Playtime at Robarts Library

BY JESSE CARLINER AND KYLA EVERALL

If academic libraries are sincere about their commitment to equity and inclusion, they must become more accessible for student parents—a large and underserved population whose members may also have other marginalized identities. Although accommodating children may seem to be outside the scope of academic libraries’ mandate, if we are to fully support research and learning on campus, we must try to reduce obstacles for parenting students however we can, including welcoming their children into our libraries. To address this need, the University of Toronto Libraries recently opened Canada’s first academic library family-friendly study space.

WEATHERING THE TWITTER STORM
Early Uses of Social Media as a Disaster Response Tool for Public Libraries During Hurricane Sandy

“I DIDN’T REALIZE THAT I NEEDED BOOKS THAT OFTEN”
Demonstrating Library Value during the Temporary Closure of an Academic Branch Library

PERSPECTIVES ON YOUTH DATA LITERACY AT THE PUBLIC LIBRARY
Teen Services Staff Speak Out

A good library will never be too neat, or too dusty, because somebody will always be in it, taking books off the shelves and staying up late reading them.”

- LEMONY SNICKET

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» Opening a family-friendly study space at the University of Toronto

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If academic libraries are sincere about their commitment to equity and inclusion, they must become more accessible for student parents—a large and underserved population whose members may also have other marginalized identities. Although accommodating children may seem to be outside the scope of academic libraries’ mandate, if we are to fully support research and learning on campus, we must try to reduce obstacles for parenting students however we can, including welcoming their children into our libraries. To address this need, the University of Toronto Libraries recently opened Canada’s first academic library family-friendly study space.

In the United States, 4.8 million undergraduate students are raising children, and there is a trend among U.S. institutions that cater to so-called nontraditional students to provide family-friendly library study spaces. Information about the number of students in Canada who are parents is not collected systematically, creating an invisible population. However, in the 2016 Canadian Graduate and Professional Student Survey, 49.3% of respondents reported that family obligations were an obstacle to success, with 14.3% reporting that they were a major obstacle.

According to Statistics Canada, Canadian women spend on average 50.1 hours per week on unpaid childcare, compared to 24.4 hours for men. Given that the burden of childcare primarily falls to women, lack of academic library support for parenting students disproportionately impacts women and has a negative effect on equitable access to library resources and services, as well as overall learning and research opportunities.

At the University of Toronto, parenting students expressed that they have had to choose their classes based on their child-
care schedules and the type of course work involved. Group projects, for example, pose a challenge, because they may require students to arrange additional childcare. Accessing services that are only available in person, such as consultations with a librarian, can also be difficult to arrange, due to the challenges and expense of finding childcare.

WHAT ARE LIBRARIES DOING?

There are few services to support parenting students in academic libraries. In Canada, some universities have activity packs or child-friendly resources that children can use while their parents study. One has a corner in its basement where parents can bring their children, but there are no dedicated, secured study spaces available for parenting students. Such rooms are more commonly found in smaller American universities and colleges, as well as European academic libraries.

In particular, there is a noticeable gap among the libraries at top-ranked research-intensive universities. A review of the websites of the top 25 ARL libraries found only one mention of family-friendly space.

THE UNIVERSITY OF TORONTO CONTEXT

The University of Toronto is a public research-intensive university spread over three campuses in and around Toronto, Ontario, Canada. From 2017 to 2018, the university had a total enrolment of 90,077 students. The University of Toronto Libraries system is the largest academic library in Canada and is ranked sixth among peer institutions in North America. The system consists of 44 libraries, with around 500 librarians and paraprofessional staff members.

Prior to the development of the Family Study Space, the John P. Robarts Library, the largest on campus and the primary social sciences and humanities library, had a policy allowing children 12 and under to accompany their parents to the closed stacks. The policy, however, was not posted publicly in the building or on the website. Under this policy, children had to be accompanied by a caregiver at all times. Although children were allowed in the library, the lack of a publicly posted policy may have created the impression that they were not welcome. When students did bring their children to the library, this would occasionally create conflict with other users over noise issues.

In the 2016 the University of Toronto Libraries LibQUAL+ survey, the library received a comment from a doctoral student requesting that the library provide a designated study space for students with children, citing many such spaces that they had seen in European universities.

According to The University of Toronto’s Family Care Office, although the majority of graduate students at the University of Toronto are women, there were previously no academic services or spaces for parents who may have needed to bring their children to campus. Therefore, the University of Toronto Libraries decided to address this need by developing a family-friendly study space in Robarts Library.

PROPOSING THE SPACE

In our large and complex library system, a family-friendly study space did not fit neatly within any one department’s responsibilities or expertise. Developing the space would require cross-departmental collaboration for successful completion and operation. The project team comprised of staff from the library’s public services departments, library facilities, and the university’s Family Care Office. In order address the administrative challenges to developing the space, the project team proposed the project directly to the chief librarian who had set aside money from the operating budget to fund innovative ideas that did not fit within the library’s organizational or budgetary structures.

In order to secure approval, the team needed to address concerns about liability and risk management regarding children in the library. The team reached out to the University of Toronto Family Care Office to ask them to serve in an advisory capacity on the
We developed the Family Study Space usage model in order to avoid the complications of having children in the library. As in any public space, caregivers are responsible for the safety and behavior of their children at all times. The chief librarian also consulted with the university administration, who were very enthusiastic in their support.

**CREATING THE SPACE**
In designing the space, the team envisioned a room that would work for as many users and their children as possible—from small children, to older children, to users working alone or on group projects. Additionally, the room would ideally have the same features and technology that our other group study rooms and study spaces had.

With these considerations in mind, the room was furnished with presentation facilities, white boards, comfortable seating, and workstations. The space was also soundproofed to avoid noise complaints from other users. To ensure the safety of children and reserve the space for the intended user population, the space was developed in an enclosed room accessible only by key fob. Renovations to the room also included painting, upgraded tamper resistant electrical outlets, low emission carpet, and improvements to the room’s ventilation system. As part of the project, nearby nursing facilities were upgraded.

To make the room comfortable and enjoyable for children, we provided child-sized furniture, toys, and a mat and foam ring for infants and toddlers. We also stocked the room with a “take-a-book, leave-a-book” library of children’s books. We chose this model in order to avoid the complications of creating a special location in the catalog that is only accessible to users of the Family Study Space.

**MANAGING THE SPACE**
We developed the Family Study Space usage policies so that the space could be self-monitored, flexible, and operated in accordance with existing library and university policies. In the process of establishing the policies, we consulted with other libraries with similar spaces to learn from their experiences. We discovered that there were a wide variety of models for access and use. Some libraries required that their family room be reserved in advance, while others were first-come, first-served. We also found that there were some rooms that were child-friendly, but not reserved for the exclusive use of parenting students.

The library decided that the room would be for the sole-use of the University of Toronto affiliated caregivers (students, staff, and faculty) with children 12 and under, who would be required to register for an access fob. The room would be available for use on a first-come, first-served basis at any time that the library was open. In order to avoid creating additional barriers to access, reservations are not required. The room policy emphasized that children were not to be left unattended in the room or anywhere in the library, and that caregivers are solely responsible for their children.

Since the room is unstaffed and self-monitored, signage was posted to communicate room use policies, including how to report maintenance issues and deal with emergencies. Cleaning wipes are available in the room to encourage users to clean up small spills on tables and desks.

Registration and fob access is managed by the department responsible for the graduate student carrels in the library. The carrel office processes the registration applications, confirms eligibility status and distributes the fobs. Users can register online at any time of the year.

We will conduct both formal and informal assessment of the space to make service improvements and evaluate the success of the room. Starting in the next academic year, we will offer research consultations with librarians in the space, in response to
According to the University of Toronto’s Family Care Office, student parents usually face three main obstacles while pursuing their post-secondary education: childcare, financial issues, and time management. Family-friendly study spaces in academic libraries address all three of these concerns for parenting students, while also supporting the research, teaching, and learning missions of higher education institutions.

CONCLUSION
According to the University of Toronto’s Family Care Office, student parents usually face three main obstacles while pursuing their post-secondary education: childcare, financial issues, and time management. Family-friendly study spaces in academic libraries address all three of these concerns for parenting students, while also supporting the research, teaching, and learning missions of higher education institutions.

The library received a comment from a user who called the Family Study Space, a “very important and much needed space as child care is so scarce and expensive. I can bring my kid and get some work done.” Family-friendly study spaces unequivocally communicate the message that you can be a student and a parent. Welcoming the whole student to the library and the university increases inclusion. Creating family-friendly spaces helps libraries further their mission to provide equitable access to information for their communities.


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Notes
INTRODUCTION
In the Digital Age of instantaneous communication, when disasters hit, they hit us all. The fall and winter of 2017-18 brought a literal and figurative deluge to our screens with the arrival of hurricanes Harvey, Irma, and Maria to the United States. Within moments of each event, websites and news feeds filled with images of destruction and cries for help. The use of social media to bring awareness to victims’ situations through hashtags and directly tagging first responders underscores the importance of this technological tool in the twenty-first century. In fact, the ubiquity of social media in documenting Hurricane Harvey have led some to believe that it should be considered the first “social media storm.” However, many of the most popular social media platforms have existed since the mid-2000s and have already been used to communicate disaster-related information since well before Harvey reached the United States’ shores. Some of social media’s earliest adapters were even public libraries who had the resources and means to use this information technology as a method of connecting with their communities.

Why should social media matter to public libraries in times of disaster? As a physical manifestation of information access, the public library maintains a relationship with its community that varies across regions, time, and context. Currently, the public library as an entity is in an interventionist period, according to Jaeger’s article “Libraries, Policy, and Politics in a Democracy: Four Historical Epochs,” where its roles and responsibilities are heavily influenced by outside factors, especially the federal government. From tax forms to permits to insurance claims, the government encourages people to use the public library to find and use information necessary to navigate American society. Public demand for accessing government and other resources is especially apparent after natural disasters, which, due to their unpredictable nature, can heighten community uncertainty and the need for credible and reliable information. Public libraries can meet this information need by using social media as one strategy to assess and provide resources in real time.

When Hurricane Sandy landed on New Jersey’s shore on October 29, 2012, it prompted a new era for societal response to emergencies and community needs. Due to the hurricane’s trajectory into densely populated areas of the American northeast and subsequent widespread flooding, Hurricane Sandy was the deadliest storm of 2012. With initial estimated recovery costs of up to $50 billion, the degree of damage to buildings, infrastructure, and endangerment of people’s safety made swift and coordinated communication paramount in response efforts. Thus, the aftermath of Hurricane Sandy resulted in federal agencies using social media for the first time in coordinating and implementing disaster response. As community-based service providers, many public libraries responded to the hurricane by sharing available resources and services with patrons.

