Strategic Library™

Toward Gigabit Libraries

BY SUSANNAH SPELLMAN, JAMES WERLE, AND CARSON BLOCK

Internet2's "Toward Gigabit Libraries" project, funded by the Institute for Museum and Library Services (IMLS), aims to help close the digital divide that persists in small, rural, and tribal libraries. Through this project, Internet2 has created a "Broadband Toolkit" and customized "Broadband Action Plan" to help librarians learn about their broadband infrastructure and internal information technology (IT) environment. The goal of the project is to enable librarians to improve their broadband services and become stronger advocates for their libraries' broadband infrastructure needs.

WHY A BROADBAND TOOLKIT FOR RURAL AND TRIBAL LIBRARIES?

Broadband connectivity is a vital element of thriving communities. The IMLS vision for the "National Digital Platform" as a rich interoperable environment of tools, data, and services provided at a distance is dependent on ubiquitous broadband capabilities — to all libraries, museums, archives, and allied institutions, regardless of their geographic location. Scalable, affordable, high-quality broadband to every library in every community is necessary for patrons and staff to access the National Digital Platform, enabling them to better focus their resources, energy, staff, and community expertise on curating and sharing their unique local collections.

In addition to broadband infrastructure, the technical skills necessary to contribute to the National Digital Platform are currently lacking in many rural and tribal libraries.[1] Additionally, most U.S. libraries are very small, and almost half are located in rural America. Per the 2012 Public Libraries Survey (PLS), of the over 9,000 public library administrative entities in the United States, approximately 80 percent are single direct service outlet public libraries, not part of a consortium or system with IT-related support.[2] Forty-five percent of the total are in geographic areas classified as rural-remote, rural-distant, or rural-fringe.[3] On average, public libraries with a rural locale classification have a 0.5 full time equivalent (FTE) librarian with a Masters of Library and Information Science (MLIS) degree (nationwide
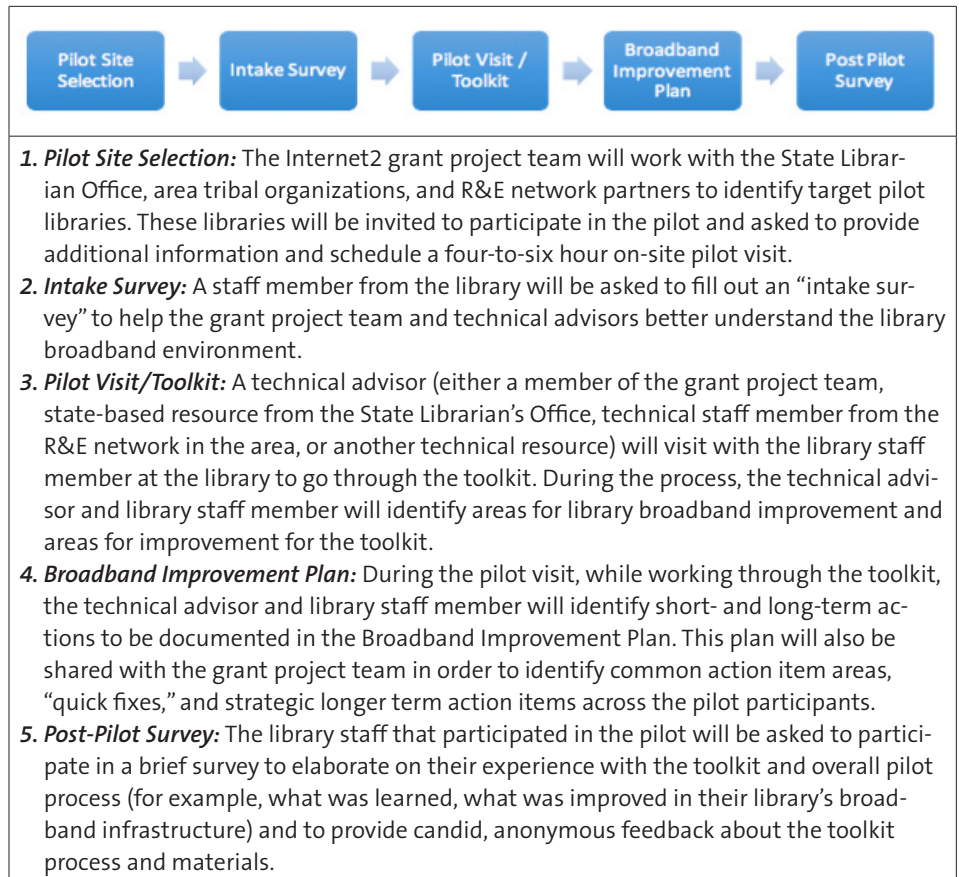
average is 3.4 FTE).[4] In rural-remote libraries, that average drops to 0.17 FTE. The average public library in the United States has total FTE staff of 14.76. Rural libraries have an average staff of 3.56 FTE. Clearly, these libraries have very limited staff resources available and are even more limited in terms of technical resources.

THE TOOLKIT APPROACH

The IMLS-sponsored "Toward Gigabit Libraries" project aims to strengthen librarians' technical broadband skills and to empower rural and tribal library practitioners to become more savvy and effective consumers, advocates, and providers of high-quality Internet access and digital services to the communities they serve. To do this, the project team has created a combined library assessment and librarian training workbook, known as the "Toolkit," to walk library practitioners through their broadband infrastructure and related devices in their libraries.

During 2017, the Toolkit is being piloted in at least 30 rural and tribal libraries across the U.S., leveraging a "Technical Advisor" from the broader Internet2 research and education (R&E) community or other local technical partners, to help walk the library staff through the Toolkit process. After utilizing the assessment tool to conduct a library broadband "check-up," participating library staff will have gained the skills and knowledge to answer the following key questions about their libraries' broadband access infrastructure:

- What is the type, size, cost, and provider of my current Internet connection? Is my library getting the bandwidth throughput it is paying for?
- What are the various types of Internet connections available and who provides the various services in the area?
- What is the best option for meeting the library's current and future bandwidth demand?
- Is the library's interior network wiring and wireless infrastructure sufficient to meet current and future demands?
- What can be done to improve internal connections to advance the library's Internet access?

The following describes the pilot project process:

The toolkit is designed is to be "hands on," with the library staff looking at and touching the various components of the broadband infrastructure and IT environment in the library. Topics in the toolkit vary from the actual broadband connection speeds and quality of service, to routers and inside wiring, Wi-Fi access points, and the various computers or other broadband peripheral equipment leveraging the network. Each of these topics includes questions and short, non-technical overviews, delivered via short narratives, diagrams or pictures, videos, and/or links to information resources.

Although the 2017 pilot visits include outside assistance for the library, the aim of the project is that the toolkit functions as a stand-alone resource, usable by a layperson. At the end of the project, after the pilot experiences help to further refine the toolkit and the training resources, the toolkit and related materials will be available for public uses under a Creative Commons license.

BUILDING UPON OTHER IMLS-FUNDED EFFORTS AND INCORPORATING THE RESEARCH AND EDUCATION COMMUNITY

The Toward Gigabit Libraries project is building upon the Edge Initiative's toolkit approach; related IMLS- funded efforts, such as Building Digital Communities: A Framework for Action; Inclusive Gigabit Libraries; and other work funded by the Broadband

1. **Pilot Site Selection:** The Internet2 grant project team will work with the State Librarian Office, area tribal organizations, and R&E network partners to identify target pilot libraries. These libraries will be invited to participate in the pilot and asked to provide additional information and schedule a four-to-six hour on-site pilot visit.
2. **Intake Survey:** A staff member from the library will be asked to fill out an "intake survey" to help the grant project team and technical advisors better understand the library broadband environment.
3. **Pilot Visit/Toolkit:** A technical advisor (either a member of the grant project team, state-based resource from the State Librarian's Office, technical staff member from the R&E network in the area, or another technical resource) will visit with the library staff member at the library to go through the toolkit. During the process, the technical advisor and library staff member will identify areas for library broadband improvement and areas for improvement for the toolkit.
4. **Broadband Improvement Plan:** During the pilot visit, while working through the toolkit, the technical advisor and library staff member will identify short- and long-term actions to be documented in the Broadband Improvement Plan. This plan will also be shared with the grant project team in order to identify common action item areas, "quick fixes," and strategic longer term action items across the pilot participants.
5. **Post-Pilot Survey:** The library staff that participated in the pilot will be asked to participate in a brief survey to elaborate on their experience with the toolkit and overall pilot process (for example, what was learned, what was improved in their library's broadband infrastructure) and to provide candid, anonymous feedback about the toolkit process and materials.

Technology Opportunities Program (BTOP) in Colorado to develop and pilot the use of a library broadband health assessment toolkit for rural and tribal libraries. The intent of this toolkit and hands-on training program is to pilot the use of a training framework around broadband delivery best practices, targeted initially towards rural public and tribal libraries. But this work could potentially scale nationally to all libraries regardless of their size or geographic location.

Further, this project intends to leverage the deep, technical expertise of the R&E community to help develop this library broadband assessment toolkit and pilot its use with library practitioners in rural public and tribal libraries across the country. The Internet2 community, which includes more than 300 higher education institutions and 44 regional R&E network partners, has worked as a trusted partner with community anchor institutions (CAIs) to provide advanced networking connectivity and technical expertise for nearly two decades. Today R&E networks connect more than 93,000 CAIs across 44 states, including one quarter of our nation's public libraries. The Internet2 R&E community is uniquely positioned to work together with rural and tribal libraries to assess their current broadband

infrastructure, identify common networking problems, and suggest ways to solve them. Partners from the R&E community, serving as subject matter experts to help guide the project and serving as technical advisors, include Florida State University iSchool, KanREN, Network Nebraska, OneNet, Pacific Northwest Gigapop, and University of Texas in Austin Information Policy Institute.

As the project is focused on two underserved populations in terms of library services and broadband — rural and tribal libraries — other key project partners representing those areas also are acting in a subject matter expert role and in some cases as technical advisors. These include: Affiliated Tribes of the Northwest Telecommunications Technology Committee; Alaska State Library; American Library Association; Office of Information Technology Policy; Association of Tribal Archives, Libraries, and Museums; Chief Officers of State Library Agencies; Idaho Commission for Libraries; Nebraska Library Commission; Oklahoma Department of Libraries; and Southern California Tribal Chairmen's Association, Tribal Digital Village.

