CHAPTER 7

Unanticipated Opportunities from Closed Libraries:
Pivoting for the Future

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FOR MUCH OF the 1990s and 2000s, Columbia University planned to build a consolidated library that would contain collections and staff from seven of its eight science and engineering libraries. During the summer of 2009, four of these science libraries were closed; staff and collections were moved to various locations on campus, although the new library space was not due to open until 2011. On January 18, 2011, Columbia opened the new science library that integrated the collections and staff from the four closed departmental libraries: Biology, Physics & Astronomy, Psychology, and Chemistry. Though the remaining science libraries—Engineering, Mathematics, Geology, and Geosciences—were not part of this initial consolidation process, the Engineering Library was closed in 2014 and planning is underway to close the Geosciences Library in 2015. This chapter focuses not on the process for closing these libraries, but on what has happened so far as a result of the closures.

Staffing, services, and relationships with faculty, researchers, and students have changed as a result of the multiphase closure and merger of

these libraries. We, the authors of this chapter, are librarians who all hold positions that did not exist before the libraries merged, and we offer unique perspectives on the migration away from departmental librarianship toward a team-based, service-oriented approach to outreach and research support that has been fostered directly in response to the closures.

This chapter is about making the most of opportunities for inter- and multidisciplinary research support that will be the hallmark of 21st-century research libraries.

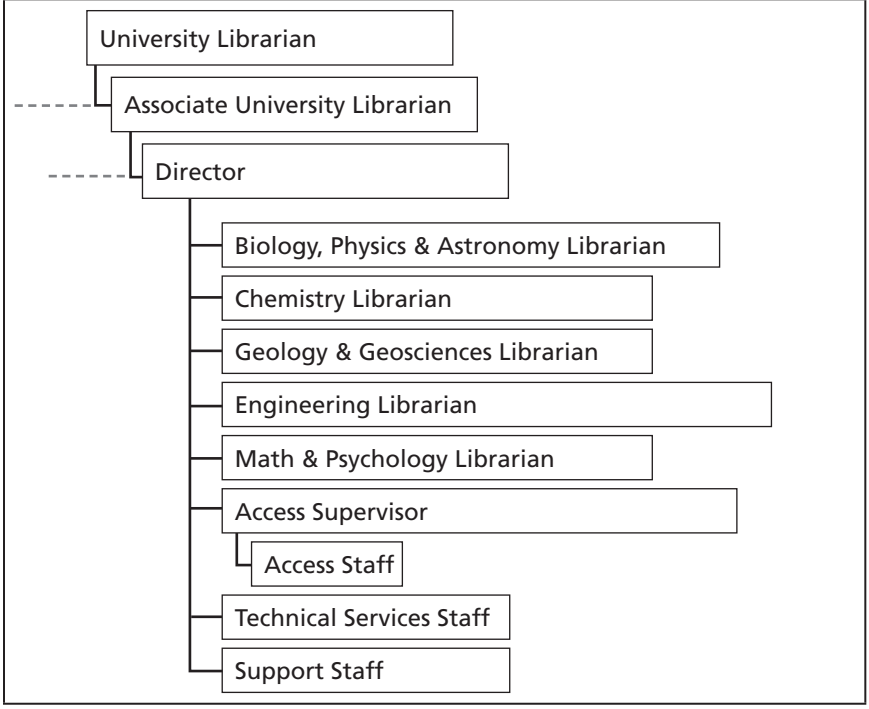
Background

Prior to 2009, the Science & Engineering Division Libraries on Columbia University's Morningside Heights campus were structured according to a traditional department-based model. The division was comprised of seven libraries—Biology, Chemistry, Geology, Engineering, Mathematics & Science, Physics & Astronomy, and Psychology—distributed across campus in the buildings that housed their associated departments or schools. The five professional librarian staff lines shown in Figure 7.1 focused on collection, instruction, and outreach according to specific library locations: Biology and Physics & Astronomy, Chemistry, Geology & Geosciences, Engineering, Math & Psychology. For decades, these five subject specialist librarians concentrated on building strong collections of print and electronic resources for their disciplines. Each librarian had excellent relationships with faculty, and each departmental library had its own unique set of services and relationships with its users.

