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Transitioning from the MLS to the MLD: Integrating Design Thinking and Philosophy into Library and Information Science Education

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Description/Abstract

Purpose

As change creates more uncertainty for library practitioners, graduate library education needs to explore how to best prepare students to manage ambiguity through new approaches to identifying and solving challenging problems. We advocate for incorporating design into graduate library education.

Design/Methodology/Approach

First, we discuss the need for a design approach to librarianship. We then introduce the nature of design thinking and philosophy, and discuss the ways in which it is already present in librarianship. We review past developments and recent trends with a special focus on the ways in which design thinking, methods, and philosophies are (or are not) incorporated into LIS education.

Findings

We synthesize these findings to propose recommendations and suggestions for an alternative degree program to the traditional MLS: the MLD (Master of Library Design). This includes the presentation of a new model of library education that blends design philosophy with traditional library science content.

Originality/Value

This is the first article in the library literature to propose the development of a new type of library degree that we refer to as the Master of Library Design, hence it has a high level of originality. While the library literature has examples of practitioners applying design thinking to improve library services, this article's value is that it promotes the integration of design thinking and philosophy more broadly in order to better equip future library professionals for a rapidly changing information landscape.

Keywords

design, design thinking, library education, design philosophy

Disciplines

Art and Design | Curriculum and Instruction | Higher Education | Library and Information Science

Additional Information

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Bios:
After an early career in graphic design, Rachel Ivy Clarke turned to librarianship, putting her skills to work as the cataloging librarian at the Fashion Institute of Design & Merchandising, a private art and design college in Los Angeles, California. She subsequently pursued doctoral studies and is currently an assistant professor at Syracuse University's School of Information Studies, where her research focuses on the application of design methodologies and epistemologies to librarianship to facilitate the systematic, purposeful design of library services. She holds a BA in creative writing from California State University Long Beach, an MLIS from San Jose State University, and a PhD from the University of Washington Information School.

Steven J. Bell is the Associate University Librarian for Research and Instructional Services at Temple University. He writes and speaks about academic librarianship, learning technologies, library leadership, higher education, design thinking and user experience. Steven is a past-president of ACRL and a co-founder of the Blended Librarian's Online Learning Community on the Learning Times Network. He currently writes at Designing Better Libraries, a blog about design thinking and library user experiences. He authors weekly columns for Library Journal Academic Newswire, "From the Bell Tower" and "Leading From the Library". He is co-author of the book "Academic Librarianship by Design" and editor of the book "Crucible Moments: Inspiring Library Leadership". For additional information about Steven J. Bell or links to his projects, point your browser to http://stevenbell.info

Introduction

We hate when library community members wait in line for service. Knowing how busy our patrons are, that they may be rushing between classes, trying to get to a part-time job, or home to care for children, we ask why our library structures and workflows are creating barriers to their daily routines. In fact, we are frustrated by just about any library service touchpoint at which our community members are inconvenienced, confused or find their expectations for service quality go unmet. For instance, access to network printers may seem trivial--unless you are a student trying to print an assignment on the way to class. There are three high speed printers in the Temple University Library's computing zone, consistently crowded with students waiting to print. Why are there lines at various times throughout the day? Was another printer needed? Perhaps a better queuing system? Was the system confusing to users? These were only guesses. We needed a better way to identify solutions and make decision that lead to positive change.

Whether the problem is limited in scope, such as this example, or is "wicked" in nature, meaning it is unusually unwieldy and ambiguous so as to present no clear solution, librarians are often at a loss for the best way to identify the exact problem and set about crafting an appropriate solution. Beyond traditional management courses that might cover decision-making styles, master's level library education offers too little exposure to problem-solving tools and methods. Education for librarianship needs more opportunities to practice techniques for creative problem identification and solving, particularly in the use of team approaches. Given the rapid growth of complexity in library operations, heightened service expectations of community and the advance of more than a few wicked problems--like the scholarly publishing crisis, the need to diversify library staffing, the defunding of public educational and cultural institutions, the exponential rise of non-library information and research options, and the need to radically transform the meaning and value that communities derive from their libraries--librarians must be equipped with a new set of skills, methods and talents to tackle these and more challenges on the horizon. They need an education that equips them with a creative, problem solving, solution-oriented mindset that allows them to develop thoughtful ways to adapt libraries to societal change (Bertot, Sarin and Purcell, 2015).

