

Connector, Catalyst and Common Good: Defining the Academic Library of the 21st Century

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Abstract

Clearly articulating how an academic library inspires and transforms teaching, learning and research is a critical role for library leadership. Conveying the library's deep expertise throughout the knowledge lifecycle (discovery, use, creation, and sharing) and demonstrating its ability to provide solutions to information problems are core to what an academic library brings to campus collaborations. At the University of Minnesota, the Health Sciences Libraries have developed a "Space as a Service" model of collaboration that positions them as a vital component of a larger Health Sciences Education Center within the University's Academic Health Center. We describe and discuss six fundamental principles that guide our vision of an academic library as a Connector, Catalyst, Common Good and Service-Rich Environment, and offer a template for applying this model to a range of disciplines.

Introduction

Clearly articulating how an academic library inspires and transforms teaching, learning and research is a critical role for library leadership. Leaders must develop a vision that takes the highly valued and well understood traditional model of libraries, which centers on access to and support for collections, and extends it in new and exciting ways as print collections are stored and replaced with electronic formats. This article explores the concept of "space as a service," as described by Lorcan Dempsey (Dempsey), and presents an overarching model (see Figure 1) developed and applied at the University of Minnesota's Health Sciences Libraries (HSL) to guide the many ways in which academic library spaces may be reenvisioned to fulfill the library's mission, as well as the mission of potential campus partners and the institution as a whole, in advancing learning, research and professional practice. Specific examples of new space-enabled services, such as content creation (far beyond the writing of papers), knowledge management (including data visualization), and experiential learning (such as virtual and augmented reality), are described in HSL's Core Model, as shown in Figure 2. As Höppner *et al.* note, aligning the library's role to the "prevailing or emergent needs of the academy and the institutional context" is essential (Höppner *et al.* 2009, 610-623). Importantly, Janice Simmons-Welburn *et al.* recommend that libraries embrace transformative, rather than incremental, change, "to fulfill the campus's goals, even in endeavors that currently do not involve the library" (Simmons-Welburn, Donovan, and Bender 2008, 130-134).

Selected Literature Review

The library literature offers few models of collaboration for transformational change. However, the literature does chronicle key ways in which library leaders have led and adapted to the changing information landscape over the past three decades.

Even before the rise of the Internet and the transformation of collections from print to digital, librarians were reflecting on their roles on campus. Stoffle, Guskin, and Boisse note how underutilized librarians are as potential partners in the teaching, learning and research missions of their institutions (Stoffle and Others 1984). They believe that campus administrators view the traditional library roles of collecting, organizing and preserving materials to be passive endeavors and that librarians are considered to be “warehouse managers” of an “underutilized, expensive storehouse” rather than active contributors to the larger campus. They recommend that libraries reconceptualize themselves as a key campus partner and teaching library that includes integrated bibliographic instruction that encourages lifelong learning, comprehensive collections accessible on or off campus, a cultural center for the campus and surrounding community, a place for community members to utilize resources, and a research program to improve library services.

While libraries did build stronger instructional programs, they also began to transform spaces to accommodate the rapid rise of computerized access to information and resources. Many academic libraries incorporated an ‘Information Commons’ (IC) into their model in the 1990s. Beagle documents the rise of an IC on two fronts: the expansion of a graphical user interface (GUI) that brought the library catalog and other electronic resources to the user’s fingertips in any networked computer, along with a larger physical space devoted to networked computers and services related to the digital environment. Beagle asks how libraries can evolve from the print tradition to successfully manage services in the fast-moving and complicated digital environment, and suggests the answer lies in a management theory called strategic alignment. Through strategic alignment the library meets the needs of the larger institution, offering a broader role for the library in organizational scope, features, and collaborative opportunities (Beagle 1999, 82-89).

Branin describes two programmatic themes that informed a reorganization and redeployment of library staff, collections and services during a renovation of the Thompson Library at the Ohio State University in 2007: new practices in collection and content management, and the creation of a ‘learning’ organization and ‘learning spaces’ in the library. At the time of their renovation, the Ohio State Libraries were already well positioned to manage collections differently, offering access to high-density storage facilities and a strong network of resource sharing. Their move to renovate learning spaces involved three ‘activities’: pay attention to social learning spaces, incorporate technology-rich environments and support, commit to library staff as learners.

Branin looks back on the five years of space design planning and shares the concepts that influenced their work:

1. "An emphasis on content management, learning, and outreach responsibilities of research librarians, staff, and student assistants: new assignments and accountability, redeployment of personnel, more collaborative team efforts."
2. "Consolidation of collections and service points: in our Thompson Library Project we are consolidating humanities and social sciences collections, a number of special collections areas, and consolidating and reducing the number of reference and circulation service points."
3. "More collaboration with other libraries and other campus agencies."
4. "Primacy of public space in library facilities that is varied, flexible, and information technology rich."
5. "Creating flexible "learning space" that brings students, faculty, librarians, and information resources and services together for active learning." (Branin 2007, 27-53)

Collaborations increasingly became key to many library renovations. Doan and Kirkwood describe how a renovated classroom space in Purdue's Management and Economics Library enables new collaborations between the library and Krannert School of Management (Doan and Kirkwood 2011, 239-248).