In the early 2000s, two initiatives led to an assessment of the division's structure and a reconsideration of whether subject specialty was the optimal model to address the changing and increasingly inter- and multidisciplinary research needs of Columbia's faculty, researchers, and students. The first initiative began in 2002 when, in conjunction with the New York Public Library and Princeton University, Columbia opened ReCAP (Research Collections and Preservation), a large off-site storage facility in Princeton, New Jersey. To date, Columbia University Libraries have accessioned over 4.2 million items to this facility. Quick and reliable delivery of off-site materials to researchers on the Morningside campus has greatly alleviated major issues around the space required to store library materials on a university campus in the heart of Manhattan where space is all too valuable. The second initiative during this same period was the rapid adoption and

growth of electronic resources available via e-book and e-journal packages. The availability of these packages has reduced the time necessary for science and engineering librarians to develop the libraries' collections.

FIGURE 7.1
Organizational Chart of the Science & Engineering Division Libraries circa 2008



In the mid 2000s, planning began for a new interdisciplinary science research building to complete the Morningside campus plan developed in the 1960s (Figure 7.2). An integrated science library was included in the building plans for the Northwest Corner Building and was originally intended to house collections from all seven on-campus science libraries. Plans were scaled down after the refusal of the mathematics department to close the doors of its departmental library. The consolidated collection now available in the integrated library is comprised of high use astronomy, biology, chemistry, physics, and psychology materials. The library space was also designed to house a Digital Science Center with state of the art technology and a selection of high-end software applications to enable scientific analysis and visualization (Figure 7.3).