However, few studies explicitly examine the use of social media as a library tool to support their community.
This paper explores the role of social media and its impact on public library services in response to Hurricane Sandy as a measure of libraries using digital mediums to support their communities. Using Twitter posts from three separate public libraries impacted by the hurricane, their content is analyzed and compared to reported library services after the storm. The analysis will then be used to discuss the use of social media as a library tool and recommendations for social media implementation in future disaster response.

BACKGROUND INFORMATION
Library Response to Disasters
According to the Institute of Museum and Library Services’ Public Library Data from 2009 to 2011, over half of all public libraries are located within declared “disaster counties.” This value implicates disaster response as an important topic within public librarianship discourse. In addition to assessing damages to buildings and collections, libraries must also meet the needs of its community. Information needs are heightened after a disaster, as the destruction results in information uncertainty and loss of important resources such as power and telecommunication services. Consistent and increased use of public libraries is not unusual post-disaster. For example, despite 35 percent of Louisiana libraries being closed after Hurricane Katrina in 2004, a study found that overall library visitor counts only decreased by 1 percent. Frequent use of library resources after a disaster can be attributed to the library’s free and low-cost resources, as well as the institution’s reputation as a source for reliable and credible information.

Libraries also extend their resources and services beyond their walls. Library bookmobiles and delivery programs provide services to those who are unable to physically visit the library. Some libraries use their skills in information management and communication to assist local disaster preparedness groups and response teams. In 2011, the Federal Emergency Management Agency (FEMA) declared public libraries eligible for temporary relocation funds in the event of an emergency, a distinction once limited to first responders, hospitals, utilities, and schools. Former Executive Director of the American Library Association’s (ALA) Washington Office, Emily Sheketoff, stated such a distinction recognizes libraries as “essential community organizations.” In context with Jaeger’s interventionist period, it benefits libraries and government agencies alike to have libraries open to serve communities after a disaster.

In the aftermath of Hurricane Sandy, communities suffered from varying degrees of damage, such as flooding, power outages, debris, and downed trees. The impact of the storm drove many community members to their local libraries to seek shelter, charge their electronics, file insurance claims and other e-government forms, drop off or pick up donations, and obtain entertainment. Despite the many stories of libraries serving disaster victims and working with first responders, such actions have yet to be translated into widespread library policy and procedures. ALA provides a “Disaster Preparedness and Recovery” resources webpage, but it primarily focuses on addressing material and structural needs after a disaster, such as mitigating water damage to collections. Other studies also note a majority of library disaster response literature remains focused on protecting materials. Such a limited perspective is highlighted in a national survey in which the majority of librarian respondents believed protecting library materials and performing daily services were their primary goals in the event of an emergency. As a result, library communication with the community and local organizations remains a relatively unexplored subject in context with disaster response. While trade journals and websites publish stories of individual libraries serving their communities, formal studies and research are comparatively scarce. With the widespread use of technology and the Internet, one method of communication stands out as an important tool for library outreach and study: social media.

Disaster Response through Social Media
As information providers and advocates of communication technology, libraries should use social media to connect with their communities. Although libraries were early adopters of social media prior to Hurricane Sandy, their use of these tools tends to focus on one-way information sharing instead of a dialogue with their community. Social media in context of disaster response may upend traditional library social media use, which is why this topic needs further examination.

![Figure 1. Number of tweets per day by library.](Image 36x528 to 576x756)
Social media coupled with mobile technology has created a society in which information sharing and communication are constant and instantaneous. Since social networking is a relatively new form of media, formal studies on its impact on social behaviors have only come about in the last decade. Within this young body of literature, however, social media use in disaster response and recovery is a popular topic for researchers, organizations, and federal agencies. Alexander claims that social media provides the following benefits during disaster response:

- Provides an outlet to listen and share thoughts, emotions, opinions;
- Monitors a situation;
- Integrates social media into emergency plans;
- Crowdsources information;
- Creates social cohesion and promoting therapeutic initiatives;
- Furthers causes; and
- Creates research data.

Such a comprehensive list is beneficial to this study because it provides a framework through which library social media use can be examined. These benefits stem from the sharing of information with people or entities, which is a large component of library disaster response, as discussed in the previous section. Using Alexander’s list as a reference, the three main benefits this study examines in context with library disaster response are:

1. Monitors a situation. A survey of library patrons impacted by the 2015 South Carolina floods revealed all respondents used social media to learn about the flooding and impacted areas. People now frequently use social media to get updates on situations, whether they were directly or indirectly impacted by the natural disaster itself. Disaster response groups also monitor social media feeds to assess and allocate resources to those in need. Libraries can use social media feeds to assess resources and services use, plan outreach opportunities, and even inform the public about its own status during the disaster.

2. Integrates social media into emergency plans. Social media is a low-cost and effective way to coordinate disaster response between organizations and people. Much like bookmobiles, social media serves as outreach for librarians to improve service accessibility. Librarians can use platforms like Twitter and Facebook to help coordinate their activities and services alongside with other responders in the community. Having an established plan of action where the library’s role and responsibilities are clearly outlined will result in more effective service and efficient response to community needs.

3. Creates social cohesion and promoting therapeutic initiatives. In alignment with the library’s mission of creating and serving communities, social media can act as an extra method of fostering connections in times of need. Disaster victims can take advantage of social media’s speed and ubiquity to check in with family, tell them they are safe, and participate in relief efforts. Social cohesion through platforms such as Twitter can also create participatory discourse between people and organizations. For example, then-FEMA administrator Chris Furgate’s recommendation to read to children during the hurricane prompted the hashtag #StormReads to trend on Twitter, as many accounts—libraries included—shared their recommended titles.

Library use of social media can also address growing concerns about rumors and misinformation spread during disasters. As providers of reliable and accurate information, libraries help establish source credibility and push more accurate resources to misinformation and unaware community members. Although there is a substantial amount of research focused on libraries responding to disasters and social media use during disasters separately, there is a gap in library science literature examining social media as a method of library disaster response. Interestingly, formal studies that mention library disaster response note an explicit absence of social media as a form of emergency communication. Despite the current dearth, library social media studies can develop quickly thanks to the abundant amount of data available on social media platforms. As libraries continue to respond to disasters, they will require more deliberate and planned use of social media as a communication tool. Such a need demands a closer examination of how libraries have historically used social media during disasters.

### CASE STUDIES: THREE PUBLIC LIBRARIES AND TWITTER

This study will examine the social media feeds of three public libraries during and immediately after Hurricane Sandy landed on the northeastern coast as a measure of social media’s impact on communication and information-sharing amongst libraries, patrons, and first responders. Due to its frequent use for sharing up-to-date information, Twitter was the selected social media platform to study. The public library systems were selected for this analysis based on their varying characteristics and available literature describing their actions after the hurricane. New York Public Library (NYPL, @NYPL), Princeton Public Library (PPL, @PrincetonPPL), and Queens Library (QL, @QueensLibrary) have Twitter accounts that were at least two years old by October 2012. All accounts were active during the time period of interest, although they were closed when Hurricane Sandy landed. NYPL and QL were closed an additional two days due to damages to several branch libraries.

These library systems serve varied communities. NYPL and QL are urban libraries located in New York City, with 91 and 62 branches respectively, and PPL is a one branch library located in downtown Princeton, New Jersey. The larger library systems

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### Table 1. Categories organized by social media benefits

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Twitter Content Categories</th>
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<tbody>
<tr>
<td>Monitoring a situation</td>
<td>• Hurricane information&lt;br&gt;• Library event/service related to hurricane&lt;br&gt;• Replies</td>
</tr>
<tr>
<td>Integrating social media into emergency plans</td>
<td>• Library policies&lt;br&gt;• Library status&lt;br&gt;• Non-library event/service related to hurricane</td>
</tr>
<tr>
<td>Creating social cohesion and promoting therapeutic initiatives</td>
<td>• Library event/service related to hurricane&lt;br&gt;• Library event/service NOT related to hurricane&lt;br&gt;• Non-library event/service related to hurricane&lt;br&gt;• Replies&lt;br&gt;• Social interactions</td>
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reported flooding and power outages at several branches from the hurricane, while
PPL sustained no structural or internal damages. 
However, all library systems were in communities where large numbers of
households lost electricity and Internet access, and sustained damages from fallen
trees and flooding. 
The library systems were mentioned in news reports for services to library patrons affected by the storm, including providing charging stations for electronics, helping people fill out FEMA insurance forms, running programs for children and adults, and having public computers and wireless connections to access the Internet. The libraries’ coupled use of Twitter and active provision of disaster response services make them ideal candidates for examining the correlation between the two activities.

METHODOLOGY
This study used a filtered search on Twitter to identify tweets from each library’s feed within the time period of interest. Within searches, each tweet was recorded and categorized based on content and message format. A single tweet could have more than one category. Common content subcategories were identified to improve analysis. Defined categories are as follows:

- Hurricane Information: Information on the hurricane's status and impact from news and government agencies.
- Library Policies: Information on library policies.
- Library Policies, Renewals/Fines: Information on renewals and fines during the studied time period.
- Library Status: Information on library branch closures.
- Library Event/Service Related to Hurricane: Event or service specifically planned in response to hurricane.
- Library Event/Service NOT Related to Hurricane: Regular library programming; included event/service cancellations as an indirect/direct result of hurricane.
- Non-Library Event/Service Related to Hurricane: Information on non-library sponsored events and services provided in response to the hurricane.
- Replies: A publicly posted message from the library to another Twitter user.
- Social Interactions: Non-informative and informative tweets aimed at conversing with people or organizations in a social manner.

Selected categories were then associated with a corresponding benefit from three of Alexander’s defined benefits (table 1). After categorizing, the collected data was organized for analysis and comparison.

RESULTS
From October 29-31, each library used Twitter regularly to provide information or to communicate with library followers. Tweet frequencies were counted and compared over the five-day period across libraries (figure 1). While NYPL and QL averaged almost 11 tweets per day, PPL had nearly double their numbers, at about 18 tweets per day. NYPL and QL had a generally increasing trendline in tweets, while PPL’s Twitter use fluctuated greatly. NYPL and QL’s low tweet count during the studied time frame may be attributed to library-wide closures, although only QL’s tweet count increased significantly upon reopening.