In addition, Seal describes four basic features of the IC model: technology, spaces for group work, digital media and online collections, and access to librarians and technology experts. Seal also goes on to characterize the four C's of an IC service philosophy: connectivity, collaboration, creation, and community. Connectivity refers to the ubiquitous access to the Internet via connected devices and any-time access to information, knowledge, friends, family, and academic peers and faculty. Collaboration is reflected in students' preparing group assignments together or engaging in-group study. Creation of knowledge is facilitated in the library by access to online, print, media, software, audio/video creation and editing, and statistical packages. Community comes from a sense of shared purpose in academic life and the social connections that are made in the library (Seal 2015, 558-569).

Finally, Dallis shares a case study for renovated spaces at Indiana University Bloomington (IUB): the Learning Commons, designed for undergraduates, and the Scholars' Commons, supporting graduate and faculty research. Dallis notes that service planning for these spaces happened during the actual construction process. The new Learning Commons is a renovation of an Information Commons space created in 2003 that functioned mainly as a computer lab with over 250 computers, 12 printers, and large-scale color plotting. The renovation of this space enables other campus partners to be housed there, and Dallis describes this co-location as convenient and an improvement in service access for students and faculty, but does not describe how campus partners were chosen or how the library is an actual partner in these collaborations (Dallis 2016, 35-48).

Overarching Framework for Space as a Service

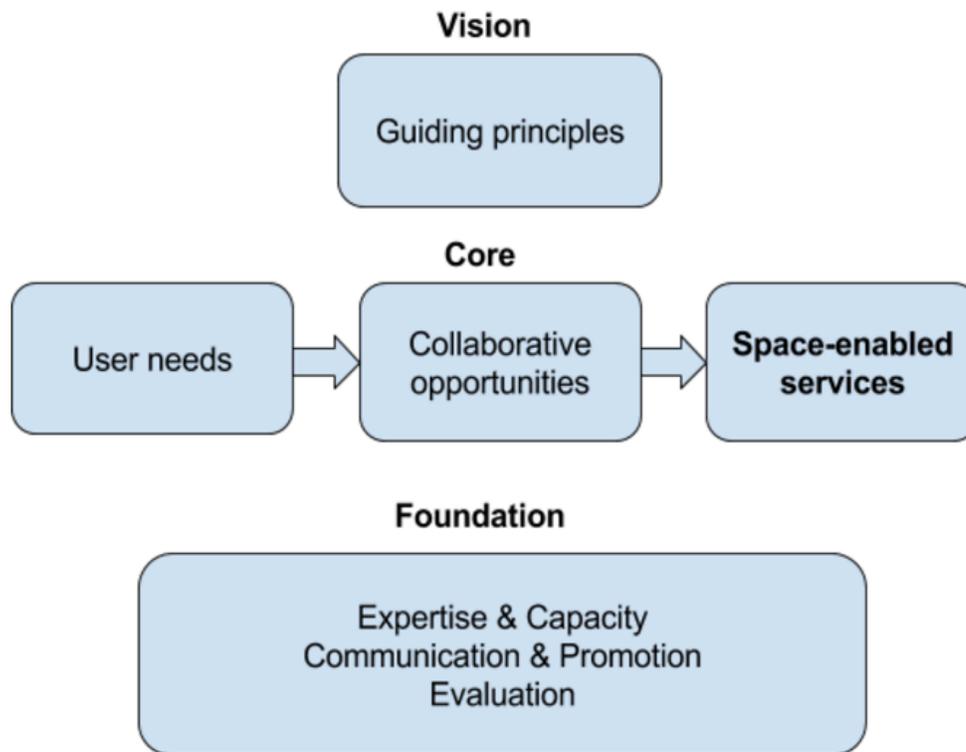


Figure 1: “Space as a Service” Model

In the overarching framework described in Figure 1, a compelling *vision* is key; the vision must clearly align with the library’s mission, position it for new collaborations, and define its areas of primacy and leadership on campus. *Guiding principles* provide parameters within which to assess new opportunities and ensure they align with the vision. *User needs* surface opportunities, and converting these opportunities into actual services, in turn, requires *collaborations* that leverage resources and expertise across campus. *Space-enabled services* are the ultimate result. The term “service” used throughout this article transcends a narrow definition of “library support” and instead refers to the library’s deep engagement and active participation in the full spectrum of institutional activities related to learning, research and professional practice.

To be successful, library leadership must strategically position the library’s vision through tireless and dedicated *communication* that fosters and inspires support throughout the organization; through flexible and creative approaches to expand staffing *capacity*, embracing new roles, new partners, and new leadership opportunities; and through a commitment to

evaluation and continuous review of the entire system to ensure ongoing alignment with the institution's needs.

