COVID's
Impact, and Future
Considerations,**
continued

this disruption, while also noting that the pandemic was a driver towards innovation. "Exceptional circumstances provided an impetus for the accelerated development of pilot outreach and engagement programs using readily available tools/platforms, such as Zoom, Springshare, Kanopy, Buffer, Microsoft Forms, and Google Forms" (109). Libraries hoped that these innovations would help them adapt to post-pandemic circumstances (124). Similar challenges and opportunities can be seen in the years before COVID, with Wilson (2013) discussing the experience of STEM libraries turning to virtual outreach as their physical spaces were closed due to budget cuts. "The loss of physical book stacks may have been disruptive at first, but this experiment opened doors to expand our library services and reputation as a high-end research library" (82).

Overall, questions remain concerning the state of academic library outreach. It is unclear how widespread systematic outreach plans are, how they are structured, and the ways in which they incorporate institutional strategic goals. Also important is understanding whether such a programmatic approach to outreach is desirable. Insight into the outreach planning process and into the general status of academic library outreach seemed especially important after the COVID-19 pandemic. To help fill this gap, this research project hopes to begin an investigation of libraries' approaches to outreach, including the use of formalized outreach plans, and to take a snapshot of current outreach programming.

Methodology

The overall goal of this project was to undertake a preliminary assessment of outreach in the pandemic/post-pandemic landscape with the aim of drawing general conclusions that could aid in further, more sophisticated, research into the topic. Because both authors worked closely with STEM departments at their locations, including developing STEM outreach and engagement opportunities, they decided to focus this survey on individuals with similar experiences as a way to limit its scope. To this end, the survey focused on three interrelated questions: whether surveyed academic libraries utilized a formalized outreach plan to guide their outreach endeavors and what form such plans took, what types of STEM specific outreach was offered, and how COVID-19 affected their overall outreach.

An online survey was identified as the most efficient method for gathering information. Instead of using national listservs or community boards like ALA Connect, the project followed a similar strategy to that used by the Outreach and Engagement Spec Kit 361. Since it was a preliminary exploration of outreach, it was decided to limit the pool of potential survey responses. A cohort of STEM or outreach librarians from peer libraries in the Association for Academic Universities (AAU) was chosen and received the survey through direct invitation.

A Note on the Definition of Outreach

Numerous authors have offered their own definitions of outreach while noting that the library profession lacks a definitive definition (Carter and Seaman 2011, 163; Blummer and Kenton 2019, 180; Diaz 2019, 184). Some articles center on the act of "reaching out to non-traditional library users, extending 'beyond borders' of a physical library, and promoting underutilized or new library resources" (Dennis 2012, 369). Others, however, focus more on instruction as a core component of outreach (Blummer and Kenton 2019, 180–181). For the purposes of this research paper, the definition provided by Diaz (2019) was used:

In academic librarianship, outreach is work carried out by library employees at institutions of higher education who design and implement a variety of methods of intervention to advance awareness, positive perceptions, and use of library services, spaces, collections, and issues (e.g., various literacies, scholarly communication, etc.). (191)

Identification of Peer Librarians

Key to this project's preparation was identifying survey recipients. Because of the authors' interest in STEM-related outreach, they decided to limit this initial survey to librarians who had similar responsibilities or those who worked exclusively in outreach and engagement (if no STEM-focused individual was identified at an institution). To develop the invitation list, the online staff directories of each AAU institution were reviewed, including any branch or satellite locations. The decision to focus on subject or function-specific librarians allowed for a more targeted pool of respondents, but it also proved challenging to put into practice. Many library websites did not include the practical title or subject area for their librarians, and others did not include clear information on whether any employees belonged to a branch or satellite location. One insight into this difficulty came from the survey responses. This will be discussed in more detail, but many responses included staffing concerns and frustrations. It could be that STEM or outreach librarians were hard to identify because they did not exist; those positions were vacant at the time of the survey.

Once a librarian was identified, their name, library, and email address were added to an Excel spreadsheet. Six hundred forty librarians were contacted from the sixty-four member institutions of AAU. Mail merge was used to send the invitation email individually, and an additional reminder email was sent a few days prior to the deadline. Because of the limitations of the librarian identification model, a line was included in the email encouraging the recipients to forward the survey to a more appropriate librarian. The authors did receive a few responses indicating that outreach was not within the scope of the recipient's job description, and alternate librarians were contacted.

The survey was live for three and a half weeks during late spring/early summer 2022. The timing of the survey sought to align with the end of institutions' academic year and to fit with the other commitments held by the authors. The survey received eighty-two responses, a 14 percent response rate. Though the rate was rather low, it likely reflects the difficulty in identifying individuals who were responsible for outreach, and the fact that multiple individuals at each library were ultimately contacted to complete the survey. In all, the eighty-two responses gave plenty of data to review and allowed for preliminary reflections on the status of outreach efforts at research university libraries.

Survey Development

Qualtrics was used to create the online survey, as the software would allow for easy dissemination and data export. Survey questions were written by the authors, though the library's assessment department was asked for feedback on survey design. A pilot survey was also offered to colleagues to solicit feedback and check functionality. The full survey text can be found in Appendix 1 and is available online at https://bit.ly/3p58qLW.

Though the project sent direct invitations to peer librarians, there was a commitment to respondents' privacy and anonymity. Questions were strategically developed to elicit the data needed without any unnecessary identifying information, and the settings in Qualtrics were adjusted so as to not

gather IP locations or other identifiable information. Demographic questions such as type of library (main site, branch, or satellite), number of overall employees, and number of those engaged with outreach, provided some context to help evaluate the responses without identifying those who participated.

Most of the survey structure was a combination of quantitative and qualitative questions. Respondents could answer "yes" or "no" to a particular question, and then be guided to a follow-up qualitative question to expand upon their response. Skip logic was utilized to eliminate the need to answer irrelevant questions. Since each institution has a unique library structure and outreach approach, it was felt that these qualitative questions would provide the most insightful data.

Analyzing Results

The eighty-two responses were aggregated and the qualitative data was codified in an attempt to discover trends and generalizations. The qualitative questions often received multi-faceted responses, so the main themes in each response were identified and then organized into categories to provide easier assessment. As this research project was envisioned as a preliminary study, it utilized very basic analysis strategies. Tables and graphs were created in Excel to help visualize the responses and place them into context.

Results

This results section is organized first by the demographics of respondents and then by the project's three research questions. They do not reflect the order that the questions were presented in the survey, which differed for each respondent based on their responses and the skip logic used. Questions were organized by theme to help readers place individual questions into a larger context.

Demographics of Respondents

All eighty-two respondents answered "yes" to the question of whether they provided outreach. Though the survey provided an option to select "no," it appears they may have self-selected out of the survey if they did not participate in outreach. Unfortunately, it is impossible to determine to what extent this was the case.

As seen in figure 1, a majority of responses indicated that they worked at "the main library location on campus/only library location at university" (35 responses). Those that worked at a "satellite or specialized location located on the same campus as the main library location" made up another large group (28). A smaller number indicated they worked at a "branch library" located at a separate campus from the main library location (12). Seven other respondents chose "other," with most indicating that they split their time between locations (3), or that they considered themselves "one library" even though they were physically dispersed amongst locations (3).