Libraries across the globe are being challenged to rethink how they will deliver service in a rapidly changing information landscape where access to information and service expectations are forcing a transformation process. Janes (2014) shared that he often hears complaints from library practitioners about the lack of workplace readiness among the graduates of library school programs. While Janes is open to such critiques he has little patience for those who offer no useful suggestions for what LIS programs need to do to improve the preparedness of their students. This chapter raises some critiques but also suggests why LIS education needs a new approach and how incorporating design thinking into the curriculum can help prepare students for the transformed library workplace.

In this chapter, we advocate for incorporating design into graduate library education. First, we discuss the need for a design approach to librarianship. We then introduce the nature of design thinking and philosophy, and discuss the ways in which it is already present in librarianship. We review past developments and recent trends with a special focus on the ways in which design thinking, methods, and philosophies are (or are not) incorporated into LIS education. We synthesize these findings to propose recommendations and suggestions for an alternative degree program to the traditional MLS: the MLD (Master of Library Design).

Why a New Approach is Needed

A local anecdote

Just as library community members prefer to avoid lines and other barriers to achieve routine tasks like printing or connecting to wireless networks, they have far less tolerance for library

experiences that shuttle them from desk to desk in search of assistance. Because design matters in simplifying processes and products, contemporary library service environments seek to centralize operations at a single desk. At Temple University Libraries, owing to an impending move to a new building, staff would transition from three unique service desks to a single "one-stop" service point. Designing the physical space is far less complex a problem than rethinking how professional and support staff from three different desks with multiple functions should merge and work collaboratively.

While we had a clear sense of what needed to happen at a single service point, how it would happen or who would deliver the service was a murkier proposition. Our Dean assigned a team representing staff from each existing desk to recommend a transition plan. The team considered a number of strategies for how to proceed, including traditional processes such as reviewing the literature, speaking with and learning from colleagues at other libraries and polling staff for their ideas. Instead the team opted to conduct a design challenge using the IDEO Design Thinking for Libraries: A Toolkit for Patron-Centered Design.[1] The toolkit enables library workers to take a design thinking approach to identifying and solving problems. With its step-by-step approach, any team can organize itself to approach a problem the way designers do.

Starting with a "How Might We…" exercise to stimulate our thinking about project outcomes, we moved through various activities that enabled us to more systematically think through the design of a new service model. Was our process successful? How well did we do as design thinkers? While we did achieve our mission to produce a set of recommendations for transitioning to a quasi-combined desk operation in our existing space, overall our efforts strayed from the toolkit path. We can certainly talk about design thinking as a process for identifying problems and thoughtful solutions, but actually putting it into practice is quite another thing. It's hard. What make it especially challenging for librarians is our lack of design philosophy in our professional education and practice. We still fail to approach problems the way true designers do.

Our library example is not unique. Libraries have always been bastions of design, from the earliest known libraries of Sumeria where workers created cuneiform lists of holdings, to the famous library of Alexandria which implemented the first known deposit model to foster access to knowledge; from Dewey's decimal-based classification system enabling patrons to browse shelves by subject rather than acquisition order to modern databases like NoveList that support readers' advisory and recommendations. Library practitioners regularly design instruction and curriculum, workflows, wayfinding tools, tutorials and other products and services that could benefit from a design-thinking approach. What separates a *library* from merely a *collection* is the design of tools and services that solve information problems.

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[1] See http://designthinkingforlibraries.com

Given the predominant role of design in librarianship, future graduates of library and information science education would be best prepared for their careers by learning to be designers and design thinkers. Libraries need LIS graduates who can assess situations and resources, identify the source and nature of a problem, and then craft an appropriate solution. In other words, educate students to identify, frame, think through, and solve problems the way designers do. That means integrating design philosophy and work approaches into the LIS curriculum (Bell, 2014).

What is design thinking?