As background for understanding the context of this model, the Health Sciences Libraries encompass three separate libraries: the Bio-Medical Library (the largest, covering medicine, nursing, pharmacy, dentistry, public health, and allied health), the Wangenstein Historical Library of Biology and Medicine (80,000 volumes of rare books, manuscripts and artifacts dating from 1430 through 1930), and the Veterinary Medical Library (a small branch library serving the College of Veterinary Medicine and located about 5 miles from the other two). HSL reports to the University of Minnesota Libraries, ranked at number 22 among peers in the Association of Research Libraries, and leverages and contributes to the expertise and resources of this larger organization. In addition, HSL works closely with the University's Academic Health Center, which consists of six colleges and schools with approximately 4000 faculty, researchers, post-docs and fellows, and 6200 students, primarily at the professional and graduate level.

Overarching Framework: Vision and Guiding Principles

A strong leader develops a *compelling* vision that defines what an academic library is and should be, articulating the *value* and *benefits* that a library brings to the teaching, learning, and research enterprise. The vision should be evocative and inspiring, enabling everyone, library staff, faculty, students, administrators, donors, to envision the library's centrality and importance. The vision crystallizes priorities, which in turn guide decisions about staffing, organizational structures, systems, services, spaces and collaborations. What do the students, staff and faculty at your institution need that the library is uniquely positioned to provide? Understanding what users *need* requires that you first understand what faculty and students *do* and how they work. What are they trying to accomplish? What barriers do they encounter and what would make their work lives easier? What are the gaps? What knowledge, expertise, and resources does the library offer that no one else on campus can or will provide? How can your library apply this unique portfolio to close these gaps? Exploring these questions involves deep campus engagement and the development of relationships that help faculty and students expand their traditional notions of a library and understand what is possible. And the answers to these questions should be central to every library mission and vision statement. For example, at North Carolina State University, the vision for the recently built Hunt Library includes "library building as a research platform (Antelman and York 2013)." An excerpt from that vision notes "students, faculty, and partners immerse themselves in interactive computing, multimedia creation, and large-scale visualization—tools that are enabling revolutionary ways to see and use information (NCSU Libraries)." Their vision is clear and the benefits are compelling.

At the University of Minnesota's Health Sciences Libraries such a gap analysis resulted in the following vision of "Space as a Service to Advance Learning, Research and Professional Practice:"

The Health Sciences Libraries are a....

- **Common good**, where exceptional staff with deep expertise facilitate the knowledge lifecycle and solve information problems
- **Connector**, strategically linking people, resources, services, information, and technology to achieve common goals
- **Creative catalyst**, prompting new insights into learning/research and offering new models for shared spaces
- **Service-rich environment** available to all

How each of these elements was applied in HSL is described as follows:

1. **Common good**, where exceptional staff with deep expertise facilitate the knowledge lifecycle and solve information problems

Common good. The library is a shared resource or common good typically funded centrally or through direct contributions by schools/colleges/departments. As such, everyone contributes and everyone benefits. At a large research university, the library can serve as a leveler between "resource-rich" units, such as those with significant grant funding and academic, administrative and technical support, and those that are "resource-poor" and lack one or more of these elements. For example, rather than duplicating particular needed resources in every department or college, the colleges may value the centralization of such resources within the library, along with the "service layer" of expertise, partnership and support that the library provides. For example, at Penn State and the University of Minnesota, the library supports knowledge creation by providing a self-service video recording studio that supports eLearning and promotes adoption of a flipped classroom model (Penn State University Libraries; University of Minnesota Libraries). The library may collaborate with academic technology staff, instructional designers, and others to equip a library space, develop policies and procedures, offer best practices and faculty development in using instructional technology, explain issues of copyright and the integration and use of digital media, and advise on mechanisms for embedding, sharing, and preserving what is created.

Exceptional staff with deep expertise. Key to a leader's role is communicating the deep expertise of each and every staff member and librarian, which underpins all library services and facilitates the knowledge lifecycle. Disciplinary backgrounds and specialized knowledge, experience with a wide array of content formats (including streaming video, data sets, simulation software), the embrace of new technologies, facility with information systems, a deep understanding of pedagogy and research methods, and extensive relationships with faculty, students and campus services reflect a unique combination of knowledge and skills that an academic institution should recognize and value in its library.

Knowledge lifecycle. Libraries facilitate the entire scholarly lifecycle, from discovery of needed resources (e.g., through the application of discovery layers and metadata or

extensive literature search), to the use or management of information (e.g., through citation managers and an understanding of copyright law and fair use), to the creation of new knowledge (e.g., through new models of digital scholarship), to the dissemination of what is created, particularly in an ethical and open way (e.g., through open access journals), to the preservation and persistence of that knowledge for the long term (e.g., through institutional repositories). Broadening everyone's understanding of what a library does within the framework of the knowledge lifecycle in which everyone works, and demonstrating how library *spaces* and library *expertise* work together to save faculty time and help students be more productive are key components of a library leader's vision and message and establishes the library's areas of primacy on campus.