PROJECT WORK TO DATE, ANTICIPATED FINDINGS, AND NEXT STEPS

The focus of the project to date has been the development of the toolkit materials and preparation to pilot their use in select libraries around the country. Internet2 began by conducting primary and secondary research to further identify and understand library broadband technology issues and needs, particularly in rural public and tribal libraries. Internet2 then assembled a diverse panel of subject matter experts (SMEs) from the organizations named above and tasked them with providing insight and information on various issues, such as tribal library spaces and library use of E-Rate, to help focus development of the toolkit and its components. In May 2016, Internet2 hosted a SME workshop to review draft toolkit

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materials and discuss the toolkit and project process. Site visits in pilot libraries began in March 2017.

A key finding the team discovered early on was a necessary tension in the design of the toolkit itself between the need to be friendly enough for any layperson to use but also with enough technical information to make the experience worthwhile — and one that would lead to actual improvement. This tension was echoed when the toolkit was refined during the gathering of SMEs. The SMEs discussed language and presentation methods that would encourage library workers to work through the toolkits and gain self-confidence in the process.

The project team is currently working with partners in several pilot states to select the libraries that will be involved in the pilot project and scheduling time for the technical advisor to visit the libraries. Together with the library staff members, the project team will conduct the approximately four-hour site visit to go through the toolkit and look for opportunities to both improve the library's broadband performance and the toolkit itself. The goal is that the toolkit will support and promote rural and tribal librarians' understanding of their broadband infrastructure to ensure it is optimized to meet local community needs and enable local contributions to the development of the National Digital Platform. Further, the intention is that the education and training opportunity that the toolkit provides to library staff will be a means to help them better advocate for their libraries broadband and technical needs in their communities — to ensure that their libraries have equitable access to the National Digital Platform. ■
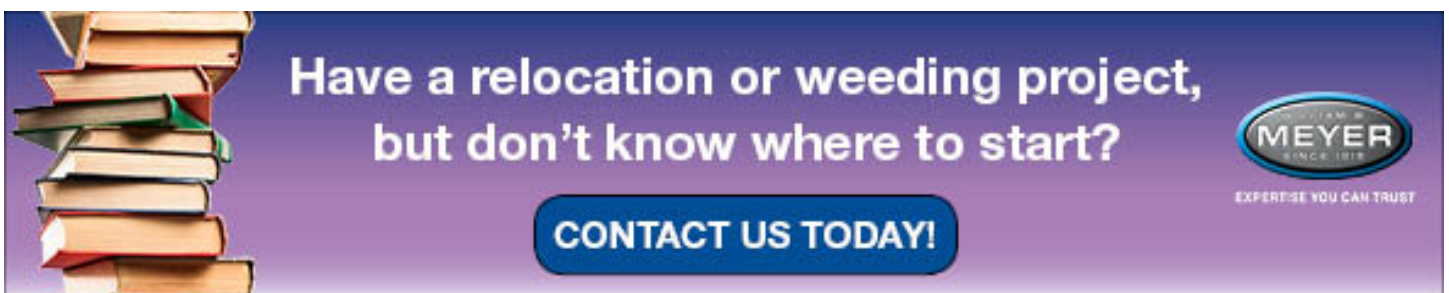
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FOOTNOTES
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2 Swan, D. W., Grimes, J., Owens, T., Miller, K., Arroyo, J., Craig, T., Dorinski, S., Freeman M., Isaac, N., O'Shea, P., Padgett, R., & Schilling, P. (2014), Data File Documentation: Public Libraries Survey: Fiscal Year 2012 (IMLS-2014–PLS-02). Institute of Museum and Library Services. Washington, DC, p.135.
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Library Lockdown

» An Escape Room by Kids for the Community

BY JENNIFER THOEGERSEN AND RASMUS THOEGERSEN

IN BRIEF

Hoping to bring the unexpected to Nebraska City, the Morton-James Public Library applied for an ALA Association for Library Service to Children Curiosity Creates grant to undertake an ambitious project: build an escape room. In a library storage room. With children. The hope was by trying something completely different, we could increase interest in the library throughout the community and build a sense of ownership in the participants, while encouraging creativity and having a lot of fun. Library Lockdown was a four-month program that brought several dozen kids together—age 8 to 13—to build a fully-functioning escape room. Their creation, the Lab of Dr. Morton McBrains, is now open for business.

INTRODUCTION

It all began with a "what if?" and a "why not?" Well, really it started with a large storage room and a grant solicitation. The result was a transformation of not only a space in the library, but in the library's space in the community. In the spring of 2016, we guided a group of kids in building an escape room in the Morton-James Public Library. It was an extraordinarily fun (and time consuming!) project; and while our goals were mainly focused on what the participants and what the community would take away from it, we were the ones who probably learned the most.

We shared some of our reflections in a short *Library Journal* article (Thoegersen & Thoegersen, 2016), but wanted to share our experiences in more depth. Our hope is that, after reading this, you will be inspired to create your own flavor of Library Lockdown in your own library. But first, a little exposition.

Aerial View of Morton-James Public Library, Morton-James Public Library (CC-BY 4.0)

THE PLACE

Morton-James Public Library serves the community of Nebraska City, in southeast Nebraska. Nebraska City has a population of 7,289 (U.S. Census Bureau, 2014). The population is predominately white (91.5%) and is 10.9% Hispanic/Latino. The percentage of people with income below the poverty level was 15.1%, which is higher than the percentage for the state of Nebraska (12.9%), but comparable to the United States as a whole (15.6%).

Built in 1897 (with additions in 1933 and 2002), the public library building is beautiful and historic; it's listed on the National Register of Historic Places (Nebraska State Historical Society, 2012). It can also seem a bit of a maze and has lots of nooks and crannies. One such nook was a rather large storage room full of used books, holiday decorations, and a miscellany of craft supplies. This room also had some water damage and moldy carpet that needed to be replaced. It was clearly in need of some love and perhaps a new purpose, as well.

THE PROJECT

In August 2015, we became aware of the Curiosity Creates grants administered by the Association for Library Service to Children (ALSC) division of the American Library Association (ALA). Thanks to a donation from Disney, over seventy $7,500 grants were to be awarded to libraries in order "to promote exploration and discovery for children ages 6 to 14" through programming that promotes creativity (American Library Association, 2015). The grant could be used to grow an existing library program or to develop completely new programming. Grant recipients were notified in October 2015, and they were expected to implement their project and complete a project report by May 31, 2016.

Inspired by the availability and purpose of this grant, the recent popularity of escape rooms around the world, and the breakoutEDU movement, Rasmus hit upon an intriguing idea: What if we turned this neglected storage room into an escape room? And why not give kids a chance to build it themselves?

INTERLUDE: SO, WHAT IS AN ESCAPE ROOM?

The escape room concept was created by 35-year-old Takao Kato in Kyoto, Japan in 2007 as a way to have a real-life adventure like those he encountered in literature as a child (Corkill, 2009). Escape rooms are like a real-life video game, where you and your friends are "locked"[1] in a room and must search for clues and solve puzzles to determine how to get out. "In order to escape the room the player must be observant of his/her surroundings and use their critical thinking skills as well as elements in the room to aid in their escape" (The Escape Game Nashville, 2015). Escape rooms come in many shapes and sizes but generally include the following:

1. A story
2. Puzzles, clues, and riddles
3. A time limit
4. A lot of fun
5. Library Lockdown

Thus the idea of Library Lockdown was born. The plan was for the program to run during the spring of 2016. The group of kids would meet at the library weekly, first learning about escape rooms and puzzles, and then creating the story, decorations, and puzzles for one of their own. After being awarded the ALSC grant in October 2015, library staff went to work clearing out the storage room. The carpet was replaced with the help of a separate, local grant. Library Lockdown was advertised in person by circulation staff, in the local paper, and in local schools. Potential participants were asked to fill out a registration form and a photo waiver.

Based on the registration forms received, Saturdays were selected as the weekly meeting time. The first meeting was February 13th, and two dozen kids showed up. We had meetings every Saturday until the grand opening on May 25th.[2]

The number of kids attending each meeting varied from ten to nearly 30; with usually around fifteen present. Nearly three dozen kids participated in at least one meeting, but there was a core group of about ten that attended the majority of the meetings. This provided continuity from week to week.

The format for the meetings was generally five to ten minutes of introducing the day's activities and forty-five to sixty minutes of work, followed by lunch (paid by the grant). The first few weeks were focused on having the kids solve puzzles on a theme (appropriately, the first week's theme was Valentine's Day).

Creating decorations for the Lab of Dr. Morton McBrains; Morton-James Public Library (CC-BY 4.0)

During week three, the kids selected the theme for the room (zombies), and also decided they wanted to make a zombie movie that would play before and during an escape room run. Then, they began making puzzles themselves and creating different parts of the room. For every subsequent week (except the week we filmed the movie), we planned for at least four separate groups, each supervised by an adult. These groups initially started out very broad:

1. The tech group was provided with old electronics, a laptop, a couple of Makey kits and a Squishy Circuits kit to use as the basis of a puzzle.
2. The storytellers brainstormed about the backstory for the room, as well as the screenplay for the zombie movie.
3. The puzzle group was tasked with coming up with ideas for puzzles.
4. The "zombiemakers" were given costume makeup and old clothes to practice zombie makeup and create zombie clothes for the movie.

As the weeks progressed, group work became far more specific; they would have a specific task related to a specific piece of the room, e.g. a particular puzzle or props for the room. The final meetings involved pulling everything together and setting up and testing the room.

The grand opening event was on Wednesday, May 25th. The families of all of the participants were invited, along with members of the community. The Nebraska City Tourism and Commerce organization held a ribbon cutting, which was covered by the local paper and radio station (Partsch, 2016; Hannah & Swanson, 2016). The city's

mayor and his family were the official first group to attempt to escape the room, and, while they were "locked" in solving puzzles, everyone else was in the library gallery having a pizza party and solving puzzle boxes that were on their tables. Over 100 people attended the grand opening event, including twenty-two of the Library Lockdown participants. Every participant received their own lock and a family pass to the commercial escape room, Escape This, which opened in Nebraska City just as Library Lockdown wrapped up.