Since the research project's focus was on outreach from STEM libraries or on STEM topics, the project tried to target those librarians who worked at such locations or participated in liaison work with those groups. Figure 2 outlines the responses received to an open-ended question. A large majority of the respondents indicated that their library specialized in science, technology, engineering, and medicine. Many focused on one specific discipline or subject area, though as it was an open-ended question, some indicated they served the "sciences" in general. Seven referred to the population served instead of the subject, saying that they worked primarily with undergraduates or graduate students. Fewer than ten indicated that they served subjects other than those traditionally included in STEM.
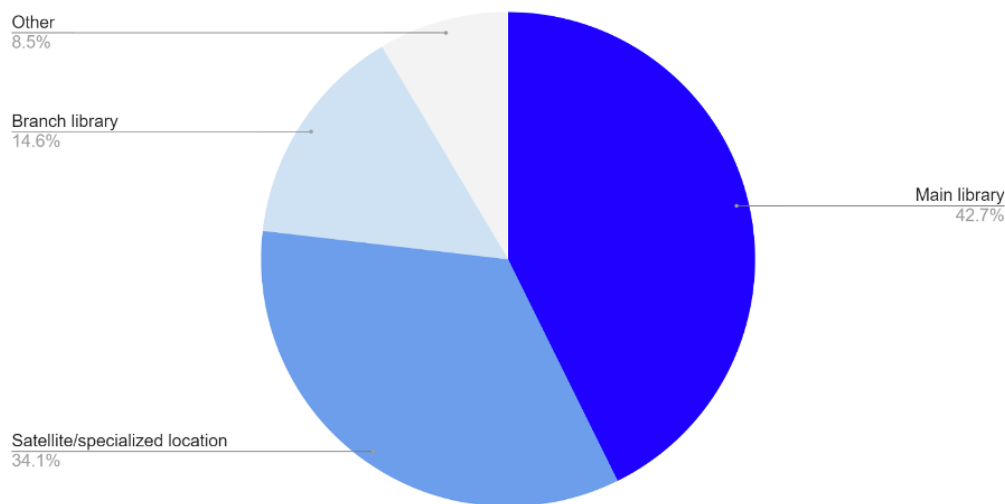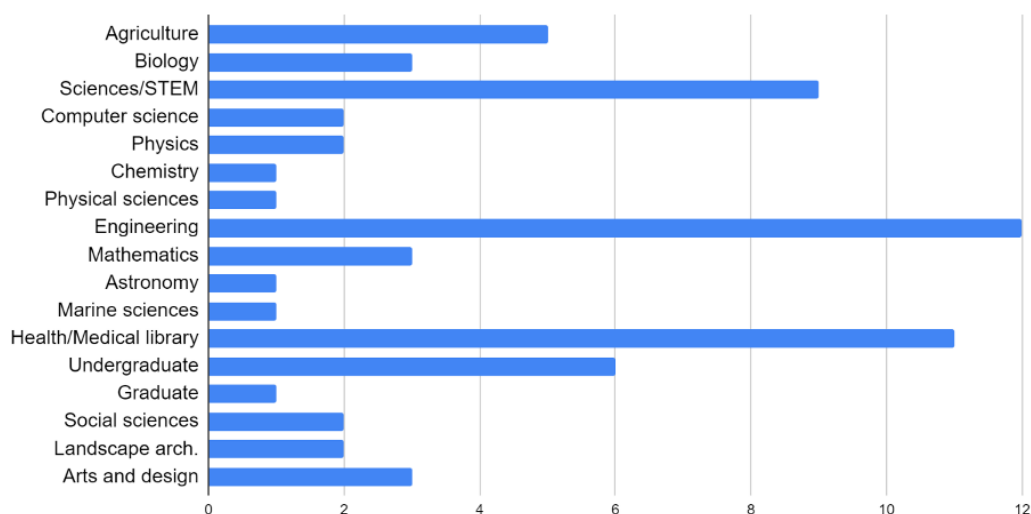
Figure 1. Type of library

Figure 2. STEM library types of liaison areas

The final demographic questions asked about the staffing of each library. A majority of the responses indicated they worked at a location with more than twenty employees (46). Twenty-two respondents indicated that they worked at a smaller location, with twelve reporting that there were fewer than five employees at their location. This is consistent with the majority of respondents working at the main or only library at their institution. Though the responses indicated predominantly large staff sizes, it was notable that almost 43 percent indicated that five or fewer employees actually assisted with outreach. Staffing becomes a strong theme as the survey continues, and a relevant follow-up question may be how much time employees are able to spend on outreach in light of their other responsibilities.

Formal & Informal Outreach Plans

The survey asked respondents if they utilized a formal outreach plan, which was described as a "document to lay out systematic goals for library outreach over a given period." Few librarians (10 or 12 percent) indicated as such, or it

**STEM Outreach
Activities in Academic
Libraries: Planning
Strategies, COVID's
Impact, and Future
Considerations,**
continued

could have been that only a small number knew of such a document. With this and the subsequent outreach planning questions, there was a noticeable level of uncertainty, with responses to open-ended questions often including statements like "I'm not sure" or "I hope that they have one."

The survey's skip logic directed respondents to different question subsets depending on whether they selected "yes" or "no" in answer to the question of whether their library had a formal outreach plan. Those who answered "no" were given two follow-up open-ended questions.

First, those who indicated that they did not have a formal outreach plan were asked how helpful they thought such a plan might be to their current outreach efforts. As seen in figure 3, a majority of the seventy-two respondents who did not have a plan indicated that they thought one might be "Very helpful" (20) or "Somewhat helpful" (29). Twenty-three (32 percent) were unsure, answering "Neither helpful or unhelpful" or "Not really helpful."
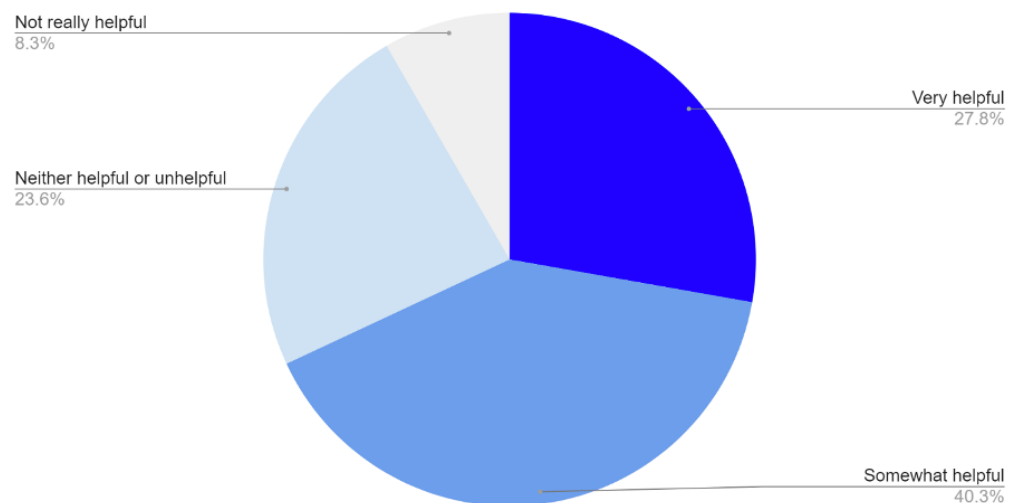

Figure 3. Would an outreach plan be helpful?