FIGURE 7.2
The Exterior of the Northwest Corner Building

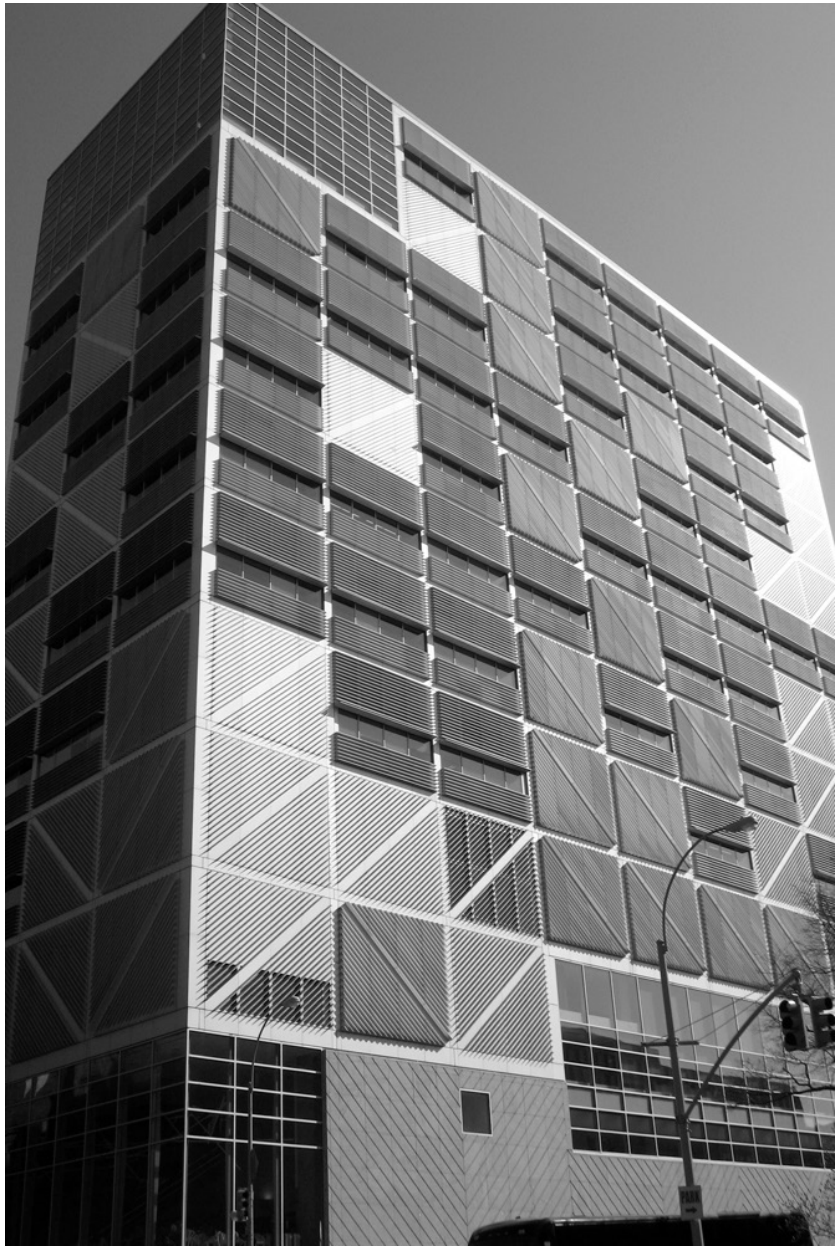


FIGURE 7.3
The Interior of the Science & Engineering Library

In line with national trends to close libraries after the economic downturn in 2008 (Guarria & Wang, 2011; Kaser, 2010), the libraries were forced to prematurely close four of the departmental libraries a year and a half prior to the anticipated opening of the new integrated science library. The libraries had recently hired a new division director with experience closing libraries who was able to shepherd the division and collections through the closing process. With only six weeks' notice, science librarians were relocated to other library spaces where they worked for the next two years until the integrated science library opened. Once outside of the departmental libraries, they no longer saw students and faculty on a regular basis, and the impact on staff who were accustomed to face-to-face interactions was considerable. Librarians planned for the challenge of working in a new library that would contain few print materials (15,000 print volumes, no print journals, and few reference materials) and very sophisticated electronic equipment and resources. The division was confronted with the need to develop support services for many new technologies and to train librarians so that they would be able to assist students using these resources.

Once the work of closing four departmental libraries was done, the promise of the new consolidated Science & Engineering Library forced the

professional staff to take stock of each others' abilities with new technologies, assess patron needs and expectations, and develop new models of service to better address researchers of the 21st century.

Taking Stock of Skills

The Digital Science Center in the new Science & Engineering Library was planned as a hub for emergent research methodologies in the sciences with access to subject experts having the technical skills necessary to consult with modern researchers. From the beginning, the deep information resources at the Digital Science Center included access to the software necessary to undertake science and engineering research in addition to the expected electronic content and databases provided by the libraries. The center was designed as a collaborative environment where students, faculty, and staff could leverage high-end workstations and expensive software to more efficiently carry out their work.

Patrons have an increasingly broad range of software skill levels, research questions, and technical issues, and the staff of the Science & Engineering division has been charged with the tailored support of the software, its technical troubleshooting, and the research support that surrounds the use of the software. To develop these new services, and to identify the levels of support the librarians could collectively expect to provide to patrons, staff members within the division undertook an informal skills assessment survey. Crucially, the survey was not tied to performance evaluations or job security; it was quite simply meant to assess the division's current understanding of and ability to use the various software programs in the Digital Science Center and to involve staff in the process of learning and skill development. New technologies and new library directions require new skills, and this approach engaged staff as active participants and stakeholders in their own professional development and engendered an inclusive, supportive framework for improvement.

The survey consisted of three basic questions about the 60+ software programs offered in the Digital Science Center: Do you know what it is used for? Do you have any expertise using it? Do you want to learn how to use it? Additionally, each staff member was asked to identify how he or she best learns.** A training plan was then generated based on several streams of data:

**Response options included tutorials (lecture plus hands-on); hands-on (e.g., doing); task-based (e.g., open-ended homework); figuring it out on your own; step-by-step instructions; handouts and reference materials; lecture (e.g., show-and-tell); and online videos.

the survey results collected via Google Forms, patron questions collected via Desk Tracker, software use collected via KeyServer, entry data collected via a Lenel entry system, center ownership of support responsibilities, and recommendations from the emerging technologies coordinator. Based on the survey results of how staff best learn, the most effective plan was determined to be a combination of brief presentations, homework assignments, and seminar style problem-solving activities using various software tools. This system continues to form the basis of the division's team-building approach to learning new skills as feedback about the skills assessment from staff encouraged the continued development of internal training opportunities. In addition to professional development related to software, the division has built a series of periodic internal staff trainings related to topics as varied as Google Apps, data and data management, and understanding code.