Content analysis illustrated variations in Twitter use across all three libraries (figure 2). NYPL tweeted the most about their library status and renewal/fine policy, with 21 and 17 tweets, respectively. PPL focused more on advertising library events and services such as electrical outlets, heat, Internet, and entertainment. They also used Twitter heavily for social interactions, 35 percent of PPL’s 112 tweets, including asking questions, recommending books, thanking concerned patrons, and even apologizing for retweeting too many news articles about the hurricane. QL’s Twitter use was more of a mix, often posting about library status and socially interacting with other Twitter users.

Each library also differed in least common content tweeted. NYPL had the fewest tweets about the hurricane, non-library services and events related to the hurricane, other library policies, and social interactions. PPL also had few tweets with information about the hurricane and rarely tweeted about fines and renewals. QL had no tweets about the hurricane, nor did they tweet about any library events or programs that were unrelated to their disaster response.

DISCUSSION
The data collected was analyzed to determine whether each library fulfilled the three identified benefits of social media that directly relate to the library’s mission of information access and community building: monitoring a situation, integrating social media into emergency plans, and creating social cohesion and promoting therapeutic initiatives. Each library’s consistent responses to Twitter users, status updates, and information about library services illustrates they all monitored their communities’ situations and responded accordingly through services and programs, as evidenced in news reports. Libraries also used Twitter to engage with others and create a social network of library patrons and local institutions. Based on the lack of information about the storm itself and few recommendations for non-library disaster response group resources, it is not apparent libraries integrated social media as part of their emergency policy and procedures. This also resulted in a dissonance between library action and their online communication. One notable example: many news reports described librarians aiding patrons with
When disaster strikes, many communities exhibit a great need for resources and information. Despite libraries providing much needed service and resources to community members after natural disasters, their use of social media platforms as a tool remains overlooked.

The lack of a coordinated effort perhaps can be explained in two parts. First, as no two disasters are alike, library response is often a direct reaction to the event and damages to their institution and community. A busy library would logically place social media communication and coordination as a lower priority than other immediate, tangible needs. Second, librarians may not make a concerted effort to use social media if they are trained to prioritize protecting library collections and conducting regular services. While digital and outreach services such as bookmobiles have been common components of libraries, there is still a noticeable gap in libraries extending these same services using online tools. The libraries in this study used social media as a part of their disaster response, but the lack of planning resulted in each library’s Twitter feed acting more as a “triage center,” providing basic assistance as the need arose, rather than an extension of in-house services.

TAKEAWAYS AND FURTHER RESEARCH
While these libraries provided much needed services in the aftermath of Hurricane Sandy, their implementation of social media as a communication and information-sharing tool illustrates opportunities to develop more coordinated efforts. As library presence on and use of social media continues to grow, it should be considered as a necessary component of library disaster response and collaboration with other government agencies and first responders. While libraries are qualified for FEMA funding, it is uncertain that local first responder groups are aware of the services and benefits libraries provide post-disaster at all. As of 2013, the U.S. Department of Homeland Security’s Virtual Social Media Working Group did not include any library organizations, which leaves libraries out of crucial conversations in designing comprehensive disaster response plans.

In an effort to participate in productive discourse, librarians also need to improve their social media use to better align with their practice when serving distressed communities. While the exact reasons for librarians’ lack of effective social media use in disaster response remains speculative, other research has shown that training opportunities for social media use in libraries remain scarce and not very effective. Since Hurricane Sandy, social media has only grown as a powerful tool for people and communities, rendering it an essential skill for librarians today. This should motivate librarians, library associations, and other professional groups to consider developing effective training and workshops geared towards intentional use of social media.

Despite its power, social media should be seen as a complementary tool to enhance information services for community members. It will optimize the library’s reach, but it cannot completely replace current methods of outreach, nor should it. This is especially important when considering who benefits the most from libraries, many of whom do not necessarily have consistent access to social media. Social media use varies across age, socioeconomic status, digital access, and education levels, making it important for librarians to consider whose information needs are and are not being met online. Considering such limitations, learning impactful social media skills and creating a support network amongst disaster response groups will enable libraries to effectively develop outreach strategies and improve disaster response services.

The discussion and takeaways highlight the necessity for further research on social media use in library disaster response. As the history of library development and service informs the direction of libraries today, so too should historic uses of social media as a library service tool guide future work. Continuing research may include case studies of public library response to recent disasters, which would provide better insight into the developing use of social media. The identified patterns and strengths can be used to guide future work in incorporating effective social media policies and protocols in library disaster plans. Considering social media usage by first responders and federal agencies, future research should also include a closer examination of relationships between public libraries, first responders, and disaster information providers in improving coordinated response efforts.

CONCLUSION
When disaster strikes, many communities exhibit a great need for resources and information. Despite libraries providing much needed service and resources to community members after natural disasters, their use of social media platforms as a tool remains overlooked. This study examines historical use of social media as a communication and service tool between libraries, community members, and disaster response groups in the aftermath of Hurricane Sandy. The effectiveness of social media use was evaluated using Alexander’s review of social media benefits and compared with descriptions of post-Sandy library resources and services described in the literature. The study found social media use to be highly variable based on content and correlations with reported in-house library services. There was no sign of a coordinated effort with other disaster response groups, and the primary objective of their Twitter accounts was connecting with patrons and other organizations through social interactions. Improvements to social media use could be achieved through intentional coordination with first responders, directed training, and evaluating social media’s strengths and limitations in disaster response.

If libraries wish to continue providing pertinent information, they need to adapt to communication methods used by their community. With social media’s strong...
Virtual Social Media Working Group and DHS First Responders Group.

11 Kelley
15 Bishop and Veil, “Public Libraries as Post-Crisis Information Hubs.”
17 Bishop and Veil, “Public Libraries as Post-Crisis Information Hubs.”
19 Bishop and Veil, “Public Libraries as Post-Crisis Information Hubs.”
22 Alexander, “Social Media in Disaster Risk Reduction.”
23 Liu et al., “Social Media as a Tool.”
24 Alexander, “Social Media in Disaster Risk Reduction.”
25 Bishop and Veil, “Public Libraries as Post-Crisis Information Hubs.”
26 Alexander, “Social Media in Disaster Risk Reduction.”
27 Bayliss, Vale, and Dar, “Libraries Respond.”
28 Liu et al., “Social Media as a Tool.”
29 Liu et al.; Zach, “What Do I Do in an Emergency?”
33 Bayliss, Vale, and Dar, “Libraries Respond.”
35 Alexander, “Social Media in Disaster Risk Reduction.”
38 Zach, “What Do I Do in an Emergency?”
39 Virtual Social Media Working Group and DHS First Responders Group, “Lessons Learned.”
40 Rachel N. Simons, Melissa G. Ocepek, and Lecia Rose, “For Disaster Preparedness.”
“I didn’t realize that I needed books that often” » Demonstrating Library Value during the Temporary Closure of an Academic Branch Library

BY RACHAEL ELROD

INTRODUCTION
Spurred by tight academic budgets and doubts about library relevancy in the age of the internet, demonstrating academic library value has become a core concern. The author uses a form of qualitative research known as narrative inquiry to view the temporary closure of an academic branch library from the viewpoint of students who used that space prior to its closure and thus provides a compelling argument for the value of the branch library. In narrative inquiry, the researcher places value on the knowledge that each person holds and which is transferred via interviews or storytelling.

A branch library at a large university advertised a temporary closure due to renovation during the Fall 2017 semester. The building remained closed during the following Spring and Summer semesters. Twelve students, both undergraduate and graduate, participated in one-on-one interviews consisting of a series of semi-structured questions about their experiences, feelings, and attitudes related to the library closure.

OVERVIEW
While literature exists on the impact of a permanent academic library closure (Murray, 2014; Lange, Lannon, & McKinnon, 2014; Hayden, 2011, and Albanese, 2007) little to no research exists on how a temporary closure of an academic branch library impacts the student experience. This study uses the library’s temporary closure to fill a gap in the literature. Using this approach, the paper provides clear evidence of library value.

As mentioned, a branch library at a large research university in the southeastern United States closed temporarily for a major renovation. The closure of this library began immediately after final exams in December 2017 with an anticipated reopening date in August 2018. During this time, the library was completely closed to the public. The library’s faculty and staff were relocated to other campus libraries and the majority of the general collection was inaccessible. Only Course reserves and current journals were available for use at the main campus library. The branch library, known as the Education Library, saw over 123,000 visitors during the 2016-2017 academic year. The Education Library is open to all students on campus, however, it primarily serves students and faculty of the College of Education (COE) which is approximately a 15-minute walk to other libraries on campus. The latest estimates provided by the COE indicate that total enrollment for all course sections is 4,231 total undergraduate and graduate students with 100 full-time faculty members and 98 additional staff members (https://education.ufl.edu/facts/, 2018). The Education Library is physically set apart from the rest of campus by a busy road but is in close proximity to sororities and student apartments.

At the beginning of the Fall semester before the renovation, the author and other staff members of the Education Library created and maintained a renovation LibGuide to help answer questions about the renovation process and provide updates and photos once the renovation began. In addition, posters were made and placed around the COE directing patrons to the LibGuide and links to the LibGuide were sent monthly via the Education Library’s Facebook and Twitter accounts, as well as through Listservs that reached all faculty, staff, and students of the COE. Announcements were made in two locations within the COE on communication monitors. The author was interested in learning about the experiences during the renovation period of students who had regularly visited the Education Library prior to renovation.

The author hypothesized that the temporary closure of the Education Library would have a negative impact on the scholarly efforts of students due to the lack of access to print materials and the distance from the main campus. In addition, the author hypothesized that students would report that the LibGuides are an important resource for information on the renovation.

LITERATURE REVIEW
Most studies on library renovations and library closures tend to discuss permanent library closures as opposed to temporary closures as well as various approaches to measure library value. Three themes in the literature that are addressed here are: the
use of narrative inquiry in library literature, the common themes seen in the literature about library renovations, and the literature surrounding the value of academic libraries.

**Narrative Inquiry**

Narrative inquiry is a type of basic qualitative research that asks participants to explain how they felt and what they were thinking during a particular phenomenon, in this case during a library closure. Narrative inquiry is often conducted through interviews with participants who experienced a particular phenomenon but can also include the analysis of artifacts from the phenomenon such as diaries and photographs. By utilizing the narrative inquiry approach, researchers can understand the individual’s understanding of a phenomenon but may also be able to infer meaning to the culture of the individual as well. Very few articles in library literature take advantage of narrative inquiry to study library-related phenomenon.