Next, those who indicated they did not have a formal outreach plan were asked to consider what challenges there might be in implementing a formal outreach plan at their library. When the qualitative responses were coded, the researchers found that the most-cited challenges included difficulty getting staff or colleague buy-in for the plan, or a lack of administrative support. Some respondents reported that they had previous problems reaching a consensus among colleagues, and that colleagues preferred to focus on individual outreach goals and objectives instead of taking a holistic view. Concerns about administrative support were mostly related to staffing, including the lack of an outreach coordinator and the inability to set aside time to prepare or follow a formal plan. There were also concerns related to funding and whether outreach was an administrative priority. Additional concerns included the potential lack of flexibility in a formal plan, whether it could adapt to changing patron needs, and whether it would devolve into busy work.

Those that indicated the existence of a formal outreach plan (10) were asked more detailed questions about their plan and its implementation. Most organized their document "by date" (4) or by "learning outcomes or strategic goals" (6), though some did report that they also considered "audience" (3) or "existing library services" (3). The survey presented a variety of common organizational strategies and allowed respondents the ability to select more than one answer. A majority of responses (7 or 70 percent) indicated that their

plans explicitly referred to the library's strategic plan, while six (60 percent) said their plans referred explicitly to the university's strategic plan. Half indicated that they did not include an assessment process in their formal outreach plan, and one librarian indicated that they did not assess outreach at all. Responses were evenly split on whether they followed the plan throughout the year. Thirty percent indicated that they followed the document "not very closely" while 40 percent said "somewhat closely" and 30 percent said "very closely."

When asked about the benefits of a formal outreach plan, the results were mixed. Those who used such documents reported that it helped keep the library aware of the outreach goals, while others used it to inform their quarterly or yearly reviews. Some admitted that the reach and overall value of the plan was limited, while others found that it helped attract new patrons or engage with other stakeholders. One respondent reported that completing this survey helped them to identify aspects currently being considered informally, such as strategic plans and assessments, which may need to be added to their existing formal outreach plan.

Though few had a formal outreach plan, all eighty-two respondents were asked about their general approach to outreach activities; their responses showed that most followed an informal structure. Only three indicated that they planned all their outreach on a semester or yearly basis. However, none indicated that their outreach was entirely ad hoc. Ninety-six percent said that they used some sort of advanced planning with most indicating that they used an "even mix between planned-in-advance and ad hoc events" (43 percent) or "Mostly planned out in advance, with some ad hoc events" (38 percent).

An overwhelming majority reported that they informally designed outreach with audiences in mind (99 percent). The survey included several audience categories (see figure 4), but under the "other" category, eleven reported additional audiences like the public or larger community, K–12 students, or general outreach just to faculty or new patrons.
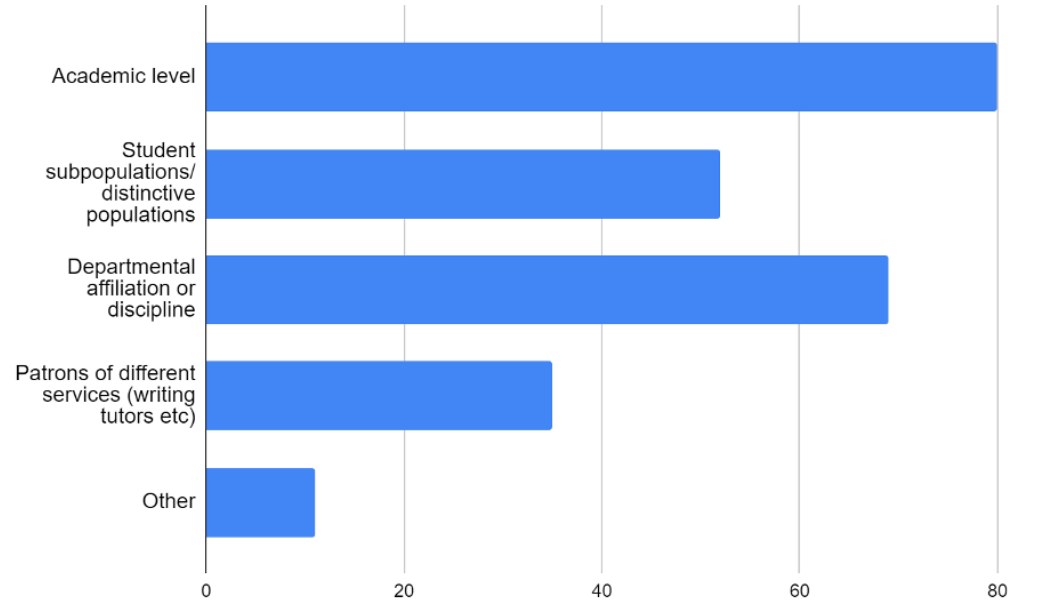

Figure 4. Categories of outreach audiences

When asked how they identified the audiences they wished to engage, some indicated they did so through university systems (like lists of new undergraduates, graduate students, or faculty), but most indicated that audiences were built through personal relationships. Either the library's

**STEM Outreach
Activities in Academic
Libraries: Planning
Strategies, COVID's
Impact, and Future
Considerations,**
continued

communications or marketing department had connections with certain groups, or the liaisons or subject specialists used their relationships to tailor outreach. Others have a library position that partners with student clubs and organizations or with student services to develop outreach for those groups. Often these relationships were built on previous interactions with the library or previous outreach events that have evolved. There were few that stated that they do not target a specific audience at all.

The survey then asked, "What steps do you take to ensure that all potential audiences were represented in outreach events?" The wording of this question was a bit ambiguous and led to multiple interpretations. Some reported on their marketing strategies and how they utilized social media and other promotional tools to advertise outreach events to specific audiences. Others shared ways that they connected with the identified audiences through campus groups, committees, or campus departments like student services. Others shared that they did not limit or consider the audience of their outreach events and all were welcome to attend.

Also of interest was the role that strategic plans played in libraries' approach to outreach. Seventy-two percent of the eighty-two respondents (59) indicated that they took steps to align outreach with at least part of the library's strategic plan. When asked what areas of the strategic plan they aligned with, seven main themes emerged (see figure 5). A few offered alignments beyond these broad themes like "student success," "collection preservation," and innovative uses of "the library as space."
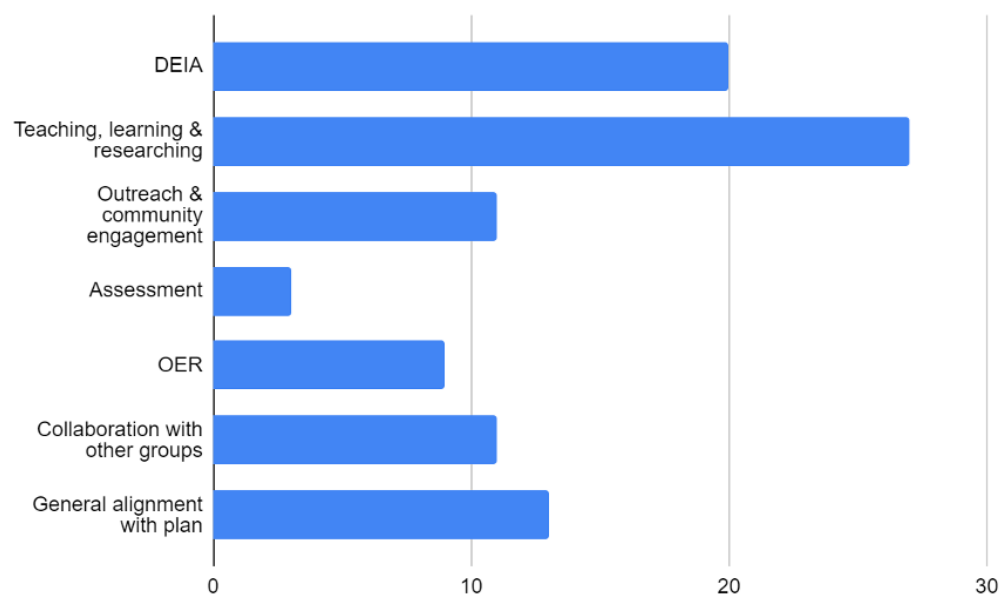