The Library Lockdown escape room is now open for business and is free for anyone to play, though donations are accepted. Groups must book the room in advance by calling the library. The room can be booked any day the library is open from thirty minutes after opening to an hour and a half before close. Generally, only one group may play the room per day, ensuring that there is time to reset the room for the next group and that it isn't taking up too much staff time. Since its opening, twenty-five groups have played the room (over 150 individuals), and there are currently eight reservations through December 2016. The groups have been families, work groups, school classes, scouting troops, and groups of friends. The escape room will likely remain open until there is a new, interesting idea for how to repurpose the room once again.

FOSTERING CREATIVITY

"Although creativity is a complex and multifaceted construct, for which there is no agreed-upon definition, it is viewed as a critical process involved in the generation of new ideas, the solution of problems, or the

self-actualization of individuals..." (Esquivel, 1995, p. 186)

When we discussed what we wanted kids to take away from their participation in Library Lockdown, we relied heavily on a white paper by Hadani & Jaeger (2015) highlighted by ALSC and published by the Center for Childhood Creativity. This paper introduces seven components of creativity: Imagination & Originality, Flexibility, Decision Making, Communication & Self-Expression, Motivation, Collaboration, and Action & Movement. For each component, the authors present a body of research explaining its role in fostering creativity and provide strategies and examples for incorporating each component into projects.

As part of the grant application, we were asked to identify which of the seven components were most critical for the project. We chose to focus on two: Imagination & Originality, and Collaboration. While all of the components played a role in the project, we felt these two were the most vital to success and used the strategies suggested by Hadani & Jaeger for these components as a guide when planning Library Lockdown meetings.

Imagination was key because the kids were starting with an empty room and no story. They had to consider many possibilities and visualize the details of the escape room. Hadani & Jaeger provided five strategies for promoting imagination, which we found to be some of the most valuable guidance, especially during the early weeks of the project.

- **Generate ideas by building on other ideas:** This was how we approached puzzle making in the beginning. We created dozens of puzzles for the kids to try out (some thought up by ourselves, many modified from those found through amazing resources like breakoutEDU). We would then ask the kids to build a similar, but new, puzzle. This didn't always lead to the creation of functional puzzles, but it did help put kids in the mindset of creating their own puzzles.
- **Generate lots of ideas:** We used this strategy for determining the theme and story for the room. At the third session, after spending a few weeks having the kids solve and modify puzzles, we had the kids pick a theme for the room. They split into groups and, guided by an adult, wrote down as many possible themes as they could think of. They came up with some pretty awesome themes—like candyland, haunted library, and star wars—before selecting
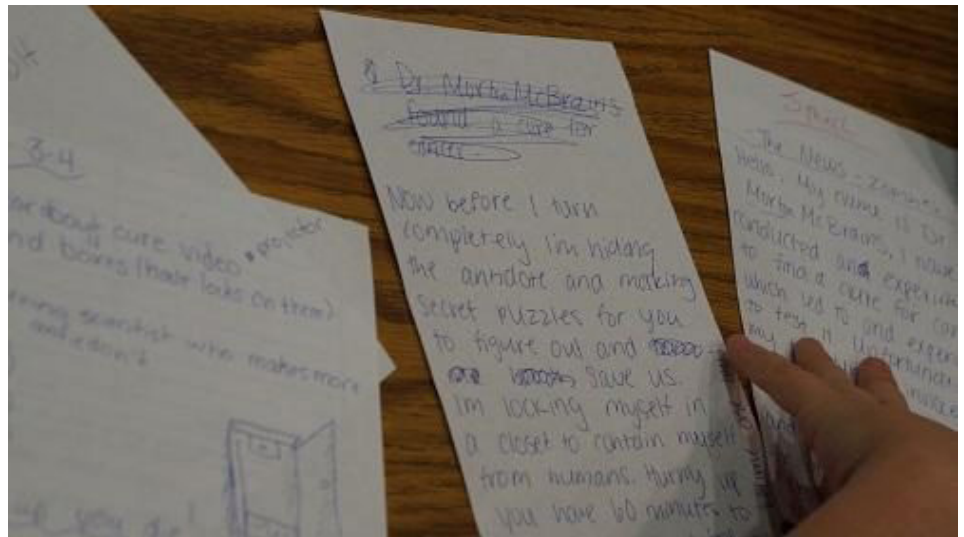
Drafts of the story for the Library Lockdown escape room; Morton-James Public Library (CC-BY 4.0)

"zombie" by voting for their favorites.
- **Plenty of imaginary play and unstructured time:** Though we often provided very structured tasks for the kids to work on during meetings, we also included several opportunities for freer, less structured activities. This included giving groups a room full of craft and other materials and puzzle books, and letting them spend the entire time attempting to make puzzles. This time did not result in many strong, functional puzzles, but allowed the kids to experiment and play.
- **Encourage new ideas and building on others' ideas:** We generally had kids work in groups of three to six, each led by an adult, which allowed us to guide conversations and ensure each kid was able to share their ideas in a positive environment.

Given the time constraints and the variety of tasks involved, the kids had to collaborate and rely on each other to ensure that the puzzles, props, and story formed a cohesive whole. One of Hadani and Jaeger's suggested strategies for promoting collaboration was providing "project-based opportunities that are structured to avoid merely splitting of tasks in favor of sharing and co-creating." Given the number of participants and the amount and variety of work that needed to be accomplished, logistically, we had to split participants into multiple groups, each with a different purpose or task. However, each group had to work together to achieve their individual objectives, and all of the groups fed into the same shared goal.

A good example was a puzzle that involved a robot maze. Using grant money, we purchased Dash and Dot, a set of programmable robots. The group working on the puzzle first worked together to program the robots so that by pushing buttons on Dot, Dash would move. At subsequent meetings, they determined how wide the maze paths had to be for Dash to be able to move easily, designed several iterations of the maze on paper, measured out and colored in where the walls would be, and painted the maze. At every step, they worked on these tasks together. Sometimes this was out of necessity (it's pretty hard to use a chalk line alone), but mostly they were doing tasks together that they could have done individually. This allowed them to problem solve, share ideas, and create something better together.

PSYCHOLOGICAL OWNERSHIP

A major outcome we were interested in fostering was a sense of ownership of the library among the community, especially the youth participating in Library Lockdown. Pierce et al. (2003) define psychological ownership as "that state where an individual feels as though the target of ownership or a piece of that target is 'theirs' (i.e., it is MINE!)" The project was embarked upon with the hope that creating a physical space would instill a sense of accomplishment and pride, and the children would develop a sense of ownership over the library. Though we did not attempt to measure the participants' feelings of ownership in any formal way, many of the participants started referring to the escape room as "their room," and those who played the room with their family or school groups pointed out the puzzles they helped make and enjoyed watching their teammates attempt to solve

Library Lockdown participants working together to create a puzzle with Play-Dough; Morton-James Public Library (CC-BY 4.0)

them. From being on a first name basis with the library director, to having access to a room off limits to everyone else, to keeping secrets about the project from family and friends (can't give away clues or answers to the puzzles!), we noticed participants definitely had an increased level of comfort in the library space and were clearly very proud of what they had accomplished.

ENGAGING THE COMMUNITY

Working with groups and individuals in the community proved to be both easy and rewarding. From planning to opening, we sought to involve a variety of groups in the project. Initially, we approached principals and teachers at local schools to advertise and help recruit students to participate. This also led to a few teachers volunteering to help.

When the group decided to make a zombie movie, we approached an acquaintance at the local radio station, who volunteered to direct, film, and edit the movie for free. The city police chief also agreed to be interviewed about the zombie invasion. The city mayor and his family readily agreed to be the first official group to try out the escape room. This drummed up publicity and provided a final, grand opening event for the group to celebrate their accomplishment. Though no one declined the invitation to participate, we had a couple of people who

offered to help, but had to back out for various personal reasons.

GAMEPLAY AND GAME MECHANICS

The entire project was a clear case of 'process' over 'product.' As we explained above, our main goals involved engaging the kids and inspiring them to be creative. Having an escape room was the secondary goal, and, in order to ensure that the room worked well as an experience for the community, we had to make sure the gameplay was there. Whether you enjoy a game or not, is closely related the flow of the experience (Sweetser & Wyeth, 2005).

Gameplay hinges on both variety and functioning mechanics. Variety means that you aren't simply solving riffs on the same word-replacement puzzle. Functioning mechanics is that the puzzle can be solved, but more importantly it relates to balance.

When explaining the importance of a balanced experience to the kids, we kept coming back to the video-game metaphor. Imagine a race game. If the track you are racing on is a straight line, the best car always wins and no skill is required. On the other end of the spectrum the track can curve so much and beat even the most skilled driver. Neither of those experiences will be a lot of fun. The first one will be boring and the second one frustrating.

We ran a puzzle in which they had to

find a key to a lock. Then we tasked them with creating a similar experience for another group. The first thing we heard was a gleeful 'they will never find it'. Then you remind them of the video game and the racetrack. We want them to find the key. Impossible isn't fun.

STRUCTURING CREATIVITY

Going into the project, we had intended to give a lot of freedom to the participants. We would create the framework and ensure that the project was progressing according to the timeline, but creative choices would be made by the children. The stories and the puzzles would be their own. However, as the project progressed, we realized we needed to put some limits on where they could express their creativity. Too much freedom resulted in several problems, including paralysis (uncertainty of how to proceed), unfeasible or impractical ideas, and a disregard for time constraints. We realized that, given our short timeframe and the logistics involved, we would need to create a bit more structure around the creativity.

There were two main ways we approached this. The first was what we were already trying to do: give them a wide breadth for creativity, then funnel their ideas into a realistic plan. But this creative brainstorming was more effective for items like story and decorations, less so for puzzle making. We allowed the kids to express wild ideas, and then we took these ideas and adapted them into a realistic plan that we could implement. For example, once a zombie theme had been selected, many kids expressed a strong desire to actually dress up as zombies. Of course, this wouldn't make a whole lot of sense as part of an escape room that would be open for months. Instead, we made the zombie movie to provide the backstory and ambience for the room and give the kids their chance to be zombies for a day.