Most of the articles in library literature use the narrative inquiry approach to understand the perspective of librarians and library students. Bugg (2015) used narrative inquiry to examine the retention and advancement of minority academic librarians working as middle managers while Frye (2018) utilized a modified narrative inquiry approach to explore the experiences of new school librarians. Mattern, Jeng, He, Lyon, & Brenner (2015) used a visual narrative inquiry approach to study the visual conceptualization of the research process among those early in their careers. Clark (2014) used a narrative inquiry approach to better understand the search process of two mature students over the course of a semester. Farmer (2004) used narrative inquiry to assess the student experience in a library media management course. However, searches of Library Literature & Information Full Text and Library Information Science & Technology Abstracts found no articles that specifically use a narrative inquiry research method to investigate patron feedback on the library itself.

**Library Closures**

While articles discussing the planning and implementation of library renovations are plentiful, relatively few directly explore how the renovations impact patrons. Common themes in these articles include: the library’s approach to renovation, student perceptions after a renovation, and library usage.

In a news article in Library Journal, Andrew Albanese discusses the three-year renovation and closure of the main library at Ohio State University (Albanese, 2007). This complex renovation involved moving library materials to four different locations on campus and providing a free bus service to other locations as well as free scanning, electronic delivery, and document delivery. Albanese informally interviewed two students who were studying at one of the temporary locations who briefly spoke of the frustration and confusion of the multifaceted project, including the disappointment that they would not be there when the renovation was complete. Linda Teel conducted patron interviews as part of an assessment to renovate the Curriculum Materials Center at East Carolina University (Teel, 2017). These interviews consisted of open-ended structured questions that were video recorded to gather opinions on the completed renovation changes. In addition to patron interviews, the study included surveys, LibQUAL+® results, and the collection of statistical data.

In an effort to study how students use physical spaces in the library, Manley and Garczynski examined how the closure of a coffee shop for renovation within the library affected usage (Manley & Garczynski, 2018). They found that having the coffee shop open increased usage by 10%. None of these studies however, examines the impact of a library closure from the viewpoint of the student experience using a qualitative approach.

**Library Value**

Literature on determining the value of academic libraries is more common. The Association of College and Research Libraries’ (ACRL) Value of Academic Libraries Report states that academic librarians should use assessment methods such as interviews and focus groups that allow them to represent the user experience (ACRL, 2010). The report also states that academic librarians should apply new assessment methods to complement existing approaches, by utilizing the narrative inquiry approach this article does that.

An analysis by Schwieder and Hinchliffe (2018) shows that the structure of literature on academic library value tends to fall into several basic categories including small group studies, single institution studies, and multi-institution studies. This study falls into the single institution category which focuses on understanding the user group at a single institution and in this case a single branch library of an institution.

The literature provides some documentation of how permanent library closures impact students but no studies have been conducted on how a temporary closure affects the student experience. This study aims to fill a gap in the literature by providing a narrative inquiry approach to understanding the student experience during the temporary closure of a branch library. It also encourages the use of narrative inquiry as a method of research for the field of librarianship as this method is not often used in the library literature but has the opportunity to help researchers better understand the experience of the library user.

**METHODOLOGY**

A qualitative research methodology known as narrative inquiry is used to better understand the experiences, thoughts, behaviors, and feelings of patrons of the Education Library during the closure. The use of narrative inquiry is important when collecting first-hand information from individuals involved with a particular event, in this case the closure of a branch library. The first step the researcher must take before collecting data is to establish the research question and identify the purpose of the study (Merrim & Tisdell, 2016). The data in narrative inquiry are the stories of participants. The primary method of data collection is through conducting interviews with participants who have experienced the particular phenomenon of interest to the researcher.

The author gathered information through one-on-one interviews with 12 students who used the library prior to its renovation. Ten interviews were conducted in-person at the

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**Table 1. Education Library Renovation Timeline**

<table>
<thead>
<tr>
<th>Date Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug. - Dec. 2017</td>
<td>Announcements made through COE listservs, library and COE websites, library and COE social media, and posters around the COE about the upcoming renovation and library closure</td>
</tr>
<tr>
<td>Dec. 17, 2017</td>
<td>Education Library closed to the public</td>
</tr>
<tr>
<td>Jan. 2018</td>
<td>Education Library Course Reserves and Journals available for check-out from main campus library</td>
</tr>
<tr>
<td>March - April 2018</td>
<td>Participant interviews</td>
</tr>
</tbody>
</table>
Participants

Students were recruited to participate in the study through an email listserv targeting students within the COE, through social media, and by word-of-mouth. Each participant was asked at the start of the interview how frequently they visited the Education Library prior to closure with responses ranging from a few times a month to almost daily. The recruitment advertised that the interview would take no more than 60 minutes and that upon completion they would receive a $10 Starbucks gift certificate provided by the researcher.

Participants included 12 students: 6 undergraduates and 6 graduate students. Eleven participants were education majors and one was a non-education major who lived in close proximity to the branch library. All participants are identified using pseudonyms as seen in Table 2. The primary method of analyzing narrative inquiry data is through a process called thematic coding. After the researcher gathered the various stories related to the topic of interest, the data was organized into themes in order to add meaning and insight. Coding was conducted manually by the researcher by creating a codebook using an Excel spreadsheet to analyze participant data collected from the 12 interviews. Using this method, the researcher organized the spreadsheet into columns that provided a summary of the data and relationships between the various data points.

When coding data in narrative inquiry, the researcher often creates columns to identify broad categories, the relationships between them, and labels them in ways that will help guide them in analyzing the data as it relates to the research question (Merriam & Tisdell, 2016). For example, in this study, many participants who mentioned the lighting would be labeled as “lighting,” a participant who mentioned the comfort of the furniture would be labeled as “furniture.” However, these would both be labeled more broadly as “ambience.” The transcripts were thoroughly examined by the researcher to discover the categories and relationships between them for analysis purposes.

Table 2. Participants

<table>
<thead>
<tr>
<th>Name (pseudonym)</th>
<th>Year in school</th>
<th>Major</th>
<th>Frequency of visits to the Education Library</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alice</td>
<td>Doctoral</td>
<td>ESOL</td>
<td>A few times a month</td>
</tr>
<tr>
<td>Beatrice</td>
<td>Doctoral</td>
<td>Curriculum and Instruction</td>
<td>A few times a week</td>
</tr>
<tr>
<td>Charlotte</td>
<td>Doctoral</td>
<td>Higher Education Administration</td>
<td>Almost on a daily basis</td>
</tr>
<tr>
<td>Diana</td>
<td>Masters</td>
<td>Special Education</td>
<td>Once or twice a week</td>
</tr>
<tr>
<td>Elizabeth</td>
<td>Masters</td>
<td>Counselor Education</td>
<td>Once or twice a week</td>
</tr>
<tr>
<td>Frances</td>
<td>Masters</td>
<td>Elementary Education</td>
<td>Two or three times a month</td>
</tr>
<tr>
<td>Grace</td>
<td>Senior</td>
<td>Elementary Education</td>
<td>A few times a week</td>
</tr>
<tr>
<td>Helen</td>
<td>Senior</td>
<td>Elementary Education</td>
<td>A few times a week</td>
</tr>
<tr>
<td>Jane</td>
<td>Junior</td>
<td>Elementary Education</td>
<td>Two to three times a week</td>
</tr>
<tr>
<td>Kate</td>
<td>Junior</td>
<td>Economics</td>
<td>Every single day</td>
</tr>
<tr>
<td>Louise</td>
<td>Junior</td>
<td>Elementary Education and Psychology</td>
<td>Several times a week</td>
</tr>
<tr>
<td>Mary</td>
<td>Sophomore</td>
<td>Elementary Education</td>
<td>Almost on a daily basis</td>
</tr>
</tbody>
</table>

FINDINGS

All the students interviewed for this study reported being inconvenienced in some way by the renovation. The most cited inconveniences were having to request materials through interlibrary loan and not having access to the stacks; not having access to technology such as printers and scanners; impact of the closure on academic coursework; having to travel further to get to another study location; and not having a convenient place to just hang out in between classes. For the purposes of this paper the author has categorized each of these under the following themes: access to materials, access to technology, productive study environment, and location and place.

Access to Materials

Prior to the renovation, the Education Library weeded its collection heavily, sending many books to an off-site storage facility; these books were available for delivery through the library catalog. Due to the size of the remaining collection, the rest of the materials were stored at a warehouse outside of town and were unavailable to students. The course reserves and current journals were both smaller collections that were able to be housed within the main library. Every effort was made through the LibGuide, signage throughout the COE, and email announcements to make students and faculty aware of the upcoming limited access to materials during the renovation. Several students mentioned the inconvenience of not having ready access to books from the Education Library. They described having to either go to the main library to get their course reserves or having to request interlibrary loan items. In some cases, they purchased textbooks they normally would have checked out of the library because they did not know that the course reserves had been moved to the main library. Alice, a doctoral student studying English as a Second Language, stated:

I can’t get the books I need sooner and so some of the books I needed right ahead I just had to give up… [if] it was at the Education Library I’d just like get it today but I have to request interlibrary loan and then it takes a week to get it and so that’s been a big delay. I don’t get to read the book when I have the feeling like I need it right now.

In addition, Alice explained the inconvenience of “traveling back and forth” to get course reserves. She said, “If it was at the Education Library it would have been so much easier. Just go down there and read the book or just make a quick scan. This semester was a little bit tough in that way.” She also stated:

I guess I didn’t realize that I needed books that often. When the Education Library was there, I guess I just usually go on my way Um, like, this semester I think at least five books or more were located at the Education Library that I have no longer access to get to them, so I had to go through interlibrary loan which takes longer and I have to walk all the way to [the main library] and return it.

Beatrice stated that she finds it easier to use Amazon and buy the books she needs.
now. She said she even had an argument with her husband about it. “My husband’s yelling at me because I keep buying books. He’s like why do you keep buying books for? And I’m like, “But I don’t have these! I need these!”

Charlotte, a Doctoral student studying Higher Education Administration, explained that the main reason she used to frequent the Education Library was to check out print books. She said “The fact that I can inter-library loan is helpful, but again, it’s more inconvenient than it is helpful” because you have to wait for the item to arrive and you do not get the item when you need it.