Figure 5: Areas of alignment with library's strategic plan

Alignment with their university's strategic plan was less clear, with only forty-five (55 percent) indicating that they took steps to align outreach with that document. Many indicated that any alignment with the university's plan only came through alignment with the library's, while others reported that outreach was tied to certain campus initiatives like new student orientation; DEIA; OER; or academic, research, and teaching excellence.

When asked, most indicated that they attached some type of assessment to their outreach (69 or 84 percent). The most common strategies were attendance and usage numbers (67), or follow-up surveys (45). A small number (6) indicated that they tried focus groups. Ten respondents shared

other assessments like informal conversations with attendees, follow-up with organizers, or looking at usage of a promoted resources. Interestingly, one librarian shared that they used a "secret shopper" during an orientation to gain feedback.

Of those who recorded assessment (69), most kept the numbers internal and only 24 (35 percent) shared them outside the library. Of those that shared their data with outside groups, most shared with collaborating groups or those that helped organize the event. A few reported that they shared data with ACRL or other professional organizations. Only two mentioned sharing outreach assessment with university administrators, and only one mentioned that it was included in the library's public annual report.

Sixteen percent (13) disclosed that they did not have any assessment process tied to their outreach. A follow-up question offered potential reasons why they may not have one. Three chose "not have enough staffing," while 4 others responded that they were "not required." The third option, "not enough time" was not chosen exclusively, but two respondents wrote in "all of the above." The "other" field also elicited reasons such as collaborating groups had their own assessments, and that assessment was less of a priority with COVID and staffing shortages. One noted that they had been planning to start assessment but have yet to initiate it. A majority (8 or 61 percent) of those without any outreach assessment said they do not have plans to develop any.

Types of Outreach

This project's definition of outreach (provided in the methodology section) was presented at the survey's start for respondents' consideration. Eighty-two percent (67) said that the definition provided was consistent with their own. Of those that provided alternate definitions, seven shared that they were not aware that their library had any set definition. Others shared that they viewed outreach as more restrictive, referring only to engagement with the public (groups external to the university). In these cases, the survey's definition better reflected academic engagement or liaison work. Others reserved "outreach" for marketing, promotion, or other one-way communications that highlighted library services or resources. Unfortunately, due to faulty survey design, a small number missed the provided definition of outreach and so were not able to answer the question.

When asked about the specific types of activities or events they categorized as outreach, responses varied greatly. All eight-two shared, some in great detail, outreach endeavors organized by their libraries. They ranged from informative promotion of services to campus-wide events and competitions. By codifying the results, the following themes were identified (figure 6 shows the total numbers of responses in each theme):

- Asynchronous/passive events: Book displays, giveaways, or other exhibits that did not require direct interaction with users.
- Orientations/open houses: Informative tours or orientations for specific audiences (like first-year students) or at specific times of year (like the beginning of the semester).
- Library information tables/resource fairs: May be organized internally or as part of larger campus events. They are typically staffed by library employees and have the potential for interaction with attendees.
- Workshops: Librarians reported hosting workshops on a variety of topics. They may also be invited to speak to particular groups.
- Newsletters/emails/advertising: Events and services may be promoted in a variety of ways: newsletters, flyers, event calendars, blog posts, etc. This category also grew to include social media posts.

- Finals or midterm-specific events: These events were separated from orientation or open house events because they all had an element of "stress-busting" or study breaks that were especially common during midterms or finals.
- Liaison work: Efforts, typically by subject specialists, to engage and build relationships with their assigned departments or disciplines. These included informative emails, attending department meetings, or meeting new faculty for lunch.
- Co-curricular or "for fun" events: These may be similar to midterm or final events but are not tied to a specific time of year. They include providing specific resources for checkout like gardening tools or board games, or organizing campus book or film clubs.
- Contests/competitions/awards: Campus-centered contests or giveaways tied to student research or creative works, or raffles for library swag. Some reported that they also served as judges for outside events.
- Outreach to community: Many libraries supported connections with local schools and public libraries or participated in other community-sponsored events.
- Other programming: Outreach in this category comprised cases where the library did not coordinate the event but provided logistical support.
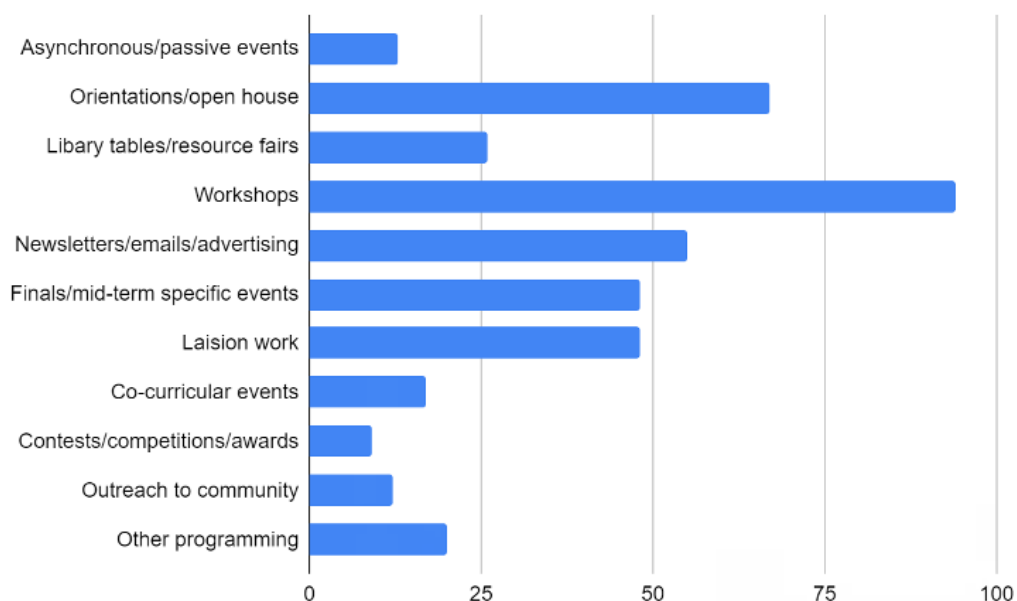

Figure 6: Types of outreach

When asked specifically about outreach related to STEM, 70 percent provided target outreach on STEM topics and 84 percent indicated that they specifically targeted STEM departments and students. The survey provided outreach options popular with STEM disciplines (see figure 7). At least 50 percent (41) of respondents indicated that they provide outreach on most of the topics offered. Those provided least often were poster creation/conference presentations (31), patents (33), and copyright (41).