Staff were becoming more familiar with the resources available in the Digital Science Center, the methodologies of modern research, and the new technologies and workflows to aid in their work. Ultimately, the division settled upon a strategy wherein the base level of support all staff should be able to provide to patrons is built upon an understanding of what each software program is and does. This basic understanding about software has become their knowledgebase to be called upon as part of the general reference interview, alongside an understanding of traditionally available resources such as books, journals, and databases. When a patron requires support beyond a staff member's expertise, they are referred to the library's "software owner," a staff member who is usually an expert user and who is responsible for the configuration and maintenance of the software program in collaboration with IT staff. In rare cases where the software owner is not an expert or is not able to assist, patrons are referred to a partner affiliate—such as an expert professor—who has generously agreed to provide technical support.

Several staff left the division before a follow-up assessment could take place in order to collect longitudinal data, but in many cases, new staff have been hired because they have the skills that existing staff were being trained for. Several of the new professionals have advanced degrees in the disciplines the division works with, and they are able to effectively engage students, faculty, and staff in new ways given their content expertise.

The skills assessment was fundamentally about organizational change. Redeveloping skills enabled the division to address user technological

needs, and the new services developed to support users have in turn led to a new openness towards trying new things, such as new software, and pivoting to stay current in support of patrons. Furthermore, the skills assessment enabled the division to identify gaps in the skills currently available to support patrons and craft job descriptions with the goal of hiring staff who already have valuable skills instead of relying solely on developing the skills internally with existing staff.

Filling Staff Vacancies

Between 2009 and 2013, five professional librarian positions were vacated. Staff vacancies were not always filled, and subject librarians often took on additional subject areas for collection development. During those years it became clear that science and engineering librarians at Columbia needed to improve their technical skills, expand their educational backgrounds, and increase their knowledge of the scientific research process. Previously, instruction and outreach programs had been limited to new student orientations and assisting faculty who needed to find articles and other material. To address the evolving roles librarians were being asked to fulfill, the division embarked on a dynamic reorganization that would facilitate providing services to patrons built upon the functional strengths of staff instead of primarily relying upon subject expertise. Library administrators were remarkably supportive of the incremental reconfiguration that involved developing new positions and reconfiguring existing positions.

One critical addition to the division was an emerging technologies coordinator, a staff member with a sophisticated technical background who was hired to plan for the implementation of the Digital Science Center in the new merged library. To create this position, a professional access services position was eliminated because that position's areas of responsibility were considerably reduced after the merger. The emerging technologies coordinator has steered the development of the Digital Science Center and has supported long-term staff in their migration to using more advanced technology. Notably, the emerging technologies coordinator does not have a library degree but does have a PhD in chemistry and teaching experience as well as extensive knowledge of Columbia and the research process. This expertise represented a much-needed expansion of the division's skills.

With the impending closure of the Engineering Library and an engineering librarian vacancy, a second new position evolved as a hybrid between traditional departmental librarianship and a consultative functional role within the division: research services coordinator. In addition to liaison and collections responsibilities to the School of Engineering and Applied Science and the Departments of Mathematics and Statistics, the research services coordinator assesses the services provided by the division, determines what the division can improve, and forecasts how the division can continue to evolve in the future. The coordinator has completed assessments that have analyzed current and future services to remote users, the roles of librarians in MOOCs, and what the libraries can do to better communicate with users. The staff member in this position has a master's degree in math and statistics along with a library degree.