For the past 100 years, education for librarianship in American has been framed as a social science. Yet creative problem solving is the realm of a different philosophical framework—the realm of design. The major difference between traditional science and design stems from the idea that science concerns itself with observing and describing the existing natural world with the goal of replicability and prediction. Design, on the other hand, centers on the artificial world: objects created by humans to institute change and solve problems. Science is about what *is*, while design is about what *could be* (or arguably what *should be*) (Liedka 2004). The objectives of design are to "create things people want" by "addressing problems or ideas in a situated context" (Konsorski-Lang and Hampe, 2010; A. Telier et. al., 2011). Thus design is a completely different form of knowledge based in the creation of things that solve problems: what Cross calls a "designerly way of knowing" (1999; 2011). Such an inherently different purpose calls for different methods, practices, and ways of thinking--and an education that emphasizes these approaches.

There are almost as many ways as describing design thinking as there are design fields that incorporate the principles into practice. An often used introduction to design thinking is the 1991 Nightline profile of the design firm IDEO. This program, referred to as "The Deep Dive," introduces the viewer to the "shopping cart project" in which a team of IDEO designers uses the design thinking process to redesign the common supermarket shopping cart. The program delves into each step of the process. They are:

- Empathic Design: The team seeks to gather information and understand everything they need to know about shopping carts by talking to cart producers, store employees and cart users. Design thinking is, at its core, user-centered design. Design thinkers must empathize with the user and understand their engagement with the product or service.

- Problem Analysis: Designers often think of themselves as problem finders. Designing thoughtful solutions requires a thorough understanding of the problem. In the next phase the designers share every piece of information they acquired, often expressed visually, in order to surface the most salient problems. For shopping carts the most serious problems

center on safety, a poor quality shopping experience, and theft.

- Ideation: Also known as the "deep dive" the designers hold sessions in which they generate as many ideas as possible, where crazy and impractical ideas are shared. One person's bizarre idea may prompt someone else to refine that into a better idea. The segment emphasizes the creativity generated by a diverse team that includes professionals from many different backgrounds and experiences.

- Prototyping: Taking their best ideas the designers work with colleagues to create prototypes of different cart designs to see which may work best. Products and services may go through dozens of iterations before one or more prototypes moves to the implementation stage where it will undergo testing with actual users.

- Implementation: While the designers are pleased with their redesigned cart they need to put it into action to find out if it really works by solving the problems of the traditional shopping cart.

- Evaluation: Almost every design model contains an assessment stage, whether formative, summative or both, in which prototypes or models are implemented in order to obtain feedback from users. At the end of the segment, after store employees and users try the new cart, the project team leader speaks to the value of the feedback as it will help improve future iterations of the cart.

While different explanations of design thinking may contain more or less steps in the process, the Deep Dive segment of Nightline demonstrates both how the process works and what makes skilled design thinkers qualified to use the process to identify problems and solutions. As Dave Kelley, a co-founder of IDEO explains in this segment, everything that is not a part of nature, needs to go through this thinking process in order to achieve smart design. If we think of our libraries as a set of process, products and services that librarians design to fulfill the information needs of community members, why wouldn't we want to equip library science students with a design thinking mentality and a commitment to design that would bridge theory and practice?

The rise of design in LIS practice

Design thinking and methods are increasingly emergent in LIS practice. The incorporation of design thinking in library practice has begun to surface, evidenced in various ways. For example, over the past decade more academic libraries have created positions for instructional designers, while MLS holders have sought to add more design skills to their existing set of skills.

Possibly the earliest recorded application of design thinking in libraries, Maya Design's 2004 reimagining of the Carnegie Library of Pittsburgh featured the use of ethnographic research methods for a human-centered redesign of the Carnegie Library building. Maya Design's work at Carnegie demonstrated to librarians the way designers approach a rethinking of the library. It signaled that librarians do not necessarily know more than the users, but rather needed to put users first and at the center of decision making.[2] Foster and Gibbons (2007) also drew attention through their use of ethnographic and participatory design methods to understand how undergraduates use the library for tasks such as the writing of research papers. By presenting the study in a way that was easily replicable, and making clear how design could be used to improve the library's physical space, they advanced the adoption of design for a better library user experience.