Eighty-nine percent of respondents indicated that they collaborated with others when creating outreach events. The survey provided example groups librarians may collaborate with (see figure 8). The survey also provided an "other" option to allow respondents to add any other groups that may have been overlooked. Librarians shared that they collaborated with outside groups like vendors, state extension offices, and professional organizations. Other university departments mentioned often focused on student support,
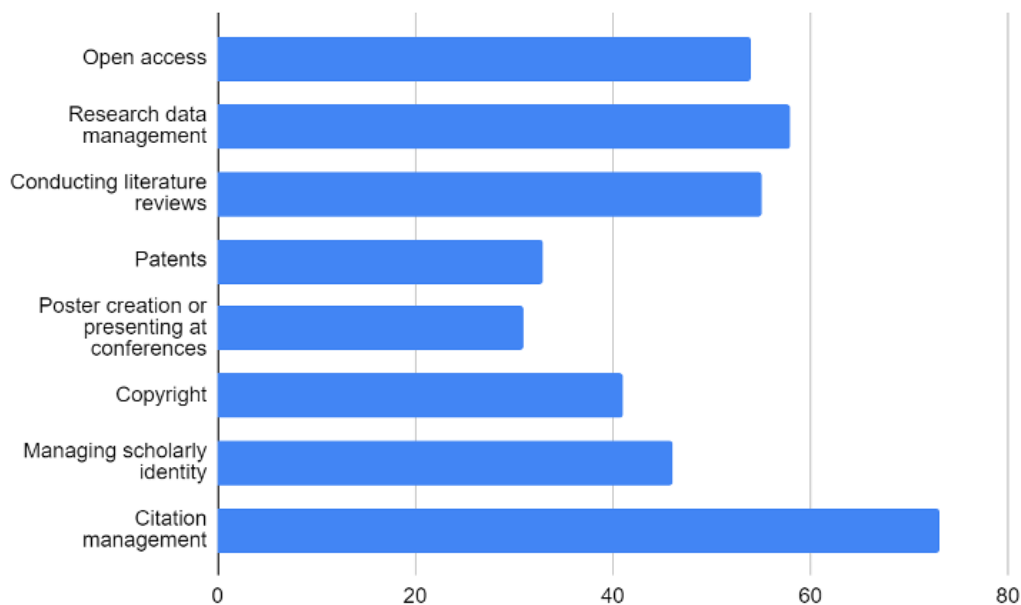
Figure 7: Types of STEM-specific outreach

including centers for writing, tutoring, academic support, or health services. Other faculty support departments included centers for teaching excellence, faculty development offices, or offices of research.
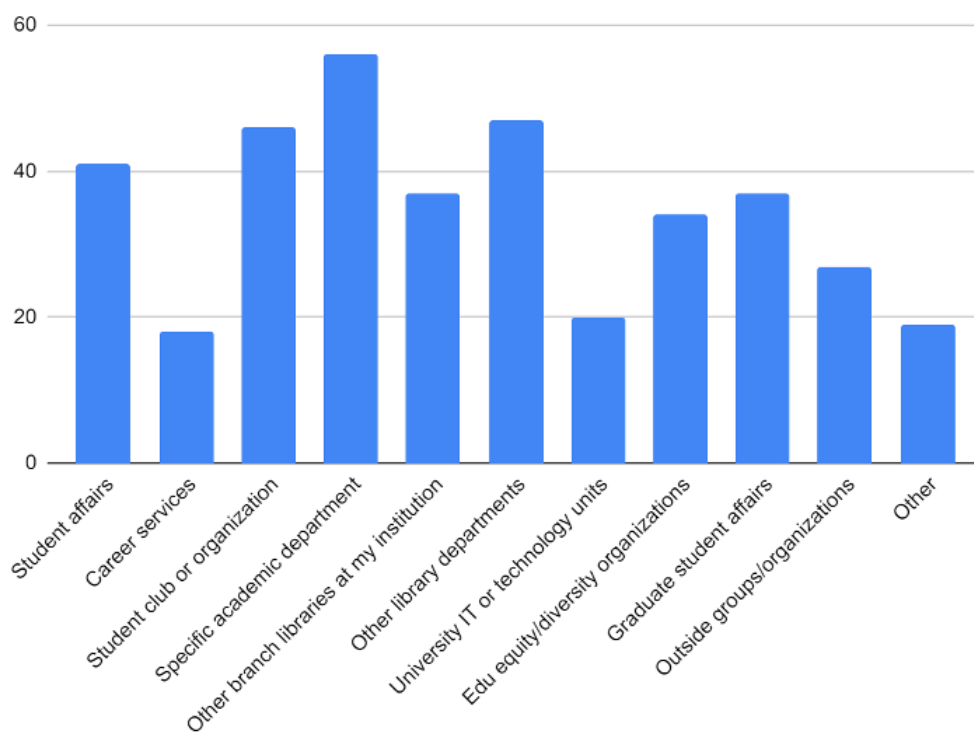

Figure 8: Outreach collaborators

Effects of COVID

This survey was launched in the summer of 2022 when COVID's impact on higher education, and library outreach in particular, was still being processed. Whether librarians were going to be able to return to the "normal" landscape of outreach in the coming 2022–23 academic year was still uncertain. It was

important, therefore, to flesh out the pandemic's role in the outreach strategies highlighted elsewhere in the survey. As seen in figure 9, an overwhelming majority indicated that COVID affected their library's outreach at least "a moderate amount."
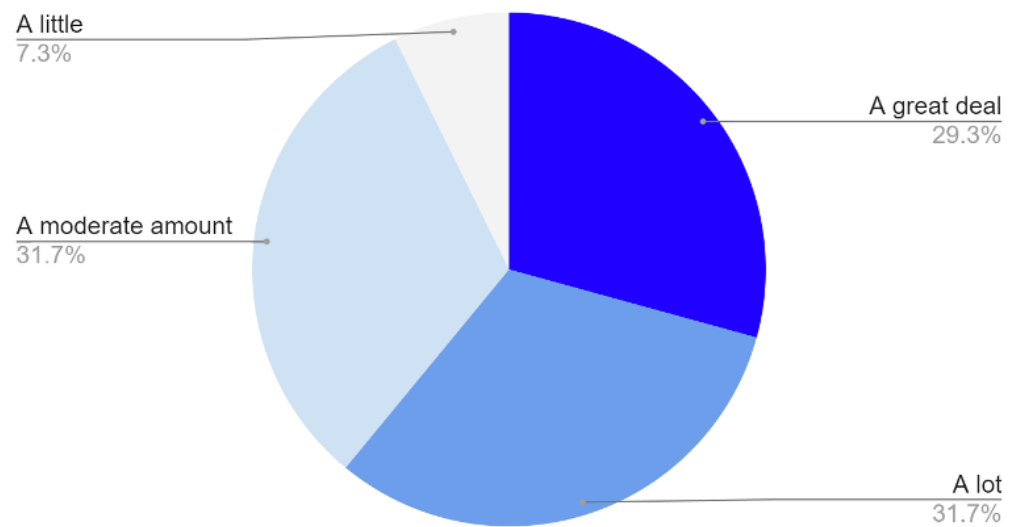

Figure 9: Effect of COVID on outreach

When given the opportunity to expand upon the impact, respondents went into great detail explaining the ways COVID initially affected their outreach plans and continued to inform their plans for the 2022–23 academic year. Themes included the following:

- Shift from in-person to virtual events: Especially during the spring and fall of 2020, libraries had to find ways to shift in-person events to a virtual space (10). Many reported that events were canceled because they did not translate well to virtual (16). At least one mentioned Zoom fatigue affecting participation/attendance. Others reported that the switch was not an issue and students seemed to prefer virtual events (4).
- Limited access to library space: With library buildings being closed, many reported missed opportunities to interact with the campus community (12), and limited promotional opportunities because of missing in-person traffic (5).
- Library staffing: Staff shortages (5) and shifting staff priorities away from outreach (7) were both concerns that continue into the post-COVID environment. Staff also were less comfortable participating in group events (2).
- Change in offerings or attendance: Though this category could be considered a subsection of the themes above, it is important to highlight the impact COVID had on overall outreach planning and execution. Many reported that they simply canceled or postponed outreach events (17), or student engagement declined (12).
- Innovation: Librarians reported that they had to adapt their outreach offerings because of changing student needs and so they tried new programming. For some, virtual programming led to broader event reach and the engagement of new audiences (3). Others successfully launched new social media presences as ways to engage their communities virtually.

- Post-COVID: Some reported that they were still figuring out how to return to a pre-COVID outreach environment, or wondered if that was even possible since the pandemic had such a negative impact on their outreach. Five reported that they were back to pre-pandemic levels of outreach, while others said they were just returning to in-person events. Some were sticking with virtual or outdoor events for the near future (4) or were going to keep the options for hybrid and virtual models (3). Three respondents reported that they were not able to continue some pre-pandemic events because they lost outreach funding during the pandemic.

Discussion

Though the targeted nature of this research project led to a somewhat small sample size, it still provided some interesting insights into the current status of outreach and the use of formalized outreach plans in academic libraries. Though not a comprehensive picture, the authors were able to make some generalized conclusions based on the survey responses.

Outreach is still a largely decentralized activity in academic libraries
While some library objectives, such as information literacy, have been formalized with set standards, frameworks, and best practices, library outreach is still an individualistic endeavor. Many respondents were frankly unsure of their library's larger outreach environment. This is in line with findings reported by the Outreach and Engagement SPEC Kit 361 (LeMire et al. 2018, 10). Outreach appears to be the purview of multiple librarians at any given location, and their focus is on their specific areas of responsibility (like subject/liaison librarians, or those who only work with undergraduates). The majority of our respondents may have a narrow view of outreach because they seem to focus exclusively on STEM departments or programs. They know their individual approaches to outreach, but most do not have a holistic understanding of outreach at their library. However, it was interesting to see that the outreach reported by many was general enough to appeal beyond a specific STEM department or program.

One reason behind this decentralization could be that, unlike instruction, outreach has a nebulous quality that depends on the unique needs of the campus community, or an individual department or program. It is strongly tied to the context of how each institution has historically defined and classified these activities, and the roles and relationships that the library has traditionally had. This aligns with the continued struggle to define outreach in library literature, as seen in Diaz (2019).

Librarians may not want to centralize outreach planning
When asked about any challenges in implementing a formal outreach plan, common concerns were achieving staff buy-in and a lack of flexibility. Ninety-six percent of respondents said that they incorporated at least some ad hoc events into their outreach calendars, so having latitude and the agency to amend outreach plans as opportunities arise is important to librarians. Such concerns could be relieved by emphasizing the importance of having built-in mechanisms for change and improvisation, as seen with the University of Nevada Las Vegas Library case studies (Del Bosque et al. 2017, 14; Wainwright and Mitola 2019, 321).

Outreach appears to be an extension of the respondents' relationships with academic departments, academic support organizations, or student clubs and organizations. While our initial focus was on STEM departments, there is an

**STEM Outreach
Activities in Academic
Libraries: Planning
Strategies, COVID's
Impact, and Future
Considerations,**
continued

opportunity to extrapolate this reliance on relationships to library outreach focused on other departments or disciplines. Ideas for outreach events often come from personal relationships, and librarians may feel that formalized outreach plans minimize this partnership. Librarians may be more comfortable being reactive instead of prescriptive in this regard.

Of those that use outreach plans, most find value in them

Among those respondents who had a formal outreach document, most felt that they benefited from having them. The primary benefits included helping libraries keep track of outreach goals, as well as generating reports for quarterly or yearly reviews. Others found that it helped attract new patrons. This confirms the potential benefits already identified in the literature (Bastone 2020, 26; LeMire et al. 2018, 10) However, other respondents felt that the plan was of limited value to their institution, so this experience is not universal. Further, the survey did not ask explicitly about the drawbacks to using outreach plans, which deserves further examination in future studies.

Libraries are already following an informal outreach plan

While a formalized outreach plan does not appear to be common among academic libraries (only 12 percent of respondents indicated that they used one), most of those surveyed appeared to follow an informal planning process. They indicated that they followed an outreach calendar or timeline for most events (84 percent), identified potential audiences (99 percent) and collaborative partners (89 percent), and included some type of assessment (85 percent). Even without a plan, they are taking steps to align with the library's (72 percent) and university's (55 percent) strategic plans. The survey responses reported that 60 percent of those who did not have formal outreach plans believe such plans could be at least "somewhat helpful."

Perhaps formalized outreach plans simply have a public relations problem. For example, some respondents offered frustration about the lack of clear outreach planning or ownership of some outreach activities, sentiments also found in Carter and Seaman (2011, 169). Many were likely STEM liaison or subject specialists, so their inability to answer holistic questions may stem from a lack of outreach communication. Advocates of formal outreach plans may gain more buy-in if they focus on its benefits, like greater communication and collaboration, efficiency, and easier reporting to stakeholders. Librarians already report that they are overworked and under-supported, so the idea of another "hurdle" to their outreach may be met with skepticism. Implementation leaders may need to proactively address issues of department dynamics, desire for flexibility, and a clear definition of the plan's objectives, goals, and obligations.

Though outreach is decentralized, libraries are following a similar game plan

Though some libraries had a different definition of outreach, they all reported very similar outreach activities and programming, including many endeavors that went beyond the boundaries of STEM-specific departments or programs and appeared to benefit the larger campus community. Out of the hundreds of examples provided by respondents, it was fairly easy to categorize them into ten or so overarching themes. This congruence was even more explicit when asked about specific STEM outreach topics. Though the respondents identified about fourteen STEM departments/programs that they worked with, almost all the respondents participated in at least one of the eight STEM outreach types identified by the authors. Collaboration groups and assessment strategies were also very consistent among respondents. While libraries value the ability to personalize and adapt to their unique campus communities, they are all offering

similar events and activities: workshops, midterm/final programming, and new faculty or student orientations are all important markers on academic libraries' calendars.

COVID is changing the outreach landscape
It may be too early to say for certain how libraries will adjust their outreach in the post-pandemic world, but in the summer of 2022, they reported that previous outreach events had been canceled, adapted, or completely re-envisioned due to the changing needs of students, faculty/staff, and community audiences. The shift to virtual programming mentioned by Surbaugh (2021) and Wilson (2013) was still alive and well in the results. Also present was a dichotomy between the desire for in-person connection and the convenience of virtual programming that many libraries are trying to figure out. This tension in student preferences may require librarians to place more forethought into an event's format, even if it was successful in previous years.