Frances, a master’s student in the Elementary Education program, stated that she did not know that the course reserves were available at the main campus library and that she bought her textbooks, unlike in previous semesters, or came up with other unique ways to access her course materials. She stated that she relies “on online [copies] or if a friend has it, have them like send me pictures or something.” After being told that course reserves were still available at the main library, she stated that she probably still would not have had time to go to that library to check them out because of the distance and her busy schedule.

Louise stated that she previously checked out course reserves from the Education Library in the past but this semester it has been “stressful” due to the distance of having to walk to the main library to get them. So, she said “this semester I kind of had to share textbooks with friends or look for a little bit cheaper cause textbooks can be really expensive.”

In hindsight, the Education Library could have provided a book return somewhere within the COE that could be checked daily to make it easier on students needing to return items such as Course Reserves and other materials. This could have even been an informal system of a mail bin in the COE’s main office that could be picked up by courier and returned to the main library. While students would still have had to walk to the main library to pick up materials, this would perhaps decrease their need to walk to the main library by half.

While the library did purchase more electronic books during the renovation this obviously cannot make up for the fact that the majority of the print collection was unavailable. Because this was a temporary closure, the library did not explore other online approaches. Instead, choosing to utilize interlibrary loan for those materials that were unavailable for the duration of the renovation.

Access to Technology

The Education Library provides technology including public computers, printing, scanning, iPads for checkout, an ADA adaptive/assistive computer workstation, and 3D printing. While COE faculty and staff had access to computers, printers, and scanners in their offices, students had no other place in close proximity to use these basic technologies.

A few students gave responses indicating that it has been inconvenient to not have close access to technology such as a printer and/or scanner. Most students said that they now go to the Student Union to print because they offer free printing even though it is located on the opposite side of campus.

Charlotte, a grad student who also teaches a class, reported that she changed one of her course assignments due to the lack of a nearby printer. “I usually give them a weekly reflection assignment and I usually ask them to turn it in hard copy and a lot of students are having trouble printing them because the library’s closed. So, I had to end up changing my assignment in a different way so they would just turn in through Canvas. And then I will just print them out myself. Because I didn’t want them to be so inconveniented by the renovation too.”

Diana, a master’s student studying Special Education, stated that in the past she had not needed the library’s scanner but this semester she could have used it quite a bit saying, “I miss the scanner because now I need it more but I can’t do it.” She continued that being an intern teacher requires “A lot of signed forms…so I need to scan” but her school does not have a scanner she can use.

Elizabeth is currently working at a local school for her degree program. She comes to campus sometimes after school lets out and is disappointed that there is not a place to print or scan. She said, “mainly the two things I go to the library for is for printing or scanning.” When asked what she has found most unhelpful with the library being closed she replied, “I think the fact that if I did have extra time between my class and my internship but I can’t go there just to print something.”

Kate stated that she does not have easy access to printing since the Education Library has been closed. She lamented, “Not having the printing I would have to say has been the biggest pain in the butt.” She said that before the renovation she would usually come to the library in the morning before class to print out her assignments that were due that day and now, she has to travel farther to print her assignments.

One change we could have made to address the lack of technology would be to coordinate with the COE to provide a printer and scanner somewhere within the COE for students to use during the renovation. Due to the limited space issues previously mentioned this would have been difficult but librarians involved in similar projects in the future may want to consider this in their planning. As most students bring laptops with them to campus, the computers are not as big of a barrier for most students. The 3D printer, ADA technology, and iPads saw low use in the past and other libraries on campus offer these for those who might need them. However, leaving the printers and scanners at the COE would have been useful to the students.

Study Habits

The Education Library is often described as the quiet library on campus, a place where studying can take place without distractions. Many students in the interview described the Education Library as a place where only quiet whispers and keyboard typing can be heard as a desirable feature of the space. Mary, a sophomore Elementary Education major, stated that the Education Library provides a place that is “way quieter and I can focus more attention on my work and my research.”

Alice explained that she and her friends do not get as much studying done as before the renovation because they must travel to another library, stating, “We know we could get more studying done if we were able to just right after class go to a library that’s near us.” Helen, a senior Elementary Education major, stated that the Education Library closure has “definitely taken a toll on like, my studying habits.” She says that because the other libraries on campus are further away “it takes a lot for me to get up and go.” She said she tried going to other libraries on campus but that “it gets a lot more difficult to find a space and time when you’re not going to be like, constantly distracted.”

Jane, a junior studying Elementary Education, described her current study situation as “limited.” She said that she now prefers to study at home but that there are a lot of distractions at home that keep her from studying as well as she did in the Education
location and place

the education library is physically separated from the main campus by a busy road, however many students live nearby with sororities and in other student housing. walking from the COE to other points on campus such as the main library, the science library, and the student center takes at least 15 minutes. Not surprisingly, many students cited the inconvenience of finding and getting to other study locations on campus as the most inconvenient part of the renovation. Some indicated that the time required to get to another library or study location reduces the time they have to study. Prior to the renovation, these students reported they would simply walk to the education library from other parts of the COE after class to study or from the sorority house or student housing within close proximity.

Grace, a senior Elementary Education major stated, “it’s a hassle to go elsewhere.” She now goes to the Music building to study alone and to the main library to study with a group. Jane, a junior Elementary Education major, stated that she misses having a library in close proximity to her classes. She said, “Just having that accessibility and having it really close to campus where I was actually, it was nice.”

Kate, a junior Economics major, said that she chose to study at the Education Library even though she is not an Education major, due to the close proximity of the library to her residence. She said that before the renovation, the Education Library “was right there and there’s no excuse not to go when it’s right there.” Now she says:

It’s definitely, like, harder... for instance, like, I wanted to go to [the main library] last night but it was so cold I didn’t want to scoot there. So, I was like, uh, I guess I’m not going. It was so cold I didn’t want to leave. Or like, walking at night like all the way to [the science library] or all the way to [the main library], just wasn’t in the picture for me. Like, it wasn’t an option so it’s definitely more difficult especially since I live in my sorority house.

Elizabeth, a master’s student studying Counselor Education explained that she has class from 8:30 a.m. - 11:30 a.m. in the COE “and then we have to wait until 2:00 p.m. to have our next class. It is a long day for us. So, it would be really helpful if Education Library is open so we can just go there and work. And now we have to walk to the [innovation building] which she said takes about fifteen minutes.

Beatrice, a doctoral student studying Curriculum and instruction, reported that she finds it easier to drive to a local restaurant than to walk to other study locations on campus which reduces her study time. She said she found a restaurant where she could get a bite to eat, plug in her electronic devices, and enjoy a quiet atmosphere.

Due to the fact that the library needed to be completely closed to complete the renovation, there was no other physical location to provide to students in close proximity to the COE. In addition, the COE was preparing for its own renovation during this time further limiting physical space availability. To the extent possible, libraries experiencing similar situations could collaborate with stakeholders to identify options to provide students temporary limited services in close proximity.

As previously mentioned in addition to the Education Library being closed for renovation, many other parts of the COE were in various states of preparing for its own renovation which limited places for students to just sit in between classes. As also mentioned earlier, the COE is physically separated from the main campus which adds another layer of difficulty in providing a close place for students.

Charlotte, also an instructor for an undergraduate course, commented, “A lot of undergrads are really out of space. Like, they have no place to hang!” Her classroom was located directly below the library but had to move for three weeks due to the noise of jackhammering. The class moved to the graduate student breakroom which can only hold a few people. After class, she said, the students asked her if they could stay in there “Because there’s nowhere else to go.” She further explained “I mean, they lost their space to just sit down and do work or whatever they need to do...and so, like, they don’t have a lot of options anymore. I can see that it’s becoming inconvenient to the undergrads.” Frances stated that she has tried going to several different places on campus to study this semester. She commented that while the other locations were nice and comfortable enough, “I just don’t know that’s my place to go.” When asked to clarify she replied, “It’s like, those are not our people, from the College of Education.” Indicating a preference to be around other students studying education at the Education Library made a difference in her sense of belonging.

Due to the extenuating circumstances of various construction projects at the COE, not much could have been done to provide a space for students. The interviews revealed that students whose classes are primarily in the COE do not have a sense of other campus buildings that are available. We could have provided more information on the renovation LibGuide that directed students to other options such as the main library, the science library or the student center, for example. In addition, we could have provided a list of the basic amenities available at each location such as group study rooms, printers, and scanners.

Discussion and conclusion

The results show that students did express a feeling that having the Education Library closed limited their ability to find quiet and close spaces to study. Students also expressed that it took them longer to get to other places to study which reduced their study time. No students mentioned using the renovation LibGuides or any related terms to indicate that that resource had been helpful to them during the renovation.

The author’s hypothesis that the closure would have a negative impact on the scholarly efforts of students was correct. Several students stated that the time it took to walk to another location to study or checkout materials or the time it took to receive interlibrary loans did impact the amount of work they were able to accomplish.

The author’s hypothesis that students would report that the LibGuides were an important resource for them for information was incorrect. None of the 12 students interviewed mentioned the LibGuides or the Education Library website as a resource that they used. However, while no students mentioned the renovation LibGuides, the statistics of that LibGuide show that it is by far the most frequently visited Education LibGuide with over 3,000 views. In comparison, the next most frequently visited Education
APPENDIX A. Interview Questions

1. What is your major and year in school?
2. I’d like you to tell me about how often you visited the Education Library before the renovation began.
3. I want you to picture yourself walking into the Education Library before the renovation.
4. Describe for me the first thing you see.
5. Describe for me what else you see.
6. Describe for me what you hear.
7. Describe for me anything else that you experienced at the Education Library.
8. I want you to think back to a typical visit to the Education Library. I’d like you to walk me through the activities that you would take while there in as much detail as possible.
9. Now, thinking back on those activities that you described, tell me what it is like to do those activities with the library being closed?
10. Please describe for me anything that has been helpful for you during the renovation.
11. Please describe for me anything that has been unhelpful during the renovation.
12. Now, I’d like you to picture yourself walking into the Education Library after the renovation is over. I’d like for you to describe to me in as much detail as possible what you hope to see.
13. How would you describe the Education Library in one word?
14. Is there anything else you would like to add before we end?