Solve information problems. Faculty and students encounter information problems throughout the lifecycle of knowledge, and libraries must engage in a continuous feedback loop: anticipating ever-changing needs as pedagogy, research methods and professional practice evolve; identifying the patterns and themes among these varied needs; staying abreast of and embracing new technologies; and recommending the best solutions for each need.

2. Connector, strategically linking people, resources, services, information, and technology to achieve common goals

With a liaison model, every school and department has a personal librarian, and often a network of specialists, such as data, copyright, and research services librarians, to connect them not only to information but also to other experts, potential collaborators, and community researchers; to grant opportunities and open access resources; to a wide range of campus services; and to specialized software and technologies (Auckland 2012; Jaguszewski and Williams 2013; Hahn 2009; Kenney 2014). The breadth and depth of campus engagement is a critical and unique aspect of library services and one not to be underestimated. No other campus unit is as systematic and inclusive in its outreach, working with students, faculty, and staff and involved in every aspect of the institution's mission, from teaching to learning to research to community engagement to professional practice. Paul Bracke explores such engagement in depth, striving to make visible "the invisible work of relationship building that is critical to the success of new liaison models." He notes the importance of "developing a more holistic view of relational capital in libraries.... [which] is important in evaluating emerging paradigms of liaison work, communicating the value of liaisons and libraries, and clarifying roles and expectations for relationship- and network-building within the library." (Bracke, Stein, and Town 2016)

3. Creative catalyst, prompting new insights into learning/research and offering new models for shared spaces

By articulating and investing in areas of expertise, leaders position their libraries to spark innovation and transform learning and research throughout the knowledge lifecycle. Through deep engagement, liaison librarians identify needs and opportunities, and may then team with library specialists, in copyright, publishing services, media services, instructional design, geospatial data, research data curation, to identify new approaches to meet those needs. As a result, the library demonstrates what is possible, facilitating deeper learning (e.g., through media production) and new modes of scholarship (e.g., content “mashups” that pull together and deliver a wide range of content on a new digital platform).

A key role for leadership is to then communicate that expertise and its benefits to faculty, students and the institution as a whole, ensuring that the library’s areas of primacy are not only recognized and valued but also expected and supported. As Bracke notes, the librarian role as catalyst “suggests diffusion of influence” and such influence should be used to “better communicate value to stakeholders and improve articulation of expectations to liaisons.” (Bracke, Stein, and Town 2016)

4. Service-rich environment available to all

Architects and campus administrators frequently have difficulty understanding what a library is without books. Why should new learning and research spaces be made available under the auspices of the library? Couldn’t those spaces exist on their own, without being part of the library or “belonging” to the library? By articulating library expertise, clearly connecting that expertise to services, and then demonstrating how those services enhance and optimize student and faculty use of learning and research spaces, leaders present a carefully considered case for the service layer that should be applied to formal, informal and specialized learning spaces, enabling students and faculty to move seamlessly among these spaces with access to content and specialized assistance nearby. Clearly describing the need for the service layer is important -- spaces do not manage themselves. Spaces require policies for usage, booking procedures, programmatic upgrades, and knowledgeable staff who can facilitate learning and solve problems when they arise. Library specialists also coordinate thoughtful programming with campus partners, providing rich experiences that deepen learning and research within library spaces.

In addition, libraries are democratic spaces, available to everyone at an institution. Frequently, specialized spaces (such as makerspaces or high-end computing and software) are limited to those affiliated with specific departments or colleges within a university. Libraries level that playing field, particularly for those in the liberal arts and humanities, facilitating new insights and skill sets (e.g., social entrepreneurship). Libraries are often the spaces on campus that are available throughout the day and night, every day of the week, enabling access to all members of the institution.

Guiding Principles

Libraries cannot afford to pursue every potential opportunity that arises, but must be judicious and align with the parent institution's strategic vision as well as their own. Guiding principles provide a framework for such alignment, directing investments and helping define goals against which to measure success. The University of Minnesota Health Sciences Libraries developed four guiding principles:

- **Promote a culture of scholarship**
- **Collaborate for mutual benefit**
- **Convey our services through our spaces**
- **Live our values**

Promote a culture of scholarship. So much emphasis has been placed on collaborative learning and research that the library's role as a place of deep reflective thought and scholarship may be overlooked. Leaders must remind administrators and architects that libraries offer more than a coffee shop environment; they continue to be a place in which students and faculty work in deep concentration away from the frenetic messaging and social networks that permeate our lives. Libraries are a place where knowledge and resources in all formats, from rare print materials to online data sets, may be consulted and contemplated, to be understood and synthesized, with the ultimate goal of creating new knowledge.