The second approach become essential in the last weeks of the project: providing a realistic frame that had a creative component. We would present the basics of a puzzle and have specific ways that they could make decisions, be creative and contribute. One puzzle involved mathematical equations on a whiteboard and several zombie head cutouts. We explained the puzzle to the kids. They colored and laminated the zombie heads (the laminator was definitely a favorite!). Using examples from math books, they helped fill the white board with

equations. They had a blast doing this (and slipping their names in there, too).

Our kids responded to having a clear goal in mind that was smaller and more manageable than the room as a whole, but still allowed them to play and infuse their ideas into the project.

BUILDING REPEATABILITY, BUILDING MODULARITY

As we worked on the project, we thought about its adaptability. How could this concept translate into a variety of contexts, especially considering most libraries would not have $7,500 to spend on similar projects or such a large space and/or staff time to devote to it? In addition, we grew concerned about how best to tie the room and the various puzzles together, as well as how we might make the room enjoyable for a variety of skill levels. We were also conscientious of the time it might take to reset the room and ensure that it was reset correctly.

The solution for all of these concerns was simple: modularity. When initially considering the escape room, we imagined the puzzles would be linear and tie into each other. Imagine, you find a key early on and it does seemingly nothing. Your team struggles on, finds more clues and solves more puzzles until the very end, when someone remembers that key from the beginning, and it all makes sense.

While the temptation to tie every puzzle into a sequence and the bigger narrative certainly was compelling, we learned that a clear division between individual puzzles makes sense for project like this. The end result was ten puzzles separated conceptually, as well as physically. Each puzzle corresponded with a locked box. Each box contained a code to be typed into a computer terminal. Once any eight of the codes had been entered, the terminal provided the code to the safe (which, of course, held the antidote to the zombie apocalypse). Ambitious/completionist players could attempt to solve the final two puzzles for bragging rights if they still had time remaining.

This approach provided benefits both during the creation of the escape room and after it opened as well:

- Having distinct puzzles simplified the planning process, which was a boon given our time constraints and the age of the kids working on the room (most of whom were nine or ten).
- Since all of the puzzles are self-contained, it is very easy for staff to quickly check if

Nebraska City Chief of Police being interviewed about the Zombie Apocalypse; Morton-James Public Library (CC-BY 4.0)

each puzzle is ready to go when resetting the room for a new group.

- We are able to raise and lower the difficulty of the room by changing the number of solved puzzles required to win, by changing a number in the computer program where players enter the codes.
- We can remix the gameplay to accommodate groups of different sizes and skill levels. Recently, the local middle school asked to bring their students to try the room. The groups had about a dozen students and only thirty minutes. We had them ignore the overall goal of the room, divided them into smaller teams, and instructed them to work on one puzzle at a time. Once they solved a puzzle, we helped them to reset it, so another group could attempt it, and they moved on to another puzzle.
- Other libraries can use the same basic format and modify it to fit their time, budgetary, and space limitations.

FEEDBACK

Participants that attended the grand opening event (22 of the 35 total participants) were asked to complete a short survey about their experience in Library Lockdown. They were asked three Likert-scale questions ("How much fun did you have?", "Would you do it again?", "Is the library fun?") to which they provided generally positive responses (average of 4.5, 4.5, and 4.3, respectively). They were also asked what they liked best about Library Lockdown. Three of the answers were very broad ("the whole thing", "everything", "building it"); eight answers mentioned making or solving puzzles; and nine mentioned unique, specific items:

- Computers
- Working with locks
- The story making
- Watching movie
- The mayor trying to get out
- Build Lego sets
- The people

- Making play-dough shapes
- eating

Our interpretation of these responses is that the group really enjoyed the puzzle-based structure of Library Lockdown, but many of the kids responded to vastly different aspects of project.

We also did informal interviews with parents during and after the project and got some very positive feedback from them on both the project and the final result. In addition, the program was effective overall for creating hype/awareness of library and reminding our community that we are still very much around. The head of the local radio/television station mentioned how the library seemed to have changed recently, stating "You guys are doing all this stuff now." Most of the library's programming outside of Library Lockdown during the preceding months was not new at all, but having a flagship event like this seems to have raised our visibility in our community.

FINAL THOUGHTS

This was a gratifying project, and we really enjoyed working on it. We also learned a great deal along the way. It was a massive time commitment. The group met for ninety minutes every Saturday from February until May. We also spent a combined ten to fifteen hours per week planning, preparing, and cleaning up. Enthusiasm for the project, for kids, and for puzzles was a requirement. Anywhere from ten to almost thirty kids would attend each session. This made planning and logistics a challenge: How much space and food do we need? How many volunteers or staff members need to be present? How many activities do we need to have ready? During the later weeks, how are we going to bring this all together?!

By the final weeks, we got very good at being prepared. We had structured activities and backup plans. We also ensured we had enough staff and volunteers to have a high staff to kid ratio (1:4), which allowed us to
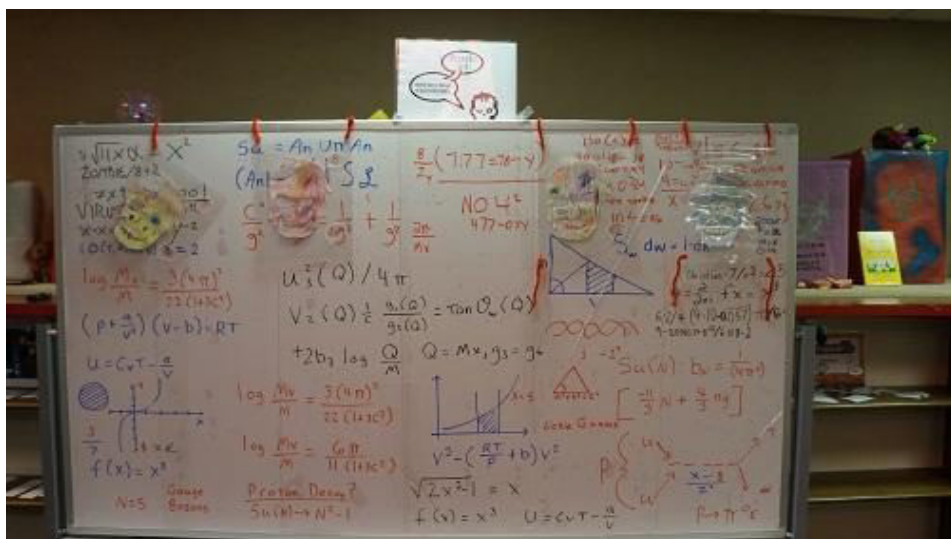
"Beauty is in the eye of the zombie-holder", one of the puzzles created as part of Library Lockdown; Morton-James Public Library (CC-BY 4.0)

be more flexible when something different happened than expected (or if more kids showed up than expected).

We wanted this project to bring in a diverse group of kids, and in many ways, it did. There was a near 50-50 split of boys and girls, and, though Nebraska City is predominantly white, multiple cultural backgrounds were represented in our group. There were a few areas we wish we had been more successful in. Though we advertised outside the library in hopes of attracting non-library users, we had few participants who weren't already library users. We also advertised directly to the Hispanic and home school populations in our city. Though several returned the registration forms, none ultimately attended any of the sessions. In future projects, we will attempt to communicate more closely with potential participants in these groups to better understand what kept them from attending.

Though not a major issue for us, it was important to consider any laws that may be applicable to the room itself. We asked the local fire marshal to review the room for any potential issues, and he approved of the use, as long as the door remained unlocked and
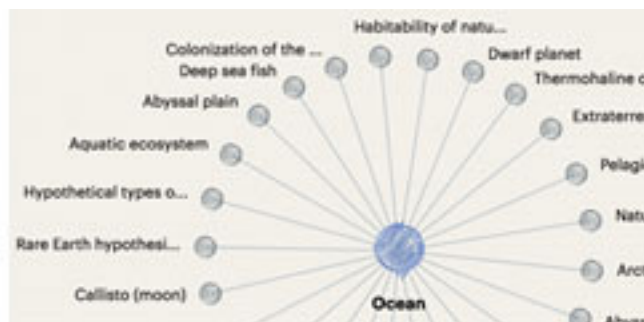
unobstructed. The Library Lockdown room is wheelchair accessible and navigable. All of the puzzles can be solved by someone with physical limitations or who is deaf or hard of hearing with little or no assistance. The instructions for the room are written and are also spoken aloud. In addition, reservations are scheduled to allow for a staff person to be present in the room and provide assistance as needed.

We were aware that not every puzzle would work out, so we chose to err on the side of having too many. That way, if something broke – which happened – a back-up puzzle was ready to go. We ended up having ten puzzles in the final room.

You will want to do some beta-testing before having the general public go through the room. We first invited some of our volunteers who had not been involved in the project to try it. This gave us a sense of what worked and what didn't work. It also instilled some confidence in the project as a whole, as they all seemed to thoroughly enjoy themselves.

We built the room with the intention of not having an employee/volunteer staffing it. But we found that having someone along

to guide the participants and explain the rules made a difference. Hints are totally ok. Good-natured teasing as well. The typical group will make it out of the room with 5-10 minutes left on the clock, which is ideal.

Though we were lucky enough to receive a generous award, which allowed us to purchase many materials for Library Lockdown, we certainly could have undertaken a similar project on a smaller budget. We took advantage of the resources on breakout-EDU, used easily accessible craft supplies, repurposed items that were already at the library (including various things hiding in the storage room before it was cleaned out), and received donations of food from local restaurants. These are strategies that other libraries can take advantage of if interested in building an escape room of their own.

Library Lockdown was a unique opportunity for Morton-James Public Library to bring something different to Nebraska City. Instead of a one-off program, it brought kids into the library weekly to work together on a major project. Based on informal comments and survey responses, the participants enjoyed the puzzle-based nature and variety of activities that Library Lockdown provided. Local press coverage kept the community interested, and the resultant fully-functioning escape room allows the project to continue to engage (Hannah, 2016a; Hannah, 2016b; Mancini, 2015). It is something that made an impression on these kids and our community, and we most certainly will not forget the wonderful things that can be made by asking the simple question: what if? ■

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FOOTNOTES:
1 Not really, since the fire marshal would not approve.
2 Except for Arbor Day weekend, that is. Nebraska City is "home of Arbor Day," and most of the kids were participating in the annual Arbor Day Parade.