LibGuide had almost 600 views during the same time period. Overall, while the students expressed that the renovation period presented an inconvenience, they seem to understand that it is only a temporary inconvenience that will yield long-term benefits. Students indicated that they were excited to see and use the renovated library space and were more appreciative of the fact that they have a convenient subject specific library and librarians at their fingertips.

The following are recommendations for future librarians involved in similar renovation projects in the future. Provide a temporary location near the library that has technology and study space. Explore every opportunity to store materials on campus. Collaborate with stakeholders to identify options to provide students temporary limited services in close proximity such as a book drop, printer, and scanner. Provide information in a LibGuide, email, posters or other means directing students to other study locations on campus, include a list of available amenities.

LIMITATIONS AND RECOMMENDATIONS

One limitation of this study is that all of the students who participated were female. However, the male-to-female ratio of students with the COE is very disproportionate. The gender distribution within the COE during the Fall 2017 semester was 1,158 female students to 225 male students. Future researchers may want to reach out specifically to and gather feedback from the male population as well to determine any gender differences that may be present. In order to fully understand the experiences of students during a particular phenomenon such as a library closure, it would be helpful to have representatives from all student populations.

Another limitation is that the researcher is the sole source of analysis of the transcripts. Future researchers may want to consider asking peers and colleagues to review the transcripts as well. This would improve the rigor and trustworthiness of the study (Merriam & Tisdell, 2016).

Future studies may also want to complement the interview portion of narrative inquiry to include artifacts such as diaries, photos, and field notes. Interviews certainly tell a majority of the story and help researchers understand the participants view, but adding other forms of narrative can lead to even greater understanding of the experience.

ACKNOWLEDGMENTS

The author would like to express her sincere thanks to all of the participants who contributed their time and thoughts to this project by participating in one-on-one interviews. The author would also like to recognize the support of Dr. Cliff Haynes and Dr. Laura Spears for their guidance in understanding qualitative research methods.

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INTRODUCTION

The lives of young people today are indelibly etched in data traces created with networked platforms supported through Internet-connected digital devices. They are growing up in a world where data literacy is a critical aspect of citizenship in the twenty-first century. In order to contribute to future conversations about the role of data in their lives, in their communities, and in society, they will need to understand how data is gathered, aggregated, processed, interpreted, and managed. A data-literate teen will have the skills, knowledge, and disposition needed to understand data in their personal life as well as the in the contexts of data collections in the world in which they live. What can public libraries, and in particular, the people who work in Teen Services, do to prepare young people for this world?

Although there is a robust and complex body of literature about digital youth and information literacy skills, data literacy at the public library is under-theorized and discussions tend to be focused on the more formal learning contexts of the K–12 classroom or higher education. There is little research examining data literacy through the informal learning context of public library programming or the potential roles that Teen Services staff (librarians and library workers) can play in supporting data-literacy competencies for youth. This paper presents the second phase of the “Exploring Data Worlds at the Public Library” research study, a project that examines data literacy at the public library. In the first phase, we explored teen perspectives on data. This paper reports findings from the next phase of the study, focused on Teen Services staff, attempting to discover what public libraries can do to prepare young people for a data-driven world.

Drawing from data collected in interviews with Teen Services staff at an urban public library in the United States, the paper analyses the knowledge and assumptions that library staff hold about teens and data, and it explores ideas about how public libraries can best serve young people in terms of data literacy. In the next sections, we introduce relevant scholarship on the topics of teens, data, libraries, and data literacy. This literature is followed by our study’s methodology and the five themes that emerged from our data synthesis. We conclude with a prototype for a curricular model for data literacy programming for teens at the public library.
of quantitative reasoning skills related to numeracy, statistics, and computation.\(^2\)

Research in the fields of LIS and the learning sciences has begun to investigate how teens interpret the meaning of data. Researchers have found that, like “information,” teens do not hold a universal understanding of “data”: For some, it is simply numbers in tables; for others, it is digital information.\(^3\) Gebre also found a mix of meanings when surveying twenty-seven secondary-school students, asking them to describe data.\(^4\) From the survey responses, he found that students’ understanding of the concept of data was, on the whole, limited to three contexts: experiment and survey, (2) utility and usage information, and (3) numerical charts and graphs. Research has also found that teens are generally unfamiliar with the broader concept of personal data collections that result in digital dossiers. Although they understand that their online behavior leaves behind data traces across platforms, they do not seem to consider the implications of those collected traces for their future selves. In addition to gaps in knowledge about data-collection contexts, they may also lack a systematic understanding of data flows, platforms, and infrastructure.\(^5\) Further, there is an affective dimension associated with young people’s relationships to data that may influence their decision-making around data.\(^6\)

Increasingly, secondary education has begun to emphasize students’ essential skills related to numerical data. According to many researchers, to be data literate, students need to be able to access, convert, manipulate, analyze, and evaluate data.\(^7\) Based on this definition, Schöls distinguished data literacy from information literacy and statistical literacy, stating that data literacy is an essential component and requisite of the latter two literacies in the hierarchy of critical-thinking skills.\(^8\) Privacy literacy, a set of skills deemed necessary to alleviate concerns about data exposure in online environments, is also emerging as a key component of young people’s well-being.\(^9\)

A broader perspective on data literacy is reflected in Gray, Gerlitz, and Bounegru’s work in the area of data infrastructure.\(^10\) Drawing upon the literature on data literacy, they propose a new concept: “data infrastructure literacy,” which includes the “ability to account for, intervene around and participate in the wider socio-technical infrastructures.” Instead of focusing on the skills needed to manipulate data sets, they argue for a systems approach to data literacy, highlighting not just discrete data-management skills but also a deep understanding of the infrastructures through which data is created, stored, and analyzed. In this way, data literacy can address broader societal concerns. While Gray, Gerlitz, and Bounegru’s work contributes an inventive expanded data-literacy model, it has not been developed specifically for teens, and the application of the model to a teen audience remains unexplored.

### Data Literacy and Libraries

Because public libraries are committed to addressing the everyday concerns and well-being of youth as citizens, a youth-focused data-literacy model is needed, particularly with respect to their digital traces collected over their lifetimes. This model should not simply be quantitative skills, but should align with the humanistic, community-oriented goals of the public library—a unique pedagogy for this place of informal learning. Currently, academic research libraries have begun to implement data-literacy programming. Typically, these models of data literacy focus on the management and use of data as a product of scholarly research\(^11\) and on the school library environment, which explores data skills primarily through the lens of statistics and visualization.\(^12\) Prado and Marzal have mapped core data-literacy competencies to a traditional information-literacy framework that includes understanding data, finding and obtaining data, reading, interpreting, and evaluating data, managing data, and using data.\(^13\) However, this framework of core competencies is intended to provide a guide for the design of data-literacy instructional services in the academic libraries of higher education and the more formal learning contexts of expert scientific research training.

Carlson and Johnston’s empirical study, also situated within the academic library context, and more specifically in the STEM disciplines, investigates how university libraries can support graduate students’ development of data management and curation skills.\(^14\) Their work identifies a set of twelve data information literacy competencies that touch on a range of tool-based and theory-based competencies that map onto the data life cycle: discovery and acquisition of data, databases and formats, data conversion and interoperability, data processing and analysis, data visualization and representation, data management and organization, data quality and documentation, metadata and representation, and cultures of practice.

Both the Prado and Marzal study and that of Carlson and Johnston reflect the valuable perspective of the librarian in higher-education contexts and academic research environments. However, while the two studies contribute to an understanding of libraries’ role in supporting the training and activities related to data literacy, their focus on academic libraries does not reflect the specific context of public libraries or the experiences and needs of teens. We suggest that work in the data-literacy field needs to be done in the context of life-wide learning beyond the academy.

A powerful platform for developing such meaningful experiences with data may be in the interest-driven, nonformal learning that happens in the context of teen library services. In the realm of nonformal learning, public libraries are already providing learning experiences with data through digital media labs and youth hackathons, albeit indirectly and not as a planned outcome.\(^15\) For example, the Civic Data Zine Camp in Teen Services at Carnegie Library of Pittsburgh included activities designed to teach teens data concepts. As a result of this work with teens, the library staff offered four tips for teaching teens data literacy: (1) Don’t focus on the technology,
In this exploratory research project, we are focused on discovery rather than testing and evaluation. Our goal is to gather empirical evidence, build models, and propose conceptual frameworks that will guide the development of data-oriented learning programs in Teen Services at the library.

While models of data literacy remain rare, especially in the informal learning contexts of the public library and with regard to young people, there are no empirical models of how teen library staff conceive of data and data literacy and, critically, what they think teens know and understand about data. With this paper, we aim to examine teen library staff’s understandings of data, teens, and data-literacy programs at the public library, hoping to provide solutions to the problems of practice that surround youth data literacy.

METHODOLOGY AND STUDY DESIGN

In this exploratory research project, we are focused on discovery rather than testing and evaluation. Our goal is to gather empirical evidence, build models, and propose conceptual frameworks that will guide the development of data-oriented learning programs in Teen Services at the library. The study did not conduct a quality review of existing library services nor did it test library staff and teens against a predetermined set of standards because such standards do not yet exist in terms of youth data literacy at the public library. Instead we looked for emergent themes in the practices and knowledge of library staff who work with teens. Gathering empirical data from their perspectives will inform the development of a youth data-literacy model that makes sense in the informal learning context of the public library.

Our analysis for this paper is framed by the following research questions:
1. What do Teen Services staff (librarians and library workers) understand about data literacy?
2. What data-literacy skills are currently supported through library services for teens?
3. What concepts, models, and competencies should guide the training of Teen Services staff in support of youth data literacy at the public library?

This paper reports on the second phase of research from “Exploring Data Worlds at the Public Library,” a three-year ethnographic study project on youth data literacy in the context of Teen Services at the public library, with the goal of building an understanding of the potential roles that teen librarians and library workers can play in supporting the data-literacy competencies you will need in the data-driven world. This paper reports on the perspectives of library staff working with teens (the first phase focused on the teens’ perspectives). Findings in this paper are drawn from our formal examination of \( N = 13 \) interviews with Teen Services staff, but we acknowledge that our analysis could, in a holistic way, also be informed by the project’s other data sources, which include our observations in the library, interactions with staff in twenty-seven data-literacy workshops for teens, and two focus group workshops with Teen Services staff at the library.