Collaborate for mutual benefit. This guiding principle is extremely important. A key role for library leadership is to develop potential partnerships with campus units, with the goal of collaboration. A true collaboration results in mutual benefit; both partners advance their individual missions by leveraging expertise and resources, allowing them to achieve more than they could individually. Collaboration is not a matter of handing over library space to another campus unit and existing in co-location without interaction and joint goals. Too frequently, co-location is confused with partnership, with the library contributing space to advance the other unit's mission. Instead, collaboration must be intentional and it must be valued. As Joan Lippincott states, "planning collaborative facilities requires an institution-wide vision and a willingness to think beyond the confines of administrative structures." (Lippincott 2004, 147-157)

In the Health Sciences Libraries, this guiding principle has been critical in helping us define and discern true partnerships. Library leaders have engaged in wide-ranging conversations with faculty, students, and administrators, as well as the simulation center, academic technology, instructional designers and student services to identify very specific ways in which we may collaborate to advance the knowledge lifecycle as well as teaching, learning, research and professional practice more broadly. The concept of collaboration is discussed in more detail later in this article.

Convey our services through our spaces. With the transition to electronic resources, a focus on easy and seamless online delivery, and embedded librarian models, libraries have been extremely successful in making their efforts less visible. Even in an embedded model, in

which librarians are participating on research teams and integrating into curricula, many faculty and administrators interact with and understand small, specific slices of what libraries and librarians have to offer. Reenvisioning library spaces allows libraries to make visible their wide range of expertise, specialized resources, and extensive services.

What do users see when they enter the library? What impression is made? The University of Minnesota's Health Sciences Libraries are piloting new spaces and services to build awareness among everyone in the Academic Health Center as planning proceeds for a larger Health Sciences Education Center (HSEC), which will include the library. One of the first changes made was to zone the library into "learning," "collaboration," "productivity," and "quiet" spaces. Three of the four zones are visible at the entrance, and designated by color-coordinated furnishings. For example, the consultation hub offers three collaboration tables with large monitors for groups of two or three. During the day, liaisons reserve the spaces for one-on-one consultations, and the day's consultation topics are noted on a highly visible whiteboard. Upon entering the library, people immediately see activity, librarians and staff working with individuals, and they have a sense of the services provided that day: copyright assistance, data management plans, open access journal development, systematic reviews, online searching to support assignments or research. The details are not shared, thus protecting patron privacy, but the consultation services, which used to take place in offices and behind closed doors, are now communicated in an extremely effective way.

Live our values. Finally, library leaders should consider the values they want to cultivate as a foundation for their organization's culture. In HSL, we value flexibility, responsiveness to change, collaboration, diversity and inclusion, exploration, and embracing failure as a learning opportunity. Openly discussing our values enables us to engage staff and stakeholders in shaping the library's culture, particularly as the organization's priorities and directions change over time.

The Core of the Model: User Needs, Collaboration, Space-Enabled Services

Figure 2 (below) describes the details of the model developed in the Health Sciences Libraries to guide the creation of services informed by user needs and supported through collaborations and partnerships.

User Needs	Collaborative Opportunities	Space-Enabled Services
Enhance Learning	Optimized experiential and problem-based learning	Formal and informal active-learning spaces with expertise and a variety of resources, including rare materials, nearby
	Simulation	Virtual and augmented reality studio
	Faculty development	Educational technology sandbox
Enable Research	In-depth consultations	Consultation pods for literature and systematic reviews, writing, and statistics assistance
	Analysis of research & education data	Technology-rich data visualization environment
	Digital content creation and multimedia production	Digital scholarship space and 1:1 button videorecording studio
Advance Professional Practice	Development of transferable skills for each profession	Integration of consumer health literacy, evidence-based practice and interprofessional teamwork into a simulated environment
Foster Individual and Collaborative Work	A scholarly environment for every learning style	A wide variety of private/public, alone/together spaces

Figure 2: Case Study for “Space as a Service” Model at the University of Minnesota Health Sciences Libraries (available at: <http://hdl.handle.net/11299/181432>)

User Needs

The core mission of any academic library is to advance teaching, learning, research and professional practice. To do that, library leaders must cultivate a thorough understanding of the

needs of students, faculty and practitioners, anticipating and responding to new pedagogies, research methodologies and approaches to professional practice.

Library leaders also depend on their staff to identify gaps and develop solutions. Today academic librarians who serve as liaisons to departments, colleges or schools at their institutions are assuming the role of business analyst. According to the International Institute of Business Analysis, a business analyst is someone who enables change in their institutions by “defining needs and recommending solutions that deliver value to stakeholders” (International Institute of Business Analysis). Liaisons are uniquely positioned within the academy to fulfill this role with their understanding of departmental needs and their knowledge of the broader array of campus resources that they can use to connect individuals to solutions and services.