Also in 2007, Steven Bell brought together a set of like-minded colleagues to collaborate on "Designing Better Libraries," a blog dedicated to design thinking and user experience.[3] It was the first library blog to advocate for design thinking as a way to understand library problems and design thoughtful solutions. It called for librarians to move user experience beyond websites and interfaces as a process for designing for a total experience across all library touchpoints. One of the original contributors, Brian Mathews, at the time working at Georgia State University, was the first librarian with the title User Experience Librarian. Bell and Shank (2008) expanded their embrace of design thinking to a book-length project that promoted the adoption of design thinking for everyday library practice in academic libraries. By adopting the authors' idea of "blended librarianship" and their modified instructional design "ADDIE model," academic librarians could integrate design into their work.

The technique of participatory design, a form of design process that supports cooperation and collaboration between users and designers (Schuler and Namioka 1993) has also recently been popular in librarianship, and encouraged through workshops on the method and technique of participatory design sponsored by the Council on Library and Information Resources (CLIR). Additionally, design-related topics like user experience (UX) are increasingly popular in the library community, especially academic libraries (Walton 2015), and large library systems such as the Chicago Public Library are instituting design thinking and methods throughout, from programming ideas to staff hires (Schwartz 2013). Reminiscent of the Maya Design Project, the Chicago Public Library partnered with IDEO in 2015 to apply design thinking processes to improve library user experiences.

Out of this project came the Design Thinking for Libraries Toolkit.[4] It offers librarians a step-by-step guide to adopting design thinking as a staff-driven process for change. The Toolkit's

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[2] See an example at: http://darmano.typepad.com/for_blog/rettiggoel.uxWeek.8.25.05.pdf
[3] See more at: http://dbl.lishost.org.
[4] http://designthinkingforlibraries.com

popularity continues to contribute to greater awareness about design thinking among library workers. In 2016, the Library Journal Design Program, which initially focused on architectural design challenges that united librarians and architects to explore the use of design to improve library services, began to offer a design thinking workshop in conjunction with the Chicago Public Library, which itself contributed to the rise of design thinking.

These significant developments in the rise of design thinking over the past dozen years demonstrate its incorporation into mainstream library practice. As more librarians come to value design thinking as a way to improve library services, we envision a growing demand for library school graduates who bring design skills and philosophy to the workplace. To get out ahead of this expectation, we pose that this is the right time for LIS programs to consider incorporating design into LIS education by instituting a new degree program: the Masters of Library Design.

Incorporating design in LIS education

Libraries are clearly drawing on aspects of design thinking and design methods to create and improve library services, but education in this area comes from outside of libraries. Given that so much of library work is about design, shouldn't library education—specifically, MLS/MLIS programs—address this need? How might design principles, theories, thinking, and methods be integrated into MLIS curricula?

Design courses in other schools and programs

One way to integrate design education into existing MLIS programs is to further draw on these external sources. Many other schools and departments offer coursework in design methods and design thinking. For example, the University of Virginia's Darden School of Business heavily emphasizes the role of design thinking in corporate innovation, even offering a certificate in this area.[5] MLIS students and graduates could certainly partake of such courses or certificate programs, either during their course of library study or as a separate endeavor. LIS students could also take courses within a design program (graphic design, instructional design, etc.) if their institution offered that major. Or they could take a MOOC or other online workshop related to design thinking.

However, there are two major downsides to this approach. First, although taking design courses in other fields will certainly expose students to diverse approaches and perspectives (a laudable situation), such external coursework is unlikely to allow students to focus on library-specific problems, settings, and contexts. Even if a student were allowed to tackle a library design

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[5] See http://www.darden.virginia.edu/executive-education/certificates/innovation-specialization/

problem in one of these external courses, lack of library knowledge on the part of instructors and fellow students means that these library projects will not receive useful critical feedback from people with subject matter knowledge and expertise. Second, and perhaps more insidious, is that relying on other departments and fields to tackle design topics in library education reifies the idea that design is something external to libraries and librarianship, thus perpetuating the notion that librarians are not designers and must rely on others to create necessary information tools and services.