Another way that COVID may change outreach at academic libraries is the impact it had on library staffing. Between hiring freezes or cuts in positions, many reported that they were stretched thin among their responsibilities. Such an environment may lead to a reduced amount of outreach, as time typically spent for outreach planning and hosting is now used for other tasks. The current economic and funding environment may actually help codify outreach efforts. COVID's impact may force libraries to critically assess how they are supporting outreach and may lead to a more centralized approach to outreach for efficiency. Many reported that outreach and campus engagement are current parts of their library's and university's strategic plans, so more efforts to define and assess outreach may be forthcoming as libraries look for ways to demonstrate their impact.

There are only minor distinctions between kinds of libraries
Responses were assessed by library type (main libraries versus a branch or satellite library) to identify any meaningful distinction in their outreach planning. In terms of the use of assessments, collaboration with other departments/groups, or designing outreach towards specific audiences, library type did not appear to have a significant effect. However, only 6 percent of respondents who worked in a main library reported that they had an outreach plan, compared to 17 percent of branch or satellite library respondents. This may suggest a potentially significant difference in the usefulness or feasibility of these formal documents based on library size or perhaps the number of stakeholders. Due to the low response rate, however, the significance of this is not clear at this point.

Limitations

Limited by the information provided in the public directories, survey invitations were necessarily sent to multiple librarians per library, department, or division. Because of this, the exact number of institutions represented is unknown, though since the project was not designed to be comprehensive, it is a minor concern. The survey also could contain duplicate submissions from a library or department, though these individuals could have different points of view regarding outreach, which would add value to this potential duplication.

Other limitations were not identified until after the data was collected and analyzed. Formatting issues with the Qualtrics survey, along with issue related to some of the questions' wording, led to confusion and uncertainty. In other cases, the confusion was due to respondents' lack of knowledge related to outreach at their institution. This meant that some of the questions related to

outreach administration (like assessment or alignment to strategic plans) were not answerable by the individuals solicited.

Next Steps/Further Research

This research project represents the beginning steps of an attempt to create a comprehensive evaluation of outreach in academic libraries. To see if the trends and themes found hold true, it will be necessary to explore a broad range of library types and institutions. More research will be necessary to survey librarians from other academic institutions, including liberal arts institutions, community colleges, and others outside of the AAU. In particular, the preliminary finding that branch and satellite libraries may be more likely to utilize formal outreach plans than main libraries should be tested.

More work may also be needed to correctly identify those who participate in and oversee outreach at each institution. The STEM focus of this project meant that many surveyed were not in a position to know the overall outreach strategy for the institution. Soliciting library administrators might be one way to access a library's overall approach to outreach, especially if the library includes outreach metrics in their reporting. Researchers may also want to attempt to solicit the planning document themselves, which would allow for analysis of the actual documents rather than librarian perceptions. These strategies may also help parse out any drawbacks or negative consequences resulting from the use of a formal plan.

More exploration could help deepen the understanding of activities undertaken by libraries, and the ways in which library type and size influence outreach. This study focused primarily on STEM-related outreach, but it would be interesting to see if the themes identified here are consistent with a broader scope of libraries, or what additional activities or events may be common at other institutions. Assessment of library outreach activities would be another avenue of investigation, especially into whether traditional assessment tools can successfully measure the impact of certain outreach activities (like workshops or table events), and whether assessment data directly affect future outreach strategies.

COVID's impact on library outreach is a multi-faceted question that deserves in-depth examination. It would be particularly worthwhile to explore the long-term effects of COVID on outreach, whether the impacts are generalizable, and whether any changes observed will persist. For example, the persistence of virtual or hybrid programming, which were essential to pandemic outreach, would be an interesting trend to follow.

Finally, as staffing surfaced as a strong theme, a relevant follow-up may include more analysis on the staffing and time allocated to outreach. Respondents indicated that there was a relatively small number of staff dedicated to outreach, but it would be interesting to discover exactly how much time librarians are able to spend on outreach in light of their other responsibilities. In addition, such a follow-up could explore whether staffing has an impact on the topics and modes of outreach, as well as on the ways that librarians plan and assess outreach activities.

Conclusion

This research study found that STEM-related academic library outreach continues to be a relatively individualized endeavor, supporting trends initially observed in LeMire et al. (2018, 10). Survey respondents indicated that many chose to approach outreach in individualized ways that met the unique needs of their locations and saw great value in an adaptable and reactive approach to outreach. Even if formal outreach plans are not currently adopted by libraries,

the survey showed that they are starting to think about outreach in a more systematic way and may be considering the value of such a document as a way to demonstrate their value to university administration or other stakeholders. More explorations of outreach programming and planning strategies would be beneficial as libraries navigate post-COVID budgeting and staffing concerns. Such research would allow librarians from a variety of backgrounds more opportunities to share their experiences and would gather insights to help provide more guidance to the larger library profession.

References

Bastone, Zoe. 2020. "Creating an Outreach Plan That Accounts for the Seen and Unforeseen," *Journal of Library Outreach and Engagement* 1 (1): 24–40. https://doi.org/10.21900/j.jloe.v1i1.471.

Blummer, Barbara and Jeffrey M. Kenton. 2019. "Academic Libraries' Outreach Efforts: Identifying Themes in the Literature." *Public Services Quarterly* 15 (3): 179–204. https://doi.org/10.1080/15228959.2019.1592058.

Carter, Toni M. and Priscilla Seaman. 2011. "The Management and Support of Outreach in Academic Libraries." *Reference and User Services Quarterly* 51 (2): 163–71. https://doi.org/10.5860/rusq.51n2.163.

Del Bosque, Darcy, Rosan Mitola, Susie Skarl, and Shelley Heaton. 2017. "Beyond Awareness: Improving Outreach and Marketing through User Surveys." *Reference Services Review* 45 (1): 4–17. https://doi.org/10.1108/RSR-02-2016-0009.

Dennis, Melissa. 2012. "Outreach Initiatives in Academic Libraries, 2009-2011." *Reference Services Review* 40 (3): 368–83. https://doi.org/10.1108/00907321211254643.

Diaz, Stephanie A. 2019. "Outreach in Academic Librarianship: A Concept Analysis and Definition." *The Journal of Academic Librarianship* 45 (3): 184–94. https://doi.org/10.1016/j.acalib.2019.02.012.

Duong, Khue. 2010. "Rolling Out Zotero Across Campus as a Part of a Science Librarian's Outreach Efforts." *Science & Technology Libraries* 29 (4): 315–24. https://doi.org/10.1080/0194262X.2010.523309.

Farrell, Shannon and Kristen Mastel. 2016. "Considering Outreach Assessment: Strategies, Sample Scenarios, and a Call to Action." *In the Library with the Lead Pipe*. https://conservancy.umn.edu/handle/11299/185437.

Flash, Kenya, Melanie Allen, Thura Mack, and Kristina Clement. 2017. "STEM Bridges: Evolution of an Academic Library STEM Outreach Program. " *Journal of Library Administration* 57 (8): 279–90. http://dx.doi.org/10.1080/01930826.2017.1374105.

Hallmark, Elizabeth Kennedy, Laura Schwartz, and Loriene Roy. 2007. "Developing a Long-Range and Outreach Plan for Your Academic Library: The Need for a Marketing Outreach Plan." *College and Research Libraries News* 68 (2): 92–95. https://doi.org/10.5860/crln.68.2.7751.