For example, in many academic disciplines, the ways in which faculty teach and students learn are changing dramatically. In the health professions, future physicians, nurses, pharmacists and others need to be able to work together as part of an interprofessional care team. To accomplish this, curricula in the health professions are adapting to meet this need. The University of Minnesota’s Academic Health Center is preparing students in allied health, medicine, dentistry, nursing, pharmacy, public health, veterinary medicine and social work to develop the communication skills, professional ethics, and leadership qualities to work in these teams in a required introductory course called Foundations of Interprofessional Communication and Collaboration (FIPCC). The course methodology is “flipped”; students view online learning modules independently and then come together in small interprofessional groups for facilitated discussions (Academic Health Center Office of Education). Health science librarians have traditionally served as small group facilitators to gain a deep understanding of the transferable skills students need to work in an interprofessional team. This understanding has, in turn, informed new services (such as the 1:Button studio, a self-service, fully automated, high-definition videorecording space with professional studio lighting and sound equipment (Health Sciences Libraries 2017a)) and identified new opportunities for collaboration (such as integrating evidence-based practice scenarios, in which health professions students must find information to inform diagnoses and treatments, into simulations of the clinical environment).

Collaborative Opportunities

Once user needs are identified, library leaders should actively *create* collaborative opportunities. Collaborations must be thoughtfully considered; they should align with institutional priorities, advance the mission and vision of each partner, and clearly define roles and responsibilities. Often these opportunities are built on relationships that are nurtured over time, through both formal and informal mechanisms. For example, as members of standing committees that include deans, associate deans, and other administrators, leaders have opportunities to formally present and discuss ways in which the library contributes to campus initiatives that advance teaching, learning, and research. Spending time in informal spaces on campus where serendipitous meetings can happen is also important. Coffee shops, campus restaurants, student unions, and departmental lectures all provide opportunities to encounter faculty and administrators and engage in conversations around how new library initiatives,

liaison work, and planning for enhanced library spaces support college priorities. Having several potential elevator speeches in mind for chance encounters can be an effective strategy. And following up with lunch or a one-on-one meeting deepens understanding, leading to the exploration of mutually beneficial projects and possible partnerships.

Clearly defined roles and responsibilities are key to collaboration and should align with the values and vision of each partner. For example, to enhance learning, HSL is developing active collaborations with the Academic Health Center's Simulation Center (learning spaces in which students develop clinical expertise without risk to actual patients). The library and the Simulation Center are identifying ways to leverage expertise across the two units, consulting to develop a virtual reality studio, integrate evidence-based practice into formal simulations, and focus on faculty development needs. Through this process distinctive roles have been defined: library expertise in content creation and knowledge management guides the development and use of new technology in the library, encouraging experimentation and innovation, facilitating faculty development, and offering self-directed discovery during all hours that the library is open. In contrast, the Simulation Center offers a more highly technical and structured environment in which formal simulations are carefully developed by simulation experts in collaboration with faculty and delivered to achieve specific curricular objectives. Such clear roles, and the expertise and infrastructure that support them, enable each partner to inform the overarching vision and activities of the other and to refer faculty and students back and forth based on their need.

Without such defined roles and responsibilities, partners may tread on the other's area or work at cross-purposes, jeopardizing their success.

Space-Enabled Services

Although teaching, learning, research and professional practice are typically treated as distinct endeavors within an academic institution, those distinctions are, in fact, blurred: academic research is incorporated into teaching and learning, and teaching and learning inform research. As a result, the library services that support and advance these activities are intertwined, and a range of questions may be considered. Where do information discovery, use, creation, and sharing fit within the faculty and student workflow? What types of services are, or should be, embedded in that workflow? And how may these services be enabled through specialized spaces and technologies in the library? Again, what are users seeking that they cannot get anywhere else on campus?

In HSL, the library spaces within a larger health science Health Sciences Education Center were defined around knowledge creation, knowledge management and social learning (active learning classrooms were included in a separate "formal learning" category). Highly visible consultation pods were identified as knowledge management spaces that not only facilitate librarian sessions with students and faculty but also promote the many services the library offers: literature searches, systematic reviews, copyright advice, open access publishing options, research data management, impact metrics, etc. The consultation pods are spaces that connect users to other campus services related to knowledge and content management,

such as writing assistance, statistics consultation, and instructional design expertise. A data visualization center also supports knowledge management, providing spaces for library workshops on best practices and on basic, freely available software; campus partners may then use the space to extend the library's services, offering more advanced workshops and classes. A virtual reality studio facilitates knowledge creation and capitalizes on relationships throughout the Academic Health Center to facilitate new approaches to teaching, learning, research and professional practice.

The library also partners with academic technology staff to identify a range of educational technologies that may be featured in a library-based technology sandbox that supports faculty development, providing low-barrier assistance that enables faculty to learn about new tools and software and incorporate them into their teaching. Collaborators include librarians with expertise in pedagogy and content creation, college-based instructional designers, simulation specialists, and IT staff.