Over four months in late 2017, we interviewed thirteen adults (six male, seven female), all of whom worked as staff members at an urban public library system. Interviews were conducted in five library branches where the interview participants had dedicated roles in Teen Services as librarians, library assistants, or mentors. Most, but not all, worked in the teen-only technology spaces located throughout the library system. Interview participant names and job positions are not identified in order to protect identities. Each interview lasted approximately one hour, following a semi-structured protocol, and addressed concepts related to data literacy, such as data awareness, data agency, data subjectivity, and data skills, as well as affective themes related to teens’ engagement with data. These themes fit within a larger conceptual structure driving this research project, which envisions data as an ongoing interplay between collections and community practices.

A research team of two primary investigators and two research assistants carried out the interviews. Once interviewing was completed, audio recordings were fully transcribed and anonymized with pseudonyms by research assistants. After data processing, data analysis commenced over four steps.

In the first step, three researchers read and reviewed the transcript corpora. A combination of inductive and deductive methods was then applied to code the data, using open coding techniques (deriving new codes that are grounded in the data) to discover facets of data literacy unique to the library staff (for example, the library staff’s beliefs about data) and applying twelve base codes from a preexisting coding matrix that arose from the first phase of this project, in which we interviewed twenty-two young people. We used the coding matrix in order to be able to capture cross-cutting themes across the project. The twelve base codes include affective characteristics, data life cycle, data representations, identity, information technology, locality, metaphors, privacy, rights, skills and aptitudes, temporal-ity, and values. As coding proceeded, the transcripts were annotated with memos, and relevant quotes were highlighted and identified. The three researchers then each prepared synthesis notes, drawing attention to broad themes they had seen in the data. This analysis stage lasted for approximately two months. Once the initial analysis had been completed, the research team shared their synthesis notes and coding and worked to formulate a set of preliminary overarching themes related to Teen Services staff, the results of which are discussed below. The names of the participants have been anonymized with pseudonyms.
FINDINGS: EMERGING THEMES RELATED TO LIBRARY STAFF AND DATA

Our starting point in this study was to gain an understanding of staff who work with teens at the public library and their perceptions about young people, data and data literacy, and problems of practice with regard to the library’s role in preparing young people for a data-driven world. We tell their story through the lens of five themes that emerged from our analysis of the interview data with Teen Services staff.

1. What are data?
2. What is data literacy?
3. Data intermediaries.
4. Understandings about teens and data.
5. Data and the pedagogy of informal learning.

These themes highlight gaps in knowledge and areas in need of development but also strengths, opportunities, and a unique library perspective.

What Are Data?

Our interviews with Teen Services staff began with an exercise in defining data. Wanting to capture the library staff’s raw, unfiltered understandings first, we (the researchers) did not present our own definition. Although primed to expect some “data literacy” research at the library through a staff meeting or in-house communications, few of the library staff had a quick, comprehensive, and easy-to-understand definition of data. There was a tension across the interviews—how to see, understand, make sense of, or even name data when so much of it is invisible. Further, it was clear that the library staff did not share a single, universal understanding of what constitutes data. This was not unexpected. Borgman, a scholarly communications researcher in the area of research data management, has noted that the term data is “now in its fifth century of use” but has “yet to acquire a consensus definition.”

When describing data, many of the library staff referenced numeracy, statistics, scientific inquiry, and the visualization tools that allow you to interpret quantitative information (such as graphs, pie charts, and spreadsheets, for example). Interestingly, staff members also situated data in the context of library services. One library staff member defined data as “information,” referencing the informational content in books at the library. Another referred to the data points that young people can earn through badging programs. Yet another spoke of the library as a “data hub”—as one aspect of collection management and library service to the community. Two staff members picked up on the “data hub” theme (although they did not use this specific term) and spoke of data in terms of collections. This would include data that libraries gather about their users and the data sets that they make available for the community as part of the city’s extensive open-data initiatives.

Data as a resource or by-product of our individual digital footprint from the networked systems with which we live, our lives, although mentioned by some interviewees, was initially not a key focus in terms of how the library staff think about data. The absence of a discourse around personalized, individual digital traces was noted in many early interviews. However, as our interviews and focus groups proceeded, the staff did indeed show awareness about this type of identified data. One of the staff members nicely summarized the challenge of defining data:

I think previously when we thought about that [data], we probably just thought about it in terms of programming statistics and circulation, and I really feel like that’s what it meant to us. We didn’t think about it in the larger context of the world, about data in the community that you use to make decisions or . . . the data that you create and kind of leave behind for yourself in this much more digital world that we currently live in. And I think that as a profession, we have sort of struggled with how to have conversations about that with teens, because we really don’t fully understand it. (Emily)

The broad interpretation of “data” and the gap between considering the mass collection of digital traces may impact the shape and overall goals of data program-
Data literacy is just one type of competency in development at this public library system. In fact, library staff are tackling a broad range of literacies (from basic print literacy to computer literacy). Many participants discussed the variety of skills gaps that Teen Services staff are facing.

As far as teen data, I think we talk about it when it comes up, you know, often when there's things like, you know, almost like crisis management, you know, like, have a discussion if someone shares something they didn’t mean to share or someone shares something with other things and we try to help them collect and organize artifacts that will be personal to them. (Ryan)

Data literacy is just one type of competency in development at this public library system. In fact, library staff are tackling a broad range of literacies (from basic print literacy to computer literacy). Many participants discussed the variety of skills gaps that Teen Services staff are facing. These range from basic literacy (such as filling out your home address properly in a form) to the skills related to digital file naming and storing conventions (a skill relevant to the organization and preservation of data and digital records). Indeed, according to one staff member, some teens are not aware what a “username” and password are and how they are used to sign up for different platform services. The myth of “digital youth” creates an overconfidence in young people’s digital knowledge that belies serious gaps in their understanding of personal computing technology and data infrastructures and that ultimately impact their ability to navigate data worlds. There is an interesting connection between digital skills and data literacy, captured by Liza in this quote where she talks about teens’ perceptions of themselves as digital experts because of frequent phone or tablet use:

They [teens] are really confident because they can use the apps so well, and they are really comfortable with screens, and they’re really comfortable with all the buttons and the way it looks and the feel of it, but they don’t know the parts that they don’t understand. And that can sort of lead to gaps that I find are dangerous, in terms of data on the internet. It would be helpful if the teens could know more about the landscape of data, especially the digital devices today have become foggier than it used to be. I think this is a very important point about data literacy. …The more they can understand the structures in place, even if they don’t know how to do certain specific things, I think if just the landscape of data was more accessible to them. (Liza).

This comment speaks to a broader contextual approach to data. The same staff member pointed out that teens don’t properly save the digital creations that they make at the library because they don’t understand how file systems work. I think it has a lot to do with mobile phones. They don’t really have a need to look at file systems anymore. That notion that a computer is built on a file system is sort of gone. It’s just like, “a computer is a thing I interact with that has stuff on it.” (Liza) Indeed, this behavior was confirmed in our fieldwork with teens, where we found evidence that youth who use mobile phones and tablets as their primary computing devices don’t have a strong grasp of file formats, file directories, or differences between local and cloud storage. It is clear that this lack of knowledge related to personal data management and ownership over data is connected to mobile computing and app-driven platforms. Increasingly, apps live at the atomic level of formatted information, and the conception of a “file” or even a format is not well understood by youth. Many of the library staff commented on this but didn’t see this as an encounter with data, but rather as a misunderstanding of, or carelessness with, thumb drives, which were frequently given to teens to store files and almost as frequently left in public terminals. Understanding the principles of file structure relates to the management of data in the data life cycle, and it connects to our understanding of platforms, devices, even networked services. This suggests that library staff need to adopt a multi-prong approach, tackling basic digital skills even as they work to introduce data creation, collection, and management to young people more familiar with app-driven computing contexts.

These interview excerpts from the library staff also speak to a broader systems-oriented approach to data literacy at the public library. They capture the interconnectedness between data, platforms, devices, and information infrastructures—representing a knowledge that goes beyond numeracy, statistics, and the data-wrangling skills associated with data collection, representation, preservation, and translation. While all of the library staff with whom we spoke evinced a strong belief in serving teens where they live, on their own terms, the nature of the technology adopted and used in library programs didn’t always reflect this philosophy. For example, if the data that teens produce is largely transmitted through their smartphones, then a large portion of data literacy should relate to their personal computing environments at home, school, the library, and elsewhere.

While our participants did not have a definitive, uniform sense of what data, data skills, or data competencies might mean for the library, each demonstrated a great interest in learning more. They were hopeful and excited about the library’s role in
Data Intermediaries

During our interviews with participants, the staff in Teen Services envisioned four roles for themselves as intermediaries at the public library: data conversationalists, data teachers, data agents, and data hubs.

Data conversationalists: This first role relates to interpersonal interactions and discourse around data topics. One staff member considered how data connects to the mission of Teen Services and their technology spaces for teens, saying that spaces where data is explored should be a safe space to hang out, to talk and discover—implying that explorations into data can contribute to the library’s ethos of relationship building. These relationships are built on discourse between library staff and teens. It is in the context of these conversations that young people can gain insight into data, which may or may not be embedded into library activities that are explicitly data-oriented. For example, one of the participants mentioned casual conversations with teens about social media, targeted political ads, and “scary” and “interesting” advertising technology to delve into the ways that personal data is collected and repurposed by data brokers. Library staff who work as facilitators between teens and data need to consider both the content and tone of their interactions. Should they be boosters, scaffolding pathways toward data empowerment, or should they be alarmists, sounding the alarm on data incursions into private lives?

Data teachers: Facilitating conversations around data can lead to learning, but even though a lot of learning in libraries happens informally, direct instruction is usually implied when we think of a librarian as teacher—one who plans a learning activity with a specific outcome in mind and then leads the instruction (or facilitates the activity). The library, according to Jorge, a Teen Services staff member, has an obligation to teach the public about data and how it applies to them as an individual, calling it “a very noble cause” for the library.

Data agents: At least two staff members thought that it is the role and responsibility of the library to protect the library user’s data and privacy. In particular, user data associated with borrowing materials. In this protective role, the library serves as the public’s data agent. The staff members noted that the library doesn’t share user data without permission, nor does the library share young people’s images on the library’s media outlet without permission. In this study, we didn’t ask a specific question about how the library guards user privacy, so we don’t know if this is general knowledge for all library staff members. Nevertheless, we found it interesting that the participants—teen library staff—extended their understanding of themselves as data intermediaries to include the data that the library produces.