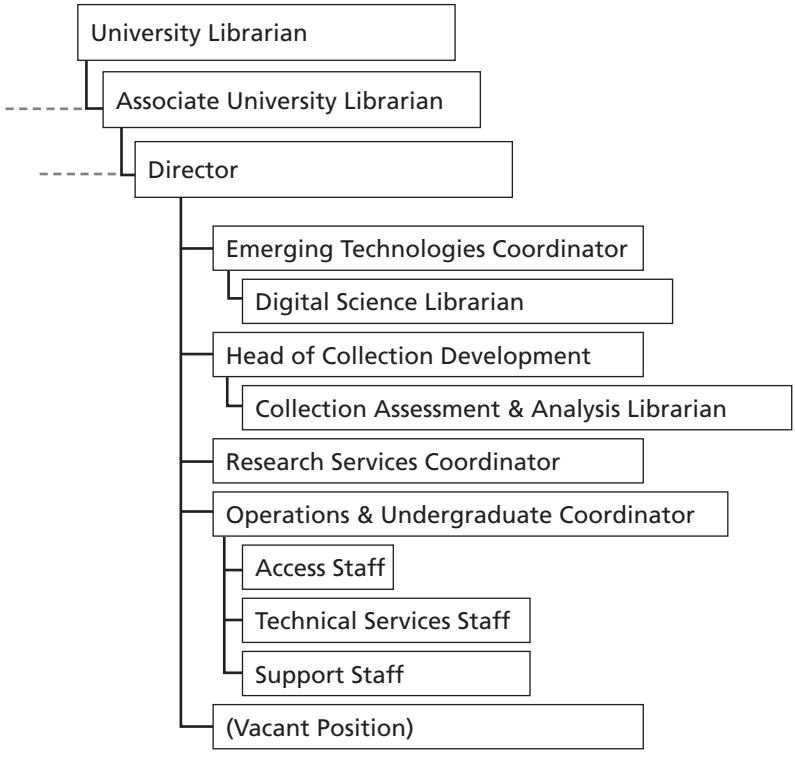
Not all of the changes to the organizational structure of the division have resulted from new hires; existing staff have also been promoted into new functional roles built upon their strengths. By 2012, the geology and geosciences librarian had taken responsibility for the collections and liaison duties in biological sciences and psychology as a result of various professional staff vacancies. That position was subsequently reconfigured as a head of collection development, who now oversees the division's collections budgets; coordinates with selectors to make decisions about renewals, new purchases, and cancellations; and is responsible for assessing the use of collections provided by the division. Soon thereafter, the vacant biological science, physics, and astronomy librarian position was reconfigured to a two-year collections assessment librarian position that reports to the head of collection development. The collections assessment librarian assesses the relationship between the division's print and electronic collections and will guide the continued optimization of collections and resources.

The final staff vacancy, a chemistry librarian, has been repurposed as a digital science librarian. This librarian will provide additional technology support to researchers who are engaging with issues of data, computational methods, and research workflows. At the time of writing, the position has not yet been filled. Table 7.1 represents the net effect of the incremental reorganization from 2008 to 2014, and Figure 7.4 charts the organization of the Science & Engineering division in 2014 resulting from incremental rearrangement.

Table 7.1
Summary Reconfiguration of Staff Lines from 2008–2014

Subject-Based, 2008		Functional, 2014
Biology and Physics & Astronomy Librarian	→	Collection Assessment and Analysis Librarian
Math and Psychology Librarian	→	Operations and Undergraduate Coordinator
Geology & Geoscience Librarian	→	Head of Collection Development
Chemistry Librarian	→	Digital Science Librarian
Engineering Librarian	→	Research Services Coordinator
Head of Access	→	Emerging Technologies Coordinator
Director	→	Director

FIGURE 7.4
Organizational Chart of the Science & Engineering Division Libraries circa 2014.



Team Approach

Throughout the transition from discipline-oriented areas of expertise to skills- and strengths-oriented support, the librarians of the Science & Engineering division have consciously developed a team-oriented, service-focused approach to providing patrons with research and curricular support. The skills assessment enabled a culture of action built upon the division's various strengths and has empowered staff to overcome the restrictions of departmental liaison affiliations.