Design courses in LIS programs

Instead of sending master's level library students to other fields and departments for design education, another possible solution would be for MLIS programs to offer their own courses specifically in design thinking. A recent overview of required MLIS coursework reveals that none of the top 20 US News & World Report ranked programs include coursework in design as a program requirement, and no library-specific courses in design thinking and methods were observed (Clarke, Meyer, & Lee, 2017). The University of Washington Information School is currently attempting to bridge this gap. In 2015, development of a course called "Design methods for Librarianship" began. As this course is many students' first experience with design, it aims to focus on exposure to and appreciation of design theories and ways of thinking in addition to basic skill development in design methods for problem-solving. Course topics include, but are not limited to, the following: definitions and history of design; where and in what ways design differs from other modes of inquiry, especially in relation to traditional library research and assessment methods; and hands-on experience with various design methods and techniques, from contextual inquiry for understanding patrons more thoroughly to prototyping design artifacts for potential implementation in libraries. As is typical in design courses, the curriculum includes traditional modes of learning such as lecture and discussion, as well as studio activities and critique. In addition to weekly hands-on studio sessions offering students the opportunity to "get their feet wet" with design methods, the course is structured around larger questions of problem-solving. Students are encouraged to tackle problems relevant to their own interests and situations. Since many MLIS students are concurrently working or volunteering in libraries, there are opportunities to address real-world problems in the settings of these organizations (Mills et. al., 2017). Since the course's launch in 2016, it has subsequently been added as an optional requirement of the core curriculum (students may elect to take the design course or another course on information behavior to meet the learning objective focused on user needs). Additional design courses have also been added to the curriculum, including an online version of "Design methods for Librarianship" and a special topics course on participatory design methods for libraries.

In summer 2016, the Simmons School of Library and Information Science debuted a course entitled "Library Test Kitchen," which introduced students to design thinking methods and skills

like rapid prototyping, ethnographic user research, and related human-centered design skills (Simmons College 2016). Although the course originated as a way of helping architecture students think about libraries as design opportunities, it evolved into the inverse. Now it focuses on teaching library students how to apply design thinking in their institutions and communities, an approach that Simmons envisions as a model for future education in LIS.

Examples like these are at the vanguard of incorporating design thinking into library science programs. Other MLIS programs have also recently become interested in offering instruction in design thinking and methods. San Jose State University is adding a two-credit course on design thinking into its fall 2017 curriculum, and Syracuse University, in partnership with the University of Washington, recently received a grant from the Institute of Museum and Library Services to explore new ways of integrating design thinking and methods into LIS education.

More than courses: a whole new MLD program

These developments at the University of Washington and the Simmons are admirable for their proactive stance regarding design education for librarians. However, while a single course is certainly better than no course at all, we believe that a one-off course is not enough. Offering only a single course runs the risk of leaving design compartmentalized or viewed as just another one of many methods, when in reality it has been demonstrated how intrinsic design actually is to the field of librarianship. Design underlies everything librarians do, and so it must also underlie the entirety of education for librarianship.

Therefore, we propose a revolutionary new idea: explicitly integrating design methods and philosophy throughout LIS education by re-envisioning the MLS as the MLD: Master of Library Design. In this proposal, design is not one course, or even a series of courses, but a continuous thread throughout all classes undertaken in master's level library education. We base this model on successful models of design education, specifically the central tenets of learning by doing and making; setting education in a studio environment; and supporting lifelong learning through the building of repertory knowledge.

Models of design education

Learning by doing

Design education is rooted in the idea of "learning by or through doing" (Lyon 2011). Unlike sciences or humanities, knowledge in design comes from making things, and therefore to gain knowledge, one must engage in actual making. Arguably much learning by doing already happens in MLIS programs, as evidenced by things like the increasing shift from research theses to capstone projects and other problem-solving culminating experiences (Burke and Snead

2014). Individual course projects may also be problem-based or related to professional practice, which is also to be lauded in terms of offering hands-on experience to students. However, one of the major differences between these learning by doing attempts in MLIS education vs. design education is that many of these hands-on library projects occur at the culmination of a term or a degree, while they are ongoing throughout the course of design education. The "learning through doing" model of education in traditional design fields such as architecture, product design, etc., extends beyond individual assignments to the entire atmosphere of the educational environment. Schön (1985) explicitly calls out the difference between practica in professional schools and his reflective practicum of the design studio:

> "…[design education] would not be organized to apply classroom knowledge to practical [i.e., real world] problems. It would be studio-like in the sense that it would organize itself around projects of simulated practice and would ask students to plunge into these before they know what they need to be doing or learning. It would expose students to the demonstrations, advice, and criticism of master practitioners. It would focus on the messiness of problematic situations which need to be converted to well-formed problems before they can be solved by the application of established techniques. It would pay attention to the strangeness of unique cases that escape the categories of established theories. And it would engage the appreciative, value-laden questions as well as the technical ones. It would not eschew the use of research-based knowledge, but it would not assume that project tasks are only done, or best done, through the use of such knowledge" (89).

Schön is saying--and we agree--that students need to hone their skills in an ongoing, consistent application in settings where they are free at first to fail. This failure is not devastating, but a springboard from which to learn, via critique from instructors with myriad experience as well as points raised by peers. Library education today often consists of learning how to do something and then being asked to do it. Design education consists of being asked to do things, learning based on what you've done, using that learning to make new things from which knowledge emerges, and so forth. In addition to providing an ongoing learning environment, this iterative approach to learning and knowledge allows students the time and space to brainstorm idea, create multiple prototypes, iterate ideas and support ongoing reflective practice--all elements which are notoriously difficult and elusive to convey in a traditional classroom environment (Heckman and Snyder 2008).

Studio-based education

How is this accomplished, if the traditional classroom model is lacking? The model of the design studio—a physical and intellectual space specifically created to support learning by doing—lets students learn from the actual practice of designing itself, helping them internalize covert and implicit elements of design methods and thinking can that cannot be adequately conveyed

through other forms of education like lectures (Schön 1985). The contemporary model of the design studio sees students tackling projects under the supervision of master designers and in close proximity with their peers, which can foster camaraderie among students (Lackney 1999). Throughout the term, student work is evaluated by classmates, the instructor, and/or panels of outside experts. These "crit" sessions not only provide students with direct feedback on the project at hand, but they also prepare students to give and receive constructive feedback as well as construct frameworks for evaluation (i.e., not just "I like it" vs. "I don't like it," but the ability to see what a client needs and how well or poorly any given design may address those needs) (Kolko 2011). Students learn not only from their own successes and mistakes, but those of other classmates as well, affording them opportunities to witness other problem-solving approaches and alternative solutions within a short time frame (Snyder, Heckman and Scialdone 2009). Schön (1985) explicitly argues that the design studio model of education should be the next liberal arts mode of education. Design studio models of interaction also offer a useful approach and provide a necessary complement to more traditional scientific models underlying professional technical education, especially in information science and technology (Snyder, Heckman and Scialdone 2009). Given the relevance of both liberal arts and information science to librarianship, it stands to reason that studio-based education may also be useful and applicable to library education.

Lifelong learning through repertoire building

The concentrated interactions fostered in studios also help students build their repertoires of knowledge. In addition to project outcomes, design education harnesses the ideas of iteration and process. Students are often required to keep notebooks, sketchbooks, or journals, not just to record ideas for future remembrance, but also to allow for the exploration of and experimentation with new ideas. Such journals also represent an ongoing instantiation of a student's burgeoning repertoire of knowledge. Reframing education in librarianship as a foundation for repertoire-building not only reflects the field's core value of lifelong learning, but it can also reduce the pressure from the ever-increasing range of knowledge students expect library education to provide.

Currently students leave graduate library education programs complaining that they still lack sufficient knowledge, and employers opine that students are under-knowledgeable in key areas. (See the plethora of blog posts and conference sessions about "what they never taught me in library school".) Yet given double the time and resources, graduate library education could still not hope to cover everything a professional librarian needs to know. Instead of trying to achieve a quantity of knowledge, explicitly framing graduate library education as teaching students problem-solving and repertoire building would better prepare them for the ever-changing situations they will face in their professional careers.