The New Role of the Library in Teaching and Learning Outcomes

BY KEN CHAD AND HELEN ANDERSON

THE CHALLENGE

Students around the world are concerned that the growing cost of higher education (HE) is not delivering good value. Reviewing the situation in the US in 2014 The Economist reported that:

"Transparency and technology will force many colleges to cut costs and raise quality. Online education will accelerate the trend."[1] It went on to emphasize the challenge: "Those that offer poor value for money will have to shape up, or disappear." Two years later it reported on the situation in Europe and noted that a growing number of students are opting to pay "alternative providers" for their higher education. More and more European governments are supporting this, typically private, alternative provision. In March 2017, A.C. Grayling, philosopher, author and founder of the New College of Humanities, London suggested that: "New, alternative providers are the face of change in higher education."[2] Making it easier for such providers is one of the key elements of the UK Government's Higher Education and Research Bill.[3]

A GROWING INTERNATIONAL EMPHASIS ON TEACHING AND LEARNING OUTCOMES

In 2016 the Higher Education Academy (HEA) acknowledged that: "The importance of 'high quality teaching' in higher education (HE) is becoming increasingly emphasized both in the United Kingdom (UK) and abroad... Excellence in teaching has become entrenched in higher education policy and in the educational strategies of academic institutions, and increasingly linked to the performance and assessment of these institutions."[4]

In the same year the UK government set out a new Teaching Excellence Framework (TEF) as part of its Higher Education and Research Bill.[5] Teaching quality will be measured on metrics which are likely to change over time but which, initially at least, will be related to graduate employment, student retention, and student satisfaction. It must be acknowledged that this approach is controversial. For example Sally Hunt, general secretary of the University and College Union cautioned: "Unfortunately, the metrics being used for the TEF tell us little about teaching quality and nothing about how we could improve things."[6] Despite the controversy most UK higher education institutions, including major research universities, have signed up to the TEF.

The underlying issues driving the TEF are not unique to the UK. Around the world the HE sector is very aware of the growing need to demonstrate value to students. In the US in 2016 the ACRL Research Planning and Review Committee noted: "Student success continues to be an important focus for higher education institutions, where the trend towards performance-based funding and accreditation criteria includes an emphasis on learning outcomes, retention, and matriculation."[7] Institutional and library strategies in many countries will increasingly reflect this attention on teaching and learning outcomes.

A NEW LIBRARY RESPONSE TO IMPROVING TEACHING AND LEARNING

The value of the library in terms of teaching and learning is not in doubt. Speaking in 2016, Liz Jolly, Chair of the Society of College, National and University Libraries (SCONUL), highlighted the value of the library with a quote from an Australian report: "Students tend to be more engaged with learning on the whole if they engage with library resources, interact with library staff, and spend time using libraries."[8] There is a growing body of international evidence that links the use of library resources with the kind of outcomes the TEF will measure. For

example analysis of the data from a study at the University of Minnesota, USA found that: "First-time, first year undergraduate students who use the library have a higher GPA [Grade Point Average] for their first semester and higher retention from fall to spring than non-library users."[9]

The question confronting library leaders now is how they can increase the value of the library and more strategically articulate it in terms of the new agenda around learning outcomes. Libraries have a number of key assets that staff can galvanize to better support teaching and learning: buildings, collections, technology and data.

Buildings: Library to Learning Space

New library buildings have been a notable component of what The Guardian newspaper called a "building spree as tuition fees pour in."[10] The University of Birmingham opened its £60 million new library in 2016 and in 2017 the University of Bedfordshire opened its £46 million library. Clearly if universities see a strong value proposition they can find significant resources to meet the need. Much of the focus of these new libraries is on the provision of an environment that will better support student learning. Announcing a £26million new library development, Leeds University Librarian Stella Butler stated: "The new library will provide our students with a state-of-the-art, high-quality study environment." SCONUL Director Ann Rossiter summarized it succinctly: "Pedagogy is the driver for the changes in library design."[11]

Collections: Library Resources to Learning Resources

Libraries struggle to provide sufficient resources to meet user demand. In the National Student Survey (NSS) a Middlesex University student voiced a common concern: "Library resources are insufficient: It can be hard to get hold of books that appear on reading lists as there are only 1 or 2 copies."[12] Digital content could help solve the problem but this technology-based promise has not been fully realized. For example, the recent Digital access solutions report from Jisc, a not-for-profit provider of digital solutions for UK education and research, noted that: "Modern university libraries require remote access for large numbers of concurrent users, with fewer authentication steps and more flexible digital rights management (DRM) to satisfy student demand." They found the most frequent problem

was that core reading list titles were not available to libraries as e-books.[13] The report talks of an underlying 'market failure' where vital learning content is not being provided in the ways that libraries demand.

Overcoming the "Textbook Taboo"

UK universities typically limit library provision of textbooks and many university libraries in the USA have a policy of not providing textbooks at all. In 2016 Rick Anderson, Associate Dean for Collections and Scholarly Communication at the University of Utah, advocated that libraries need to get over what he labelled their "textbook taboo." He went on to say: "At a time when it is increasingly necessary for libraries to find new ways of being mission-critical to their sponsoring institutions, this aversion to textbook provision seems to me increasingly self-defeating."[14]

The Challenge of Licensing Models for Core Learning Resources

Textbook publishing is big business, requiring major investment. It generates significant revenues. Anderson's view is that it is going to take a big shift to overturn the current model. E-book platforms such as Kortext,[15] VitalSource[16] and start-up digital textbook provider Bibliotech[17] are eager to work with publishers to promulgate a commercial solution. No doubt they would challenge Jisc's notion of market failure. Their solution is a licensing model based on limiting use to individuals or for specific courses. This enables them to deliver digital resources that are not available via the library. A percentage of the e-book titles identified by Jisc as not available to libraries are available on the Kortext platform.[18] This course-specific model is not favored by most libraries or by Jisc but has been eagerly adopted by some institutions. If libraries are to play a more inclusive role in the management and delivery of learning resources they may have to reconsider their approach to resource licensing.

Open Resources

Making textbooks and core learning re-

sources open and freely available at a low or zero price is another approach to solving the problem. It can also help institutions support online learning, for example in the form of MOOCs (massive open online courses). Jisc is running a four year (2014–2018) project on institutional open textbook publication. It aims to better understand if the institution as e-textbook creator can: "Help students by making higher education more affordable, and promote a better, more sustainable information environment for libraries, students and faculty."[19]

Mafalda Marques, Research Analyst at Jisc noted that for Higher Education Institutions (HEIs): "The advent of the TEF provides another incentive... to raise the topic of institutionally produced textbooks higher on the agenda."[20]

In the US, academic software firm bepress notes that, in response to increased student textbook costs: "Educators, institutions, and even state legislators are turning their attention toward Open Educational Resources (OER)" in order to save students money while increasing engagement and retention. As a result bepress has developed its infrastructure to host and share OER within and across institutions.[21] The UMass Library Open Education Initiative estimates it has saved the institution over $1.3 million since its inception in 2011.[22] Other textbook initiatives include SUNY Open Textbooks, developed by the State University of New York Libraries, which has already published 18 textbooks, and OpenStax, developed by Rice University.

However, Rick Anderson remains skeptical that these initiatives will constitute a sufficient solution in the near term: "The prospect of revolutionizing the textbook industry with OERs seems like it's going to be a long-term one...the ratio of words to action in this realm remains quite high." He sees potential for a better outcome by working with publishers: "Helping textbook publishers...is not the point. But if, in helping students, we end up helping textbook publishers as well, that might be something we regard as an acceptable by-product – especially if it attracts textbook publishers
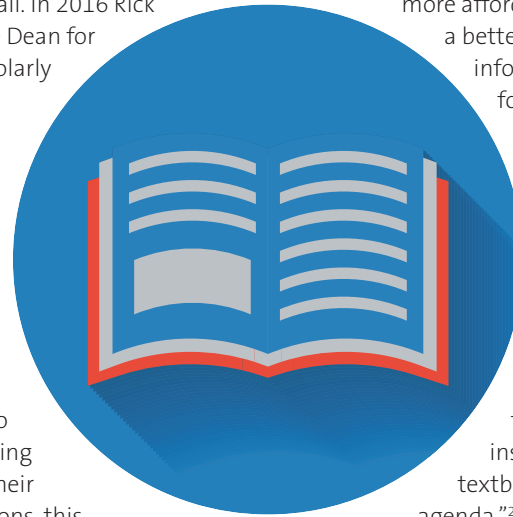
to the project as collaborators."

Knowledge Unlatched 23 is an example of this kind of collaboration: "We believe that by working together libraries and publishers can create a sustainable route to Open Access for scholarly books." Groups of libraries contribute to fund publication though a crowdfunding platform. The consortium pays a fixed upfront fee for the publisher to publish the book online under a Creative Commons license.

Diverse and Disaggregated Content: Taking a Holistic View of Learning Resources

Rick Anderson's "taboo" notion might also be extended to librarians managing many other kinds of learning resources. For example, libraries typically don't manage the course learning resources in the learning management system (LMS)/virtual learning environment (VLE). This is where students find core resources such as presentations, digitized versions of key texts, lecture notes and videos. As formats such as e-pub are developed it will become easier to break up or disaggregate content such as e-books into smaller parts which will be easier to consume on mobile phones and tablets. A Jisc e-book project from 2013 noted the trend towards "increasing disaggregation of e-book content into smaller but coherent elements."[24] According to Jisc, students value 24/7 access to a variety of online content including lecture notes, want greater use of lecture capture and value a more consistent online service.[25]

This lack of coherence in terms of the holistic management of resources was noted as far back as 2001 by librarian John McColl: "There is a burgeoning area of overlap between the 'learning resources' which academics wish to install in their VLEs, and the digitized learning resources which libraries are making available."[26] This has been one of the driving forces in the adoption of library-centric reading list software.