The Foundation: Positioning the Library to Support the Model

Library leaders must position and reposition the library to anticipate and respond to user needs. As Scott Bennett states, "start early, set priorities, and stick to them...do not wait until you have funding, or even the prospect of funding, to begin planning" (Bennett 2015, 215-231). We could not agree more. The HSL "Space as a Service" model began modestly in 2014 as a small planning effort to "refresh" library spaces, which was one full year before a new Health Sciences Education Center was conceived. HSL visioning was iterative, and early planning prepared us well for a much larger process in which we were a valued and fully engaged member at a table of deans and associate deans. *Before* we were asked what a library of the future is, we presented a compelling vision of new spaces, *as well as services*, for content creation, knowledge management and social learning to advance the AHC's mission.

Our refreshed spaces enabled us to pilot these services, thus providing concrete examples that demonstrated impact and garnered support and faculty champions. For example, 122 different faculty and students used the 1:Button studio 145 times in the first four months of a soft rollout that was primarily promoted through word-of-mouth. As a result, and with the input of faculty and instructional designers, three studios will be included in the new HSEC.

Other measures of success:

- After our current spaces were refurbished and new services were offered, the fall semester gate count for the Bio-Medical Library increased by 15% for September through December from 2015 to 2016 (from 152,493 to 175,216).
- The Health Science Libraries vision is now driving significant aspects of the planning for the new building:
 - We were asked to develop the concepts for four separate emerging technology spaces that will support faculty development, virtual and augmented reality, visualization and gaming, and a makerspace/entrepreneurship model.

- The Wangenstein Historical Library of Biology and Medicine will be prominently located in a high-traffic area and rare materials will be featured in digital and analog exhibits throughout the building.
- Furnishings, technology, and collaborative tools that facilitate knowledge creation and knowledge management will be threaded throughout all floors.
- Deans, associate deans, faculty and students are all responding positively to our new services, using the 1:Button studio to develop videorecordings for technology-enhanced courses, teaching classes in the data visualization center, and developing ways to integrate virtual reality into the curriculum.
- New collaborators, such as the Medical Device Center, the Simulation Center, and the College of Design, are eager to work with us.

The lesson is clear: do not wait for another entity on campus to decide and define what the library is or should be, now or in the future. Take a “perpetual beta” approach to try out new things in small ways, developing partnerships and building on successes. Ultimately, faculty, students, and campus collaborators who value the library, its services, and its expertise will demonstrate how relevant and essential the library is; they will make the case for you, positioning you well when you walk into a room of people who are all competing for space and prominence in a new building.

Expertise and Capacity

Certainly the most valuable asset that any organization has is the expertise and experience of its staff. In HSL, a liaison model of one librarian for each college/school (or two for the Medical School) within the Academic Health Center is supplemented by an extensive array of library specialists in data curation, research services, copyright, and publishing services, some from within HSL and some from across the University Libraries. This hybrid organizational structure allows HSL to provide both generalists and specialists as needed.

Although successful, this model requires continual planning for new positions and roles that will serve the emerging priorities of the institution. What will be needed tomorrow? A teaching and learning strategist who can provide interprofessional leadership across colleges and schools? An emerging technologies strategist who can develop partnerships from across the institution to integrate new technologies into teaching, learning and research? By engaging in flexible and creative approaches, and inviting staff to express their interest in new roles, leaders can pivot and position the library for new services. Of course, building capacity for new roles is not easy. It requires evaluating current services and activities to identify those that may be discontinued (e.g., staffing a service point with students rather than staff), re-envisioning positions when they come open, hiring residents or fellows on two-year term appointments to explore new areas, and considering new responsibilities for paraprofessional staff.

Supporting the professional development of staff is key. New skills are needed to position staff to take on new roles and consider emerging opportunities. For example, HSL addressed the increased demand for systematic reviews by rethinking the roles of paraprofessional staff. Systematic reviews are rigorously researched summaries of clinical

healthcare questions that provide a high level of evidence on the effectiveness of healthcare interventions that provide recommendations for provision of care (Cochrane Consumer Network). In HSL, liaison librarians are given first priority for accepting a new systematic review request for their assigned college/school but additional staff must support the expanded service, especially when liaisons are at capacity. As a result, paraprofessional staff have received training at local, regional, and national workshops and practice their skills under the supervision of experienced librarian searchers. Once they have achieved proficiency, they become an integral part of the service team.

Performance coaching and support are crucial to building expertise and developing a culture of learning. By initiating conversations with staff and librarians about their strengths and interests, managers and directors may connect those staff with support, training, courses, and conferences, positioning them for success. Ideally, the organization moves forward, and the staff are increasingly engaged and motivated -- a win for all. For example, the University Libraries offers an extensive Leadership Development program for staff throughout the Libraries (librarians, library assistants, and civil service staff). One component of the program is a bi-annual competitive Individual Development Program, which is designed for 12 Libraries staff at all levels of the organization, regardless of formal position in the Libraries. Each year it is offered, about 30 staff members apply for the 12 slots. Participants work individually with a coach to develop a customized development plan, develop self-awareness through numerous assessments, including a 360-degree review by colleagues, administrators, and direct reports, and develop their confidence and skill in offering leadership. As a result, numerous staff members, including four in HSL, have move into new positions (such as an emerging technology and innovation strategist) that directly support strategic directions and our space-enabled services.