Some librarians are inherently more skilled—or are more interested—than other librarians in certain areas: instruction, reference, web content development, collection development. Traditionally, the librarian responsible for service to a department would also be responsible for each of these areas, regardless of that librarian's ability, in order to best communicate to that constituency. However, by identifying strengths and interests, the division staff members have been able to better collaborate with each other across traditional subject-specific boundaries. Furthermore, having local expertise in particular skills has facilitated the professional development of both the expert and the non-expert staff. By sharing knowledge, strategies, and experience, this team approach is improving the abilities of all staff members.

As research in the sciences becomes increasingly inter- and multidisciplinary, a team approach built upon functional strengths and diverse subject expertise is also improving the level of service the division can provide to patrons. All reference questions related to science and engineering, and even some that are not, are funneled through the head of collection development who acts as a point of triage. The question is either answered or passed on to the relevant member of the professional staff who has the necessary functional or subject expertise to answer the question. All reference staff are copied on responses in order to share knowledge amongst the group. This knowledgebase of answers is especially useful to staff when similar questions are asked in the future. Furthermore, delivering reference services as a team also provides coverage in case of absence.

The team approach has also impacted how the division carries out instruction and collection development. For example, to keep the attention of a large workshop or instruction session, several librarians will divide the presentation content into short segments to provide students with fresh perspectives. Rotating speakers can overcome fatigue on the part of the

students and the librarians involved. Similarly, collection development responsibilities are shared among librarians who can best manage complex vendor relationships, and web content development is shared among librarians who have skills with web design, information architecture, and user experience design.

Supporting Undergraduates

As Columbia University is a research institution with very high research activity, library support for scientists and engineers is mostly focused on graduate student researchers, not on undergraduate science and engineering majors. Graduate students tend to have more complex research needs than undergraduates and are enrolled in much higher numbers, while undergraduates spend the majority of their time in lecture and laboratory courses. Additionally, Columbia University has a complex undergraduate landscape comprised of several schools and programs. For the Science & Engineering Libraries, the constituencies most impacted by the closure of the various libraries have been undergraduate students in Columbia College, general studies, continuing education, and the School of Engineering & Applied Sciences.

Undergraduate coursework in Columbia College is based around the core curriculum and includes a requirement for non-science majors to take three non-research based science courses. Students in these courses rarely come in contact with science librarians because of the decentralized undergraduate infrastructure in which students are not firmly associated with the culture of a department. This distance challenged the division because undergraduates predominantly occupy the consolidated library space.

Undergraduates needing research assistance in a particular subject are typically matched with the appropriate subject specialist librarian. Though one other library division includes a staff member dedicated to serving the undergraduate population, there had been no comprehensive undergraduate support plan for students working in the sciences. With the variety of undergraduate students working in the Science & Engineering Library every day, it was easy to recognize that students likely do not know who librarians are, what they do, or how librarians might help them.

The move away from the subject specialist model opened an opportunity to implement new methods of targeting undergraduates in a more active way as opposed to simply waiting for students' consultation requests or

faculty members' instruction requests. In line with the move to functional roles within the division, an access supervisor with an MLIS was promoted to a professional librarian role dedicated to serving undergraduates. In addition to overseeing access issues and reserves, this librarian coordinates undergraduate orientations and instruction sessions in collaboration with the rest of the division.

The undergraduate coordinator regularly provides research consultations for undergraduates and teaches in-class library instruction for several sections of the university writing program, a one-semester course that all first-year undergraduates must complete. He also makes contact with incoming freshman at a variety of orientation week events before the start of the fall semester, and he connects with new transfer students at the start of the spring semester. These touch-points take various forms including tours, short introductory sessions about library services, and working the libraries' information table at meet-and-greet events.

An increasingly popular undergraduate major and concentration in sustainable development has built upon the successes of the undergraduate writing program to foster more substantial contact between undergraduates and science librarians. The rising number of undergraduates studying sustainable development has led to more requests for in-class instruction and follow-up consultations from students who regularly use the Science & Engineering Library. The ability to interact with students and build relationships during their first year has been invaluable; it is a marked contrast to hoping they get in touch later in their college experience when they have a research need.