LeMire, Sarahr and Stephanie J. Graves. 2019. "Mapping Out a Strategy: Curriculum Mapping Applied to Outreach and Instruction Programs." *College and Research Libraries* 80 (2): 273–288. https://doi.org/10.5860/crl.80.2.273.

LeMire, Sarah, Stephanie J. Graves, Shannon L. Farrell, and Kristen L. Mastel. 2018. *Outreach and Engagement SPEC Kit 361*, Washington, DC: Association of Research Libraries, November 2018. https://publications.arl.org/Outreach-Engagement-SPEC-Kit-361/.

Mack, Thura, Ingrid Ruffin, and Nicole Barajas. 2014. "Beyond BOSS: A Blueprint for STEM Engagement, Student Recruitment, and Outreach." *Tennessee Libraries* 64 (4). https://www.tnla.org/page/TL64_4_STEM.

Surbaugh, Holly M. 2021. "Quick Pivots: Maintaining an Agile Approach to Outreach During an Evolving Crisis." *Marketing Libraries Journal* 5 (1): 108–127. https://digitalrepository.unm.edu/ulls_fsp/185/.

Wainwright, Amy and Rosan Mitola. 2019. "Creating an Outreach Story: Assessment Results, Strategic Planning, and Reflection." In *ACRL 2019 Conference Proceedings*. https://collected.jcu.edu/fac_bib_2019/66/.

Wilson, Jill. 2013. "Ultimate Outreach: Exploring the Outreach Sea within the Engineering, Math and Physical Sciences Libraries at Cornell University." *Science & Technology Libraries* 32 (1): 68–83. https://doi.org/10.1080/0194262X.2012.758459.

Appendix 1: Outreach Survey Questions

Within this survey, the authors are defining outreach as "work carried out by library employees that includes methods of intervention to advance awareness, positive perceptions, and use of library services, spaces, collections, and issues (e.g., various literacies, scholarly communication, etc.). Outreach efforts are typically implemented periodically throughout the year or as a single event" (Diaz, 2019). Some examples of outreach may include finals week events, writing retreats for graduate students, open houses for new students, or contacting new faculty and/or staff via email to invite them in for a personal tour of the library, among many other examples.

Does your library provide outreach?
• Yes
• No

(If no) If your library does not perform outreach, what are the reasons your library does not?

How would you describe your library?
• Main library location on a campus/only library location at University
• Satellite or specialized location located on the same campus as the main library location
• Branch library located at a separate campus from the main library location
• Other (please describe)

If your library location is specialized or subject specific, what areas do you serve?

How many full-time employees work in your library location?
• 1–5
• 6–10
• 11–15
• 16–20
• More than 20

How many employees in your library location assist with outreach events?
• 1–2
• 3–5
• 6–10
• More than 10

- My library doesn't engage in outreach

Does your library use a different definition of outreach than the one provided above?
- Yes
- No

(If yes), If your library uses a different definition, how does your library define outreach?

What kind of outreach do you provide? What kind of activities, events, topics, etc.?

Do you collaborate with other departments or groups on outreach?
- Yes
- No

(If yes) What other departments or campus groups have you collaborated with on outreach? Please check all that apply.
- Student Affairs
- Career Services
- Student club or organization
- Specific academic departments
- Other branch libraries at my institution
- Other library departments
- University IT or technology units
- Educational equity/diversity organizations
- Graduate student affairs
- Groups or organizations outside the university (e.g., public libraries, community groups)
- Other (please describe)

To what extend do you plan your outreach calendar in advance on a semester/yearly basis, versus conceiving and planning outreach events ad hoc?
- All planned out in advance on a semester/yearly basis
- Mostly planned out in advance, with some ad hoc events conceived throughout the year
- A fairly even mix between planned-in-advance and ad hoc events
- One or two planned out in advance, but most are done ad hoc
- All events are planned out ad hoc

Does your library design outreach events with particular audiences in mind (like undergraduates, graduate students, faculty, distinct student populations, or specific departments)
- Yes
- No

(If yes) What categories of audiences have you identified? Check all that apply.
- Academic level (graduate or undergraduate students)
- Student subpopulations/distinctive populations (race/ethnicity, LGBTQ, international students, military students, etc.)
- Departmental affiliation or discipline (STEM, art, etc.)
- Patrons of different services (writing tutors, VR, etc.)

• Other (please describe)

(If yes) How does your library identify these audiences?

(If yes) What steps do you take to ensure that all potential audiences are represented in outreach events?

Do you provide targeted outreach on STEM topics?
• Yes
• No

Do you provide targeted outreach to STEM departments and students?
• Yes
• No

Do you provide outreach on any of the following topics?
• Open Access
• Research Data Management
• Conducting Literature Reviews
• Patents
• Poster creation or presenting at conferences
• Copyright
• Managing scholarly identity
• Citation Management

Do you take steps to align outreach with your Library's strategic plan, goal, or mission statement?
• Yes
• No

(If yes) What are some examples of how your outreach aligns with your Library's strategic plan, goals or mission statement?

Do you take steps to align outreach with your University's strategic plan or mission statement?

(If yes) what are some examples of ways your outreach aligns with the University's strategic plan or mission statement?

For this survey, assessment is the evaluation of library services or events to determine the use and efficacy of the services by relevant stakeholders.

When you do outreach, do you accompany it with some form of formal assessment, such as follow-up surveys or collecting usage or attendance data?
• Yes
• No

(If yes) What assessment strategies do you use?
• Follow-up surveys
• Attendance/usage numbers
• Focus groups
• Other (please describe)

Do you share this assessment with others outside the library?

- Yes
- No

(If yes) If you share this assessment, with whom do you share the assessment data?

(If no to the first assessment question above) Are there specific reasons why your library does not have an assessment process? Check all that apply.
- Not enough time
- Not enough staffing
- Not required to have one
- Other (please describe)

(If no to the first assessment question above) Does your library have future plans to develop an outreach assessment process?
- Yes
- No

Some libraries use a document to lay out systematic goals for library outreach over a given period. This is often called an outreach plan.

Does your library have a document like this?
- Yes
- No

Follow-up questions if respondents indicate they have an outreach plan

How is your outreach plan organized? Check all that apply.
- By date
- By audience
- By learning outcome or strategic goals
- By existing library services
- Some other format (please describe)

Does your outreach plan explicitly refer to the library's strategic plan, mission, or goals?
- Yes
- No

Does your outreach plan explicitly refer to the university's strategic plan, mission, or goals?
- Yes
- No

If you assess library outreach, is the assessment process outlined in the outreach plan?
- Yes
- No
- Outreach is not assessed

How has having an outreach plan benefited your library and its outreach efforts?

How closely do you stick to your outreach plan throughout the year?

STEM Outreach Activities in Academic Libraries: Planning Strategies, COVID's Impact, and Future Considerations, *continued*

Follow-up questions if respondents indicated they do not have an outreach plan

How helpful do you think it would be to your outreach efforts if your library had a formal outreach plan?
- Very helpful
- Somewhat helpful
- Neither helpful or unhelpful
- Not really helpful
- Definitely not helpful

Can you think of any challenges you may face if you were to try and implement an outreach plan?

To what extent has COVID affected your library's ability to provide outreach?
- **A great deal**
- A lot
- A moderate amount
- A little
- None at all

If you'd like to expand upon COVID's effect on your library's ability to provide outreach, please do so here.