Data hub: This is a collections-oriented perspective. One might call it a traditional stance to intermediation because it focuses on the curation and reference roles of the library in helping the public gain access to and share data (usually publicly available civic or scientific data). As one participant explained, “To a librarian, it’s like how to access the data and how to share it with an interested person” (Jorge).

Understanding about Teens and Data

What do the library staff think about how young people interact with data? What are their assumptions about teens and data? Responses were mixed. Some frankly said they didn’t know what was going on with teens and data (“I don’t know what teens’ relationship to the idea of data is in the first place”—Olivia). We surmise this is because young people’s digital footprints are related to the use of their personal devices, which are outside the purview of the library. Other staff members thought that teens know more about data than we give them credit for, a belief perhaps gleaned in part through their interactions with teens at the library. One interview participant hypothesized that teens likely have a good level of basic data awareness but an even higher level of data skills, because they are savvy when it comes to the visibility location and tagging data in social media platforms.

We asked the staff about teen awareness of themselves as data subjects. One staff member speculated that teens’ particular self-orientation (their “selfishness” or egoism) gives them an advantage over older technology users because identity building is such a big process during teen years. The staff member reasoned that this central thrust of adolescence—identity building—can be leveraged to give them a sense of agency or ownership over their data. A staff member observed that teen identity is always being expressed in the library, saying, “Any sort of activities that we do, the teens sort of do their own thing. Everything, every sort of program we have, is an opportunity to express their identity” (Jorge). If we follow this argument, then data-oriented activities at the library could quite naturally facilitate teens’ self-awareness of themselves as data subjects.

Discussion about teen awareness of data turned toward themes of privacy protection. A few interviewees suggested that each of us who uses the internet or digital tools has a “data self” made up of our digital footprint. In response to a question about data traces, one staff member spoke about teens and the data they create at the library, suggesting that their lack of privacy strategies, rather than reflecting a gap in knowledge, reveals how much they trust the library environment as a safe space to connect with different people and ideas. As Lauren explained:
There are few equivalents in the public library world to the type of assessment and certification of learning that happens in the K–12 environment or in higher education. Learning theories and practices developed in the context of formal learning do not necessarily apply to the library.

I can think of instances when people have actually left their handles on whiteboards. We try to erase those so that not anyone can just access that. And then even related to people leaving their belongings unattended. It’s kind of a similar thing where they feel safe in the space and they’re like, “I want people to connect with me. I want to get more views.” Or whatever. I think that is probably the impulse and then less of an awareness that that could be not a positive thing. (Lauren)

Overall, when thinking about teens and data, the interview participants were exceptionally teen-oriented. They were strong advocates for meeting teens where they are in life, for finding meaningful ways to relate data to teens’ daily lives and their communities, and for making data concepts practical, rather than theoretical.

### Data and the Pedagogy of Informal Learning

There are few equivalents in the public library world to the type of assessment and certification of learning that happens in the K–12 environment or in higher education. Learning theories and practices developed in the context of formal learning do not necessarily apply to the library. This project is trying to resolve a problem unique to the world of unstructured library learning: how to ensure meaningful and successful learning experiences about data in an environment where interactions with the institution are not obligatory (as they would be in the K–12 setting). In such a space, planning for sequential learning experiences, critical to some STEM learning, is problematic. A key strength of informal learning, however, is that its primary goal is meaningfulness—learning that takes into account the sociocultural context of the learner and that is driven by the interests and motivations of the learner.

Informal learning experiences depend heavily on the library staff’s deep knowledge of the people and community they serve. In our interviews with the Teen Services staff at the library, we saw that they do indeed have an admirable knowledge and sensitivity to their local communities, especially as relates to youth. To a lesser degree do they understand the pedagogy of informal learning. What might a knowledge of models of learning and theories of practice for informal learning environments look like? It would include a basic understanding about the psychology of motivation and interest, situated cognition, and the social construction of knowledge (for example, shared family knowledge, the influence of peer groups) as well as knowledge of various models of mediation and facilitation beyond the traditional classroom. We do note that two members of the library staff specifically mentioned connected learning in their interviews, a conceptual model and practice framework that draws upon this body of learning theory and that has been applied to informal learning spaces for teens, especially in relation to digital making. Other teen staff members may have been aware of connected learning, but we did not specifically ask about it in the interviews. Nevertheless, continued professional development around connected learning would be useful but with the proviso that thus far connected learning has not made explicit connections to data literacy and youth in public libraries.

### DISCUSSION

#### Understanding Data and the Data Life Cycle

The principal lesson learned in this project based on three years of fieldwork with teens, library professionals, and public libraries is that there seems to be no single definition for data literacy, nor is there a simple “plug and play” recipe to help guide library programming around data-literacy competencies. The library staff in Teen Services identified a range of interpretations for data and data skills, including the following:

- quantitative data and associated reasoning, technical and computer skills;
- digital data, the footprint that teens leave online, and the associated social skills;
- data as a tool for artistic expression through data visualization techniques;
- civic data to empower citizens and enable social justice;
- library user data as a management tool.

The ambiguities about what constitutes data and data literacy, we think, hamper purposeful, intentional design of data-oriented library services and ultimately the impact that these services will have on the community. One way to accommodate the messiness that surrounds data literacy is for library staff to work together toward a definition of data. A conversation launched on a discussion board with the question prompt “What is data?” or perhaps a workshop designed to explore various types of data might help staff achieve a shared understanding that makes sense in the context of their own capacities, interests, and community.

Another approach is to think less in terms of the format of data (for example, a set of numbers, a table, scientific notes, digital traces, and so on) and more in terms of data as part of a system, situating data activities at the library within the broader concept of the data life cycle. All of the interpretations of data listed above could fit within a data life-cycle model. The library staff, however, were not always clear on how to align these forms of data to specific skills and learning outcomes. This may be because one type of data can be treated in many different ways, depending on the place within the data life cycle. When K–12 schools address data literacy, they do so with the specific curricular needs of the local school, school district, and state standards.

But learning in the public library is more...
The library staff who participated in this study often referenced broader themes and issues in their discussions around data and data literacy. From their practical interactions with teens and data, they realized that data sits within a broader context of community, society, technical platforms, institutions, and infrastructures. And throughout all these contexts, data connects back to the individual.

The Context of Data: Cross-Cutting Themes
The library staff who participated in this study often referenced broader themes and issues in their discussions around data and data literacy. From their practical interactions with teens and data, they realized that data sits within a broader context of community, society, technical platforms, institutions, and infrastructures. And throughout all these contexts, data connects back to the individual.

Library Staff as Data Intermediaries
Thinking holistically about data suggests a range of mediating roles for library staff and a range of outcomes for teens. Indeed, the library staff reflected this positionality to data in the way they envisioned various roles for data intermediaries at the public library: as data conversationalists, data teachers, data agents, and data hubs. This suggests, again, a certain ambiguity around data but also, perhaps more hopefully, that there are many opportunities for library staff to engage with data. Not every staff member working with teens will be adept at reading and writing CSV files in Python. But they may be able to have a conversation with a teen about their rights as a citizen living in a data-saturated world.

CONCLUSION
As we discovered in this project, there are multiple perspectives on data and data literacy, a situation that prevents a one-size-fits-all approach to library programming around data for young people. We suggest using a holistic and humanistic approach to data, an approach framed around the concept of the data life cycle, which is then aligned to broad, cross-cutting themes such

fluid and needs to be framed around a conceptual model rather than a hierarchy of standards. Working with a data life-cycle model may help to scaffold intentional outcomes with regard to data literacy.

Data has a life, much like information: it is created, collected, wrangled, visualized, curated, preserved (or destroyed), stored, interpreted, translated, used, and shared. Each stage is associated with specific skills and tasks. Librarians are familiar with the notion of an information life cycle, and therefore it should not be difficult to adapt this approach to their work with data at the library. By seeing discrete data-oriented library activities as just one piece in a larger data story, librarians can build programming that presents a rich picture of data, one that flows in a logical manner and helps teens build a strong conceptual understanding of data.

A data life-cycle model could be expressed simply as four phases—collect data, describe and organize data, preserve data, and transform and use data—each representing a phase in the life of data. (For the sake of simplicity, we have represented the data life cycle as if it is a neat step-by-step process, but in actuality, phases can be concurrent and iterative, and the activities associated with each stage can be built out considerably.) We note that the data life cycle is reflective of other common models in the data field and mirrors the actual practices of professional data stewards/data curators. Conceptual models are useful tools because they bring intentionality to practice and help practitioners plan outcomes that impact people and community. Models can also point the way to gaps in programming. If the model was presented to teens, it might also help them understand the various roles and formats of data with more clarity.
as data infrastructures, data rights, and data subjectivity (to name a few). To navigate this complex world of data, teens do need technical, conceptual, and analytic skills to create, collect, manage, and curate data sets, but they also need a critical awareness of the broader social impacts and opportunities created by data. The library staff who participated in this study brought their interest in youth and a sensitivity to the real-world situations where young people interact with data. They have an important role to play in helping teens understand the data life cycle with more clarity, to see that data is not ephemeral but that it has material meaning in their daily lives and that it has the ability to shape their identity, connections, and agency in the world.

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Amber Williams and the Deer Park location of the Spokane County Library District (SCLD) have been feeding kids healthy snacks after school and during the summer for two and a half years. The library has been reimbursed for all of that food through two federal programs – the Child and Adult Care Food Program (CACFP) and the Summer Food Service Program (SFSP).

I attended Amber's session, “Feeding Kids for Free” at the WLA Conference in Yakima, which was chock full of information and details on how to replicate their success. It was easy to see how passionate Amber is about this program, and after hearing her speak I hope more libraries in areas experiencing poverty can also begin to feed kids for free.

I asked Amber these questions a few weeks after the conference.

Q. WHAT HAPPENED TO INSPIRE YOU GET INVOLVED WITH FEEDING KIDS AT THE LIBRARY?
A. I heard about food scarcity issues in the area when we held community conversations about aspirations and concerns, which is what started the inquiry. What really galvanized me to make it happen was watching local elementary schools kids argue over a bruised apple at an afterschool program at the library.

Q. WHAT DID YOU NEED TO DO TO CONVINCE YOUR LIBRARY DIRECTOR THAT THIS WAS A WORTHWHILE ENDEAVOR THAT FIT INTO THE MISSION OF THE LIBRARY?
A. I wrote a three-page proposal addressing the process, which included detailed work plans and research. In Deer Park there was no other organization well-suited to take on feeding kids. I made the case that the library was the best option and then explained how it could work. I addressed who

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