Remaining Relevant without a Physical Space

The high undergraduate population in the Science & Engineering Library and the focus on outreach to graduate students has enabled the Science & Engineering division to think deeply about how to better support researchers who are not—or physically cannot be—present on campus. Planning is underway to develop services that better serve researchers in the field, faculty on sabbatical, and distance-learning students who are engaged in online courses. The division now frequently supports tools that enable researchers to leverage cloud-based resources to access the information they need, independent of their current location.

To provide services despite fewer available library spaces, the librarians in the Science & Engineering division are delivering instruction, materials, and consultative advice in new ways to students, faculty, and staff. The research services coordinator has identified several areas in which the division can better connect with remote users: recordings of workshop presentations, web-based instruction that includes formative assessment, and consultation via web VoIP services such as Skype and Google+. These areas represent iterative developments upon the services already provided to on-campus users, so the startup time and cost for each is remarkably low.

Several workshops throughout the past school year were recorded in collaboration with the Columbia Video Network, the distance education program in the Engineering School, and were made available on YouTube. Topics for these on-campus workshops were identified in conversation with the Engineering School and were chosen via a survey asking students' interests and needs. The workshops were aimed at filling the gaps left by departments in the professional training of engineering graduate students. PowerPoint presentations, handouts, and video recordings from orientations, workshops, and classroom instruction sessions were put online in a chronological list in order to deliver content asynchronously to students who could not attend the on-campus sessions.

The division will next implement some of the same topics in a more robust web-based format. The production team from the Columbia Video Network has agreed to record, edit, and host short web tutorials developed by librarians. An evolving set of meaningful distance instruction sessions will be created that include formative assessment to engage users throughout a series of videos. Interestingly, the best practices adopted for web pedagogy are in turn influencing the in-person sessions delivered by librarians.

In addition to providing remote access to workshops and instruction, the division's librarians will also offer web-based consultations to remote users (Cohen & Burkhardt, 2010; Steiner, 2011). Consultations to remote users can be offered with minimal additional costs using free web VoIP services such as Skype and Google+, and the cost of upgrading to reliable hardware (i.e., inexpensive webcams and microphones) has not been prohibitive. An existing online form was modified slightly to enable users to request consultations via videoconference. Future iterations of this service may include using enterprise screen-sharing tools such as WebEx.

It is especially important to promote web-based tools and resources to remote users. To spark interest in new tools, the division hosts contests throughout the semester using marketing grant money to pay for modest prizes. To date, contests have been held to encourage the use of 3D modeling software (http://3dprint.cul.columbia.edu/?page_id=1817), increase the division's social media footprint, and gather images of the research that takes place in the departments served by the division (http://bit.ly/instagramScience). Web-based submission interfaces and social media platforms have enabled librarians to more effectively interact with students, faculty, and staff whether or not they are ever able to set foot into one of the division's library spaces.

As new needs arise and as new constraints are placed upon patrons, the Science & Engineering division will continue to evaluate new models of developing services and will iteratively evolve existing services.

Optimism for the Future

With the several libraries already closed and with the Geosciences Library slated to close in 2015, the Columbia University Libraries Science & Engineering division has established a framework that enables it to continue to meet the needs of researchers, stay relevant as the technological landscape continues to evolve, and adapt as new user needs arise. Merging four departmental libraries and closing others has caused rippled effects in the division's staffing configuration that have enabled the division to devise a functional approach to services layered atop the subject expertise already present in staff. As the skills necessary to support Columbia University students, faculty, and staff change, the division has recognized where it can train internally and where it may need to hire new staff to inject those skills into its repertoire. To sustain its momentum through pivots and iterations, the division candidly reviews its activities. Assessment with the goal of team building ensures continued delivery of relevant services that meet a wide range of patron needs in an ever-changing landscape of minimized library footprints and maximized library expectations.

The Science & Engineering division at Columbia University has maintained an optimism about the future of library services despite closing five of its eight libraries, opening a new library, and planning for additional closures. Though these strategies apply whether or not libraries are closing, argue that the opportunities presented by a closed library are real, are worthwhile, and should be taken advantage of as fully as possible.

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