Of course, an investment in the professional growth and development of staff and librarians requires resources and must be identified as a priority. Competitive hiring packages may entice those with specialized skills or a diverse and inclusive perspective to join, and thrive, in the organization. In addition, retention is as important as recruitment, and attending to the needs of those from traditionally underrepresented groups is essential.

Communication/Promotion

Communicating the library's vision, both internally and externally, and in many different ways, is essential. Inviting staff to help develop the vision is critical to ensuring that everyone understands it, can articulate why it is important, and can see his/her unique role in making that vision a reality. At first, leadership may need to ask staff to suspend their disbelief, to trust that reenvisioning the library is a process and that the details will emerge over time, particularly as the needs and perspectives of students and faculty are identified and reinforce elements of the vision. Formal visioning processes, group discussions, individual conversations, written communication, and integration into library branding all contribute to developing a shared understanding.

Communication and promotion to those outside the library, to students, faculty, administrators, and potential donors, require a strong communications specialist, someone whose time is dedicated in part to writing articles for library, departmental and college newsletters and web sites, managing and developing a social media presence, and creating presentations, posters, and impactful handouts with talking points for library leaders to share with stakeholders. In HSL, an experienced health science librarian with an interest in and aptitude for communications was tapped, although she had no formal training in writing or graphic design. Her deep knowledge of the current academic and library environment was an incredible asset, and she has developed valuable journalism and design skills over the past several years that enabled HSL to effectively communicate the “Space as a Service” model through presentations to a wide variety of groups, including the AHC Faculty Consultative and Student Consultative Committees; through individual tours with deans, associate deans, instructional designers, and academic technologists; and through broad sharing of annual reports, online newsletters and videos (Health Sciences Libraries 2017c; Health Sciences Libraries 2017d; Aspinall 2016).

Evaluation

Finally, new (and old) spaces and services require a continuous feedback loop. Leaders should seek regular input from those who use each space to identify what may be improved (e.g., increased soundproofing in the video recording studio), what is missing (e.g., on-site assistance with video editing), and what is working well and should inform future investments (e.g., more than one studio!). Small-scale pilots are an effective way to try out new possibilities with limited investment. And low-barrier feedback mechanisms, such as flipcharts and whiteboards asking, for example, for students to vote on their favorite chairs and tables, can provide quick input that may then be investigated in more depth (Health Sciences Libraries 2017b, 2). Short surveys and focus groups with student and faculty advisory teams are also useful (Health Sciences Libraries 2014, 1-16). In addition, brief, impromptu interviews with those currently using a space can provide particular insights. Take photos and ask for quotes, using them to make a case for funding or to market the spaces and services (Jaguszewski and Aspinall 2016).

Colleagues with complementary perspectives and experiences such as instructional designers, academic technologists, associate deans for education and research, student services coordinators and simulation specialists are all excellent sources for feedback and revision. In addition, it is important to solicit input from library skeptics, as well as champions, and to ensure that services align with the institution’s priorities, as well as library’s mission and vision.

Conclusion

At the University of Minnesota, the Health Sciences Libraries have developed a successful model for “Space as a Service” that positions them as a vital component of a larger Health Sciences Education Center that is currently being planned within the University’s

Academic Health Center. A pilot project in which they applied and refined this model enabled them to prototype new furnishings, new technologies, and new services to inform future investments, resulting in an immediate gate count increase of 15%. In addition, the Libraries' vision, demonstrated throughout this pilot, is driving significant aspects of planning for the new building, including the conceptual development of four separate emerging technology spaces (a tech sandbox for faculty development, virtual and augmented reality, visualization and gaming, and a makerspace/entrepreneurship center); a model for knowledge creation and management that will be threaded throughout the building; increased visibility for the rich collections of the Wangenstein Historical Library of Biology and Medicine; greater integration of new library services, such as the 1:Button Studio and Data Visualization, into the curriculum; and a growing list of new campus collaborators eager to work with them in the future.

Over the next three years, the Libraries will continue to develop and evaluate their services within this vision to inform the design for the new building. Future challenges are likely to include developing staff capacity to meet the technological expertise required for the new spaces and services, developing a funding model to sustain and refresh the technologies and infrastructure, and further refining the Libraries' areas of primacy and collaboration with other campus units within the range of services offered throughout the building.

Even within these constraints, the success of the model indicates that academic libraries in a wide range of settings may apply this framework as they re-envision and embrace their roles in an ever-evolving higher education environment.

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