Technology: From Library Systems to Educational Technology
The Rise of the Library Centric Reading List System

The last five years have seen a big increase in the number of universities in the UK, Australia and New Zealand deploying library reading lists solutions. Over half of the libraries in UK Higher Education have installed such solutions.[27] The online reading list can be seen as a sort of course catalogue that gives the user a (sometimes week-by-

week) course/module view on core resources and provides a link to print holdings information or the electronic full text. It differs significantly from the integrated library system (ILS) 'course reserve' module, notably by providing access to materials beyond the items in the library catalogue. Titles can be characterized, for example as 'recommended' or 'essential' reading and citations annotated (e.g. 'Read chapter 4'). There is even the possibility of providing more personal touches: a University of Birmingham list notes: "Emeritus Prof. Lote taught renal physiology and pharmacology to medical students in Birmingham for about 35 years."[28]

These solutions allow academics to maintain their reading lists online (with the ability to pull in new references from a variety of sources) and easily link reading lists to resources in the library catalogue/discovery system. There is also integration with the back-end acquisition elements of the ILS to generate an alert when additional copies need to be ordered. This kind of functionality has potential benefits for publishers too. Reading list data aggregated regionally or nationally could provide them with vital information about how their content is used, by what kinds of user and for what courses.

Reading list solutions commonly integrate closely with copyright clearance workflows. This can have a significant impact, as librarians from the University of Birmingham note: "By allowing digitized copies of chapters...to be uploaded and automatically copyright-checked — academics are saved a lot of administration time and can focus their energies instead on choosing the right resources for their list. Most importantly, though, items that would have ordinarily been restricted to print-only access can be made available. For distance learners especially, this is transformational."[29]

Reading list integration with the VLE can be seen as an attempt to bind together the two worlds of library learning resources (print books, e-books, articles) with course-specific learning resources such as lecture notes, videos or OER. Reading list software brings librarians and academics together

into a system where they must cooperate to be effective. Indeed some librarians claim that the reading list system is a key library tool for transforming student learning. By "investing our efforts into developing a genuinely effective, interactive and responsive reading list system" librarians at the University of Birmingham are aiming to "transform the teaching and learning experience for students and academics."[30]

Reading list systems have achieved a high adoption rate because they are seen as providing high value. Indeed some university libraries pay more for their reading list system than their ILS. Until recently these systems were not deployed in the US. This is partly because academics (faculty) are more likely to select a single title that most closely relates to the content of the course they are teaching. The title is then recommended to their students. Higher education institutions, particularly those in Australia, New Zealand and some other parts of Europe (including the UK) are more likely to operate a reading list model, supplying students with a (sometimes long) list of recommended titles.

Nevertheless, reading list solutions are now getting traction in the US. SirsiDynix, a US headquartered vendor, announced 'BLUEcloud Lists' in 2016. It will manage a range of resource types: "Books, journal articles, newspaper editorials, YouTube videos and more." The initial customer, Cranfield University sees it as a key component for "postgraduate course materials and student-staff collaborations for learning and teaching."[31] In 2015 Ex Libris partnered with predominantly non-US libraries to develop and launch its reading list module Leganto. The following year the company announced a version, LegantoSM, targeted at the specific needs of colleges and universities in North America. The solution is designed to improve student engagement and retention and to "reduce the cost of educational materials for students and schools by maximizing the use of library-subscribed resources; taking advantage of advanced pay-per-use models for academic publications; and promoting the use of open educational resources."[32]
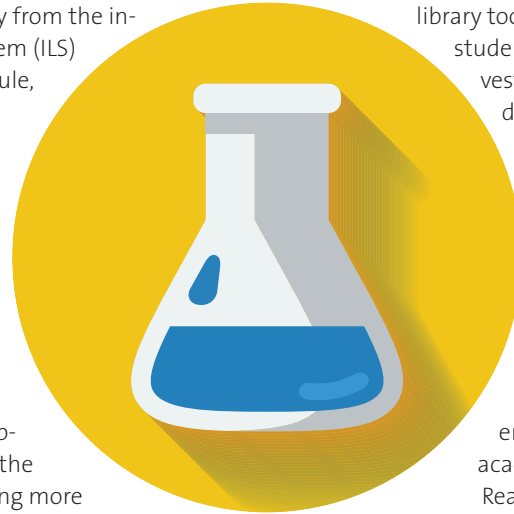
E-book Platforms

The licensing restrictions on e-textbooks and core texts mentioned earlier mean that key learning resources may not be found in the library's ILS or discovery service. Students can be confronted by a bewildering array of options to find and obtain the resources they need. For example in a response to a survey in early 2017 a librarian remarked: "My students have to deal with 17 different e-book platforms all with different interfaces and usability options. The frustration level is sky high."[33] Consequently it is no surprise that by providing students with a more mobile-friendly, coherent approach to core resources: "Aggregators such as VitalSource and Kortext have formed strong positions."[34] In April 2017, to extend its reach, Kortext formed a partnership agreement with Dawson Books, a company that provides a library-focused e-book platform. The press release emphasizes the value of a single platform: "Students can end up with one Universal bookshelf for all of their textbook and library content where they can take notes, study and collaborate with their colleagues."[35]

In 2014 the University of East London (UEL) partnered with Kortext to provide an estimated 4,000 first-year students with a tablet device preloaded with "core e-textbooks as well as links to the university's online library resources, the virtual learning environment (VLE) and other student resources and information." This was billed as: "A major new initiative to support student learning and success."[36] In 2015 Middlesex University invested over £2 million in its program to provide students with free core e-books. It is worth noting that the money did not come out of the library budget: "Money was allocated by the University Executive. This was new money which had not previously been allocated either to Schools or the Library."[37]

There is another key advantage that platforms such as Kortext and VitalSource have over conventional library e-book platforms. It is data. The data on library journal and e-book usage from services such as COUNTER[38] or the aggregated national UK service JUSP[39] do not include even anonymized data about the user. The customer is the institution. In contrast digital e-textbook platforms enable lecturers to see "how many students on their modules have accessed their digital textbooks. They can also compare how students are using them, such as pages read and notes taken."[40] These kinds of data will also be invaluable to publishers.

Data: Library Management Information to Learning Analytics

In May 2016 the Economist announced that: "The world's most valuable resource is no longer oil, but data. Smartphones and the internet have made data abundant, ubiquitous and far more Valuable."[41] The Higher Education Commission report From Bricks to Clicks cites learning analytics as bringing enormous potential for improving the student experience and went on to highlight the role of the library in providing key data to support analysis.[42]

Learning Analytics

The digital footprint left by students in their daily engagement with Higher Education leaves large amounts of data that lends itself to analysis which can be used to improve teaching and learning. A Jisc report which gathered evidence and case studies from the UK, the USA and Australia stated: "Every time a student interacts with their university — be that going to the library, logging into their virtual learning environment or submitting assessments online — they leave behind a digital footprint. Learning analytics is the process of using this data to improve learning and teaching."[43]

Learning analytics will play a key role for academics. A recent report from the Higher Education Policy Institute[44] (HEPI) emphasized that: "Learning analytics can furnish teachers with information on the quality of the educational content and activities they are providing, and on their teaching and assessment." Jisc's effective learning analytics R&D project is spending more than £1 million over two years to provide academics with "everything you require to track student learning activity so that you can improve retention and attainment." In summary, according to HEPI, learning analytics is one of the primary tools that universities should be considering if they are to make the most of the potential of technology to transform teaching and learning. The new General Data Protection Regulation (GDPR) makes institutions far more accountable for the protection of the data they hold and this could make them cautious about how they exploit data analytics.[45] Nevertheless the expectation is that: "The vast majority of universities will soon be using learning analytics of some sort."[46]

On their own library management information or analytics will not suffice. Greater integration with systems and services beyond the library will be a prerequisite to deliver actionable learning analytics. For example, Nottingham Trent University's learning analytics initiative[47] is designed to increase retention and improve attainment. Engagement scores for each student are calculated from VLE access, library usage, card swipes and assignment submissions.

CONCLUSION
Leadership

The Higher Education Policy Institute talks of "rebooting learning for the digital age" and places a strong emphasis on leadership: "Strong digital leadership is a key feature of effective educational organizations and its absence can be a significant barrier to progress. The digital agenda is therefore a leadership issue."[48] It is also one where librarians have much to offer. Institutional pressures will demand that librarians are even more strategic in positioning their value propositions in the context of a wider institutional approach to teaching and learning outcomes. It is not a given that conventional library resource budgets will grow but the recent large investments in library buildings and digital textbook platforms have demonstrated that substantial funding is available in response to good value propositions.

A Holistic View of Library and Learning Resources

As part of strengthening their value proposition we expect to see more libraries take a holistic view of the management, discovery and delivery of a wide range of learning resources. At the moment many valuable resources stand apart from the convention-
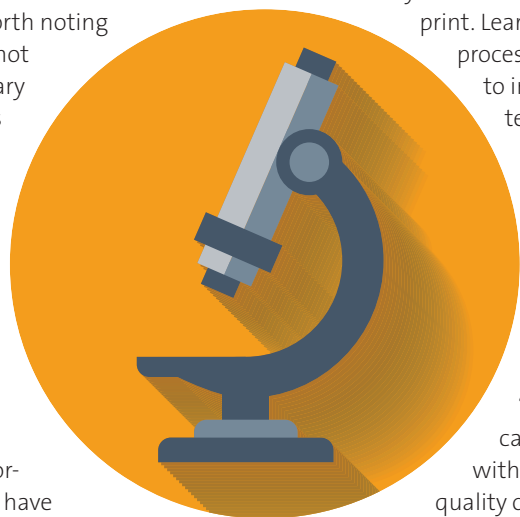
> » **Just as librarians have expanded their remit in terms of support for research outputs and outcomes we will surely see them play a closer and more active partnership role with academics in the acquisition and curation of course-specific teaching and learning resources. For example, while the e-book initiative at Middlesex University is positioned and funded as an institutional project, the library is recognized as being vital to its successful management.**

al library collection. Just as librarians have expanded their remit in terms of support for research outputs and outcomes[49] we will surely see them play a closer and more active partnership role with academics in the acquisition and curation of course-specific teaching and learning resources. For example, while the e-book initiative at Middlesex University is positioned and funded as an institutional project, the library is recognized as being vital to its successful management.[50]

An Increased Role for Data Analytics

The value of data analytics will surely be a key driving force. Data from reading lists and digital textbook platforms combined with information from other institutional systems on student retention and academic performance will produce powerful insights. Such analytics will be invaluable to institutions, publishers and intermediaries as they look at new ways to deliver content.