A new model for library education

Most MLIS programs have evolved out of traditional classroom models and approaches to education. Classes focus on topical content rather than approaches to problem-solving or other broad epistemological constructs. For instance, a review of the top 20 ALA-accredited master's level LIS programs in the United States shows that these programs require an average of 6 required courses, comprising on average approximately 40% of the degree credits and prioritizing topics like information organization, management, technology, reference services, and research methods (Clarke, Meyer and Lee, 2017). While these topic-based courses may allow students to learn specific details about these areas, they are often a one-and-done opportunity where students finish a project on that topic and then move on to a new topic the following term. Any connections among topics will vary based on instructor and school, and techniques like problem-solving approaches do not have enough time to take hold.

In contrast, design education offers a more holistic approach. Courses focus on techniques and approaches instead of or in addition to topical content. For instance, Standford's d.school offers classes such as "Creativity and Innovation" (teaching students to think outside the box) and "Design Thinking Studio" (where student have hands-on opportunities to try out some of those outside-the-box ideas. Another useful model comes from the Integrated Design & Management program at MIT.[6] Students follow a curriculum that instead of traditional coursework, includes sessions such as lectures from faculty on the "topic of the day"; hands-on design workshops where students explore and try different making techniques; guest lectures from experienced professionals; group projects based on solving problems; foundational courses and electives; and specific time allotted for project work in labs.

So while a traditional MLIS program might see a student take 3 courses per term for two years (see Figure 1), a new Master of Library Design curriculum might look more like the MIT model, with time divided not by topic, but by instructional mode (see Figure 2).

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[6] https://idm.mit.edu/about/curriculum/

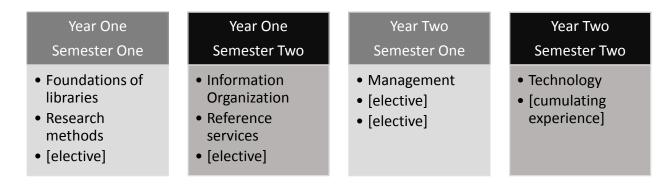| Year One Semester One	Year One Semester Two	Year Two Semester One	Year Two Semester Two
• Foundations of libraries • Research methods • [elective]	• Information Organization • Reference services • [elective]	• Management • [elective] • [elective]	• Technology • [cumulating experience]

Figure 1. An example course of study in a traditional MLIS program. Although individual courses of study will vary, this hypothetical example is based on the average required courses in the top 20 ranked ALA-accredited MLIS programs, most of which follow the semester system.

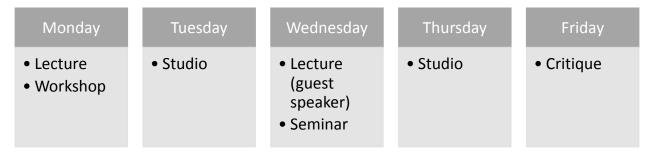| Monday	Tuesday	Wednesday	Thursday	Friday
• Lecture • Workshop	• Studio	• Lecture (guest speaker) • Seminar	• Studio	• Critique

Figure 2. An example schedule for the Master of Library Design (MLD) program. Each week includes lectures, workshop activities, studio time, seminar discussions, guest speakers, and critique and feedback sessions.

It may seem like we are abandoning the 'science' of librarianship by moving away from topical courses, but we are not. Just as design programs offer and require coursework in history and theory, the MLD will still include courses on library topics, like theories of classification, principles of reference, etc. Students need this knowledge to inform their problem-solving and design work, just as architects need education about buildings throughout history, or fashion designers need knowledge about textile structures and characteristics. We are not proposing to eliminate these topics, only to offer them in new ways and integrate them with additional design approaches.

For example, on a given week, students may be focusing on information organization and cataloging. The week would start with a lecture and general introduction to the topic, covering such things as the history of library cataloging, objectives of cataloging, and existing descriptive standards. This would be followed by a hands-on activity intended to both help students better understand the lecture content as well as plunge them immediately into problem solving. In this example, student might be given copies of a resource (say, a feature film on DVD in a case) and asked to independently decide which descriptive elements they might record in a catalog for future retrieval by patrons. After recording their independent ideas, students would compare their elements with others in the class to see how similar and consistent the recorded elements were. Discussion among students and guidance from the instructor would reveal reasons and

justifications for the inevitable discrepancies. The instructor could also raise the need for descriptive elements to vary depending on target audience.