A Merging of LibTech and EdTech

All this suggests a trend for library technology and educational technology to merge. We will certainly see reading list systems, VLEs and digital textbook platforms better integrated and perhaps even subsumed into common learning services platforms. This might be achieved through mergers and acquisitions or new solutions coming to market. We are beginning to see a shift away from a narrow conception of library systems, the library supply chain and library data. Conventional integrated library systems and even the new generation of library services platforms remain wedded to an outdated view of learning resources and will have to change significantly or be integrated or subsumed into a new generation of learning services platforms. ∎

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The Creativity Connection

» Research, Writing, and Creativity @ the Library

Left: Giovatto Library Art Gallery and Makerspace.
Right: Faculty in Print Display Case

BY KATHY STEIN-SMITH

INTRODUCTION

What is it that makes us happy, increases our earnings, makes us better leaders, and is essential to the economy and to society, but where we don't live up to our potential? The answer is -- Creativity.[1]

Creativity, which drives scientific and technological discovery, as well as interdisciplinary research, is in demand in the workplace, and is needed to effectively address the most complex issues facing the world today. It is an essential 21st century skill, empowering us to see new connections and envision new solutions. It is fostered by reflective learning, with a mindset, and in an environment, in which the interplay of different perspectives is part of the process.

Where can we find access to the information, technology, and community environment to support new ideas and reflective learning? The answer is -- the Library.

On the Metropolitan Campus of Fairleigh Dickinson University (FDU), located a scant 5 miles from New York City's Manhattan, the Frank Giovatto Library serves as a hub for research, writing, and creativity, with a collection, services, and spaces designed in response to real and perceived needs of the Campus community, and a team of dedicated librarians and staff.

The academic Library fosters creativity and provides access to the world of ideas, not only through its collections, but also through its role as a social space, where students interact not only with other students, but also with faculty, staff, and alumni.

The process of critical thinking and reflective learning often takes the form of reports, projects, or presentations; or musical composition and performance, and artistic works.

The Library supports it all — through its collections; exhibit, performance, and makerspaces; collaborative spaces; and programming.

Most importantly, librarians empower students by facilitating research and by framing the interconnectedness of research, writing, and creativity in their information and media literacy instruction and in their assistance to students and other library users at the reference desk.

SUPPORTING STUDENT RESEARCH AND WRITING

The Library supports student research and writing across the disciplines through its collections, services, and spaces.

Support for student research and writing includes media/information literacy sessions for classes at faculty request, walk-in Library Research Clinics, and individual research consultation sessions with the librarians available for students, faculty, and staff. Such individualized attention and instruction is especially valuable in an academic landscape often characterized by large lecture and online classes.

The Library supports student research and writing in providing instruction and assistance in finding and evaluating information. In alignment with traditional media/information literacy instruction, the Library also helps students to join the scholarly conversation, to discover academic writing, the framework of information within their discipline and to effectively and appropriately integrate research information into their research and writing.

The importance of an initial first-semester library orientation and experience, aka information literacy instruction, cannot be overstated -- in terms of reducing real and

Left: FDU Press publications in the Sammartino Room, Giovatto Library. Right: Student Art Exhibit in the Reference Reading Room

perceived library anxiety and of acquainting new students with the collections and services of the Library and of the role of the Library in their student success. Ideally, this first-semester experience would form the foundation for progressive library instruction to develop academic, disciplinary, and career writing and research skills.

As a follow-up and complement to library instruction, embedded librarians play a key role in communicating the availability and value of library services to faculty, students, and departments who might otherwise be unaware of these services.

In addition to academic and course-related writing, it is important to bear in mind that both fiction and nonfiction require background information, with creative nonfiction especially research-dependent, and the Library also plays an important role in supporting creative writing. Famous writers, including Hemingway, have written in libraries, and libraries house and make available -- in single and multiple copies -- creative works.

In addition, the Library houses the campus Metro Writing Studio, which offers student writing support, and a browsing collection of current library books on research and writing is available adjacent to the Writing Studio.

The Library is also prepared to partner with other university departments, providing research assistance as requested, and by offering library and research-related workshops.

SUPPORTING FACULTY RESEARCH AND WRITING

In addition to supporting student writers and writing, the Library plays a role in supporting faculty research and writing through research consultations offered by the librarians and research assistance. Librarians also often work with faculty in identifying potential journals and publishers, and in searching for information to support grant-writing.

The Library also offers the opportunity for faculty to present on their research and publication through faculty book talks. These presentations, and the subsequent conversations, often form the basis for mentoring relationships and for cross-disciplinary conversation, collaboration, and further research.

The Library offers the same level of support to university administration and departments in search of information.

Libraries often also support faculty writers by sponsoring and/or supporting institutional repositories, university presses, and journal publishing platforms.

RECOGNIZING THE STUDENT, FACULTY, STAFF, AND ALUMNI AUTHORS AND ARTISTS

The Library recognizes our university community of authors and artists through its collections and special events.

Its Special Collections Suite houses books by FDU authors, a collection of FDU Press monographs, as well as the complete run of the FDU *Literary Magazine*, an archive of FDU Magazine, the Metropolitan Campus Student Newspaper Archive, as well as FDU doctoral dissertations, masters theses, and honors theses. There is also a Faculty in Print display of current books and articles by FDU authors.

The authors and artists are honored at the Celebration of FDU Authors and Artists, the Library's signature event of the year, held during National Library Week, and the Library serves as the venue for Honors Research Day, where graduating Honors students present on their research.

THE LIBRARY-CREATIVITY CONNECTION

The Giovatto Library supports research, across the disciplines, by offering writing, music performance/practice, an art gallery, a makerspace, and other creative and collaborative spaces empowering all members of the campus community to maximize their creative, collaborative, and intellectual potential.

Appealing to, and attracting, different subsets of students and faculty ensures that a diverse conversation, fresh perspectives, and cross-sector collaborations are taking place at the library.

The Library also offers a regular series of "musical afternoons" where faculty, staff, and students can play either of 2 Boston by Steinway library pianos or their own instrument, sing, or just listen. The library makerspace, which includes two 3D printers and a digitizer, offers the opportunity for students, faculty, and staff to "print" their 3D designs.

The Library Recital Program is available to any member of the campus community who would like to have a musical recital, with the Library as venue. The Library Exhibit Program offers faculty, staff, and students the opportunity to exhibit their work in the Library Gallery. For both types of event, the Library is prepared to sponsor a reception and to help promote the event on campus.

A Readers Circle Book Club, open to the campus community, meets once a

Book Display at the entrance to the Writing Studio

month, and the readers circle model allows participants to share their independently-chosen reading. The Readers Advisory offers librarian advice and guidance to independent learners in developing their own self-directed learning program. Coloring books and crossword puzzles are available in the Library Cafe.

Circling back to the Library collection and services, research has clearly demonstrated that readers of books live longer.[2] Making books present and available in the lives of our busy students is clearly our most vital contribution to their present and future well-being.

CURRENT TRENDS AND FUTURE DIRECTIONS

It is interesting to consider how the Library could expand its support of writing and of creativity.

The Library is the natural venue for meetings of local and regional writers groups and writing-related seminars and workshops, as well as cultural events, theatrical performances in its theatre-auditorium, open mic readings, and local author events. Our Giovatto Library actually served for many years as the setting for the university's Literary Society guest author talks by nationally-known and best-selling authors and serves as a venue for many programs highlighting campus authors and artists across the disciplines.

The Library, as our example has hopefully shown, can truly take a place at the heart of the creative conversation on campus, foster new ideas, and bring different

stakeholders to the proverbial table. Critical thinking, creativity, and the ability to take new ideas and concepts from conceptualization to implementation are concepts that require not only a diverse community, but also an environment where such free thinking is fostered and supported. The Library, regardless of budget or staff, can indeed become such an environment and truly add to the creative dialogue so essential to higher education.

The Library can, and should, partner with local organizations such as the local historical society in developing online resources as well as print monographs and articles on local history and its role in the contemporary community, building bridges among local stakeholder groups including the campus, the local K-12 students, and senior citizens.

Archival projects are a wonderful way to highlight the technological, historical, and professional expertise of the librarians.

A writing partners mentoring program would be another area where the Library could bring together student writers with faculty, staff, and alumni authors who share an interest and/or disciplinary background.

The Library could sponsor a writers group, where campus writers can come together to read and offer positive feedback on each other's work, and host local writers groups to bring together students and writers. The Library could also sponsor a writer's hour, inviting students to write in an environment free of distractions.

Piano, music, and dance practice rooms for individual and group use, art studio

spaces, an expanded makerspace, photographic and video equipment for student use, and an expanded art gallery are only a few of the additional possibilities for collaborative partnerships across the campus and beyond.

CONCLUSIONS

The goal, and the challenge, is to establish the centrality of the Library in the conversation on creativity and innovation taking place across the disciplines on college and university campuses.

The role of the Library in bringing together local and campus stakeholders in support of writing, research, and creativity is one of developing and supporting partnerships and in providing collections, services, technology, and spaces where academic, literary, and creative synergies flourish and thrive.

The partnership with faculty -- academic authors, experts, and artists, and with community authors, artists, and organizers is where the Library can serve as a link to building the creative community on campus and beyond and creating a better future for our students and for our world. ∎

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A New Way to Improve Library Services

» **Conducting a Participatory Design Study of Faculty Research Practices**

BY LYNNE JACOBSEN AND KEVIN C. MILLER

Anthropologist Nancy Fried Foster defines participatory design as an "approach to building spaces, services, and tools where the people who will use those things participate in coming up with the concepts and then designing the actual products."[1] With increasing frequency, libraries are conducting participatory design studies that employ ethnographic methods—such as in-depth interviews, photo interviews, mapping diaries, observation studies, and design workshops—to gather information about the research and work practices of faculty, students, and staff. While these methods can be time-intensive, they enable libraries to gather rich data that are embedded within a larger set of activities, providing a deeper understanding of user behavior. Once analyzed and interpreted, the findings can be shared with constituents, such as architects, software developers, or library administrators, and applied to a host of initiatives, including library renovation, website redesign, and improved library services.

Participatory design starts with a question, and the question determines the appropriate methodology to employ. Our question was "How do faculty members conduct research?" Our goals were to better understand the research, teaching, and technological needs of faculty, and discover the degree to which faculty use (or do not use) library services, resources, buildings, and technologies to satisfy these needs. To this end, we conducted a series of in-depth interviews with faculty members with the anticipated benefit of producing a body of data to inform library decision-making. The following article provides a summary of our results, including an overview of our procedures, methodology, and approach to analysis. By contributing to the growing literature of case studies on participatory design projects in libraries, we hope to demonstrate that this new approach to improving library services is within the reach of academic libraries, no matter their size or available resources.

LITERATURE REVIEW

Our project builds on previous studies that have used ethnographic methods to address this type of question. For example, Colby College librarians conducted a study in 2010 in which faculty were asked open-ended questions on how they use library and information technology (IT) services.[2] Interviews took place in faculty offices and were videorecorded for subsequent co-viewing and evaluation by librarian and IT staff. The results of the study generated ideas for new approaches to faculty services, provided the basis for a deeper understanding of faculty culture, and strengthened the relationships between all constituents.

A second study, called Project ERIAL (Ethnographic Research in Illinois Academic Libraries), took place in 2010 across five academic libraries and focused on the research processes of students.[3] Librarians employed several ethnographic methodologies, including semi-structured interviews, photo journals, mapping diaries, and web and space design workshops.[4] This qualitative study was grant-funded, took place over two years, and enlisted the help of two anthropologists. Project ERIAL enabled librarians to experience the students' world and subsequently institute strategic changes to improve services.

Both of these studies—and many others—draw a direct connection to the work of anthropologist Nancy Fried Foster, director of anthropological research at the University of Rochester for a decade, and now senior anthropologist at Ithaka S + R. Foster's work has made the University of Rochester a hub for participatory design in libraries, and her Council on Library and Information Resources (CLIR) sponsored workshops have equipped numerous librarians with new tools to better understand their users and design better services, spaces, and technologies. Our study, likewise, benefited from two CLIR workshops led by Foster in 2012.

METHODOLOGY

To answer our research question—how do faculty members conduct research?—we designed a qualitative study focused on a series of in-depth interviews with a rep-

resentative selection of faculty members. Each interview was approximately 45-minutes long, semistructured, and took place in the faculty member's office—*in situ,* in anthropological terms. The interviews were video-recorded for subsequent analysis; Jacobsen served as the primary interviewer, while Miller ran the video camera and asked follow up questions (probes). Six questions served as touchstones for each interview:

1. Tell us about your current research project. Where do you work on this project?
2. What materials are you using for this project? How did you know these items existed? How did you obtain these materials? How do you use these items?
3. How do you organize your work? Tell us about your office setup. What programs do you use? What technology do you use?
4. Do you use materials in your teaching? If so, what types of materials? How did you know about these items? How did you obtain them? How do you use them?
5. How do you keep current in your field?
6. If you had a magic want to help you in your current research project, what would you do with it?

With this methodology, we did not ask directly about the library. Instead, we listened as faculty articulated their research practices to indirectly learn about their use of library materials, services, and facilities. We conducted the interviews during the fall semester of 2014 without a grant or any special funding. We used a digital video camera and tripod already in the library's holdings; the only real expense was our time. Our goal was to conduct 10-12 interviews with faculty solicited from a wide range of disciplines and schools within Pepperdine University.

Following an internal proposal to the Dean of Libraries, we sought Institutional Review Board (IRB) approval and completed a required web-based training course on "Protecting Human Research Participants." We then selected faculty members for interviews through nomination by division chairs and library subject liaisons.

REVIEW AND ANALYSIS
At the close of the interview period, we had completed nine 45-minute interviews with individual faculty members. Although slightly short of our projections during the planning and recruitment periods, we were satisfied with the representational breadth of the subjects. Within Seaver College, our main undergraduate campus in Malibu,

Figure 1. Coding frame in Google spreadsheet

California, six of eight divisions were represented, while the remainder represented three of our graduate programs; namely, Education, Psychology, and Public Policy.

During spring semester 2015, we began the review and analysis process. We reviewed all nine video recordings separately on our own, extracted data points for comparison and interpretation, and then met to discuss our notes and ideas on coding. The coding process was thus deliberately inductive, with comparable data points arising out of the analysis process.

We used a Google Spreadsheet as our preliminary coding frame, a place to record the iterative results of the coding process and tease out some categories that gained significance across multiple interviews **(see Figure 1)**. Clearly, some of these categories grew out of our scripted, open-ended questions, such as:
- Systems or methods of organizing research materials
- Preferred physical location(s) for conducting research

However, many other categories emerged in the expansive, conversational answers enabled by the interview format, often spurred by follow-up questions. These categories include:
- Preferences for reading (and note-taking) print versus electronic
- Methods for communicating and collaborating with co-authors/colleagues

Here are a few notable quotations from various interviews that illustrate some of these categories, particularly the question

of print versus electronic resources.
- A faculty member from one of our graduate campuses suggested that the rows of stacks in the library could be done away with in favor of a coffee shop since
- "It's all on the computer now, right?"
- On the importance of currency in research: "You're reading history when you're reading a book...I couldn't live without electronic journals."
- "I still love paper. I have a really hard time not having the paper article and reading it, and working it up. And I have a tablet I can do that on, but I just don't think I understand the work unless I'm actually reading a physical piece of paper."
- On visiting libraries: "There's something about the smell of dust and old leather that is really pretty intoxicating."

RESULTS
Many themes and observations about faculty culture emerged from the categorization process.
1. **Projects**. Most faculty are involved in multiple, simultaneous research projects
2. **Locations**. Most faculty use their campus office for research, some conduct research at home, and some write in a variety of places (on a laptop). For a few respondents, research also required travel to a specialized library or archive. Some respondents indicated that work locations depended on childcare schedules.
3. **Collaboration**. For collaborative work, most faculty use email to contact others, while some use social media, phone calls, and face-to-face contact. Some expressed an interest in using shared

document editing software like Google Docs and Dropbox, while a few are actively using these products.

4. **Discovery**. Faculty indicated a variety of means of discovering materials: specific databases, Google/Google Scholar, the library catalog, mining bibliographies, social media, visiting a bookstore, publisher email, direct contact with authors/colleagues, and Research Now (online research company). Access to materials was provided through interlibrary loan, from the library, directly from the author, and from other university databases.

5. **Reading**. Most have a hybrid approach when it comes to print versus electronic.

6. **Organization**. Faculty use a wide variety of methods and technologies to organize materials. Most use some kind of citation software (such as RefWorks, Mendeley, or Zotero), while others thought they should be using one. One quote: "There are a ton of different options, so it's almost like information overload on how to organize your information."

7. **Teaching**. Direct integration of their own research with teaching was not widely indicated. When asked if they use materials in their teaching, faculty mentioned both tools and resources: Sakai, online databases, books/textbooks/e-books, library materials, primary and secondary sources, InfoGuides, CDs/streaming, current articles, video tutorials, and PowerPoint.

8. **Keeping current**. Some faculty use social media for communication and staying current. Others mentioned staying current by attending conferences, reading journals (both print and electronic), editing a journal, being a reviewer of a journal, conducting research/publication projects, writing grants, and joining a listserv.

9. **The Office**. We asked each faculty member to give us a tour of his or her office. Faculty explained the organization of their shelves, cabinets, and desks. They described the materials they use for research and teaching, which ranged from books and journals to posters and objects. Many offices contained art objects from travels or from student projects. The tours provided an enlightening and personal look into a professor's life.

10. **Magic wand**. When asked what they would wish for with a magic wand, many faculty responded "more time." Other responses varied, including a desire to have nearby colleagues, ways to discover faculty interested in similar research subjects, or the ability to speak and understand all human languages.

11. **Facilities**. There was little mention of using library facilities; the exception was a request for a coffee shop in the library.

FACULTY NEEDS

Faculty expressed various needs, some of which were met right away, and others are planned for the near future. These results were shared and discussed with the library management team and disseminated to faculty through the library's electronic newsletter.

a. Web-based data collection site
b. Better tools for online collaboration
c. Help with citation software
d. Improved communication about library workshops
e. Podcasts (like TED talks) curated by the library
f. Access to a better microform reader
g. Automated notification when resources become available
h. A coffee shop in the library
i. Alumni access to library resources
j. Electronic access to the Economist and the Wall Street Journal
k. Use of reserve books outside of the library
l. Access to a specific database
m. In-person workshops on using databases
n. The means to learn new languages for research
o. Ways to discover faculty with similar research subjects

CONCLUSIONS

The results of this study provided invaluable insight into faculty culture as well as data to improve library services, spaces, and technologies. Should we desire more data, the results of this study could serve as the foundation for a survey more broadly disseminated among the faculty. As far as lessons learned, we feel the recruitment process may have been more successful if we had incentivized participation, such as providing participants with gift cards or a similar reward. We may also have achieved our projected participant numbers if we had extended the duration of the project.

The results of this study also confirmed the presence of trends found in other academic libraries:

a. In an increasingly digital environment, library services intersect with multiple points of the scholarly research cycle, including support with citation software, data management and preservation, data mining, and new publishing or dissemination opportunities.[5]
b. Research increasingly occurs in networked environments utilizing social media, discovery platforms, and electronic communication that enable faculty to collaborate and share their work within and across institutions and disciplinary communities.[6]

The process of visiting faculty in their offices and discussing their needs strengthened our interpersonal and professional relationships in a way that defies metrics. We are very grateful to the faculty who opened up their doors and contributed their time for this participatory design study. ∎

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FOOTNOTES:
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