The following day in the design studio, students would be presented with a problem or challenge related to cataloging. They may be given a collection of resources (say, periodicals) to describe and catalog for a particular user group (say, senior citizens). Students would spend studio time investigating the needs of this particular user group (through primary and/or secondary research), brainstorming ideas for resource description, and developing prototype "catalogs" to meet the needs of the situation, with instructor feedback and guidance. (We use the term "catalogs" loosely here as previously deployed variations on this exercise have shown that student solutions often look very different than traditional applications—a good sign of innovation!). Supplemental lectures, either from instructors or guest speakers, and seminar discussions, help scaffold students in their work by offering opportunities for repertoire building through exposure to existing theories and practices.
At the end of the module, students' work would be shared in critique sessions, where other students, instructors, and possibly practitioners would comment and offer feedback. Such sessions force students to explicitly articulate the rationale, or the reasons and justifications for decisions made in their work, and why it meets the needs of the given users. Although we use a cataloging-related example here, all manner of library topics, from reference services, to collection management, to information needs and behaviors, would be incorporated into this model. This lets us turn the focus to design of library services, and encourages students to solve problems in innovative ways, rather than reinstitute the same solutions that libraries have seen in the past.

Implications of this new model

Instituting a new MLD program has many implications beyond the direct impact on library students and their skill sets. While we believe overall that offering an MLD would be a positive step toward creating future librarians with the ability to think critically and devise innovative solutions to challenging future problems, there are also logistical and even potentially political ramifications. For instance, overhauling an entire degree program or starting a new program is no easy task. For starters, who will teach in this new program? The MLD requires not only instructors with new and different knowledge bases, but also instructors with completely different teaching approaches and styles. An instructor who is used to delivering lecture content may not be comfortable or qualified to offer studio feedback and critique. Additionally, many contemporary LIS programs have shifted to online delivery modes, complicating the ability to bring students together in studio settings. Some online programs support synchronous interactions, which may offer opportunities for a new type of online studio environment; the University of Washington is exploring potential technologies and tools to support such interactions. But for other schools that rely on asynchronous education, the MLD would be

impossible.

Beyond individual course instruction, departments and colleges may face bureaucratic challenges in creating new degree programs in terms of funding, administration, and various accreditation standards. The MLIS degree and its equivalents have been accredited by the American Library Association since 1951 (Quinn 2014), although it evaluates programs based on adherence to a set of established standards rather than on naming conventions. Considerable attention would need to be paid to those standards and the ways in which they might (or might not) be addressed in a new program. Other professional implications may affect job descriptions and hiring decisions, and possible clashes between professionals educated in the MLIS model versus those in the MLD. Still, the profession has seen similar change before--notably the shift from MLS to MLIS--which ultimately helped it thrive.

Conclusion

Librarians and information professionals already perform significant amounts of design work. Owing to their routine creation of tutorials, signage, programming, instruction activity, workflows, as well as the more serious challenge of finding solutions to wicked problems like open access, user awareness of resources, and information literacy, it is clear that the future of libraries needs professionals equipped with the Masters of Library Design. Put simply, librarians need to keep making their libraries better. Failing to do so may marginalize libraries as valuable community resources.

Design thinking offers a path to a future where libraries become better and in turn contribute to a better world. While a scientific core remains a strength of library education, library educators need to recognize that current and future practitioners conduct more design work than scientific investigation. Explicitly integrating design philosophy into contemporary library education is a strong path to a future of librarianship rooted in adaptive problem solving.
We are only at the beginning of a change process. A few pioneering institutions are beginning to try new approaches and ways of bringing design into LIS education. In this chapter we, too, offer a pioneering idea: the Masters' of Library Design degree. Although we offer preliminary inspiration, rationale, and suggestions in this chapter, planning and funding the 'd-school of librarianship' is itself a wicked problem. To tackle it, we need faculty and practitioners to collaboratively engage in conversation about how to move forward.

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