Designing the MLIS: How Design Thinking Can Prepare Information Professionals

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ABSTRACT

In recent years, the library profession has embraced the value of design thinking for designing services, serving users, and organizing physical spaces. This paper describes the developments that led to the incorporation of design thinking in a Masters in Library and Information Science program at the University of Pittsburgh. Through a three-course *Design Methods Sequence (DMS)*, students engage in sustained partnerships with organizations in the local community. This paper provides insights from a pilot instructional year, highlighting ways in which the DMS may serve as a model for MLIS programs that aim to build experiential learning opportunities for students.

ALISE RESEARCH TAXONOMY TOPICS

curriculum; pedagogy; community engagement; information needs; human-computer interaction & design

AUTHOR KEYWORDS

design thinking

INTRODUCTION

Design thinking, the creative, human-centered approach to problem-solving, has been used to improve systems, services, and spaces in libraries. Because libraries are typically risk-averse, design thinking can encourage agile change and innovation in libraries (Meier & Miller, 2016). Design thinking has been identified as an important framework for library instruction (Bell & Shank, 2007), for renovating library spaces (Rodgers, 2019), for creating library signage (Luca & Narayan, 2016), and for improving customer service (Cecchetto, 2016). In playing an important role in librarianship and having the potential to encourage further cultural change in libraries, design thinking is well suited to the MLIS curriculum.

This paper describes the theoretical and practical developments that led to the incorporation of design thinking and methods in a Masters in Library and Information Science program at the University of Pittsburgh. Through a required, three-course *Design Methods*

Sequence (DMS), students develop competencies in design methods, and project management while engaging in a sustained collaborative partnership with an organization in the local community. Pitt's DMS can serve as a model for others who wish to provide students with experiential learning opportunities that develop skills and knowledge necessary for the information professions.

DESIGN THINKING

Design thinking is a human-centered, creative method of solving ambiguous, complex, and ever-changing problems - so-called "wicked problems" (Gram, 2020). Originally situated within the context of professional design firms, design thinking entered the mainstream in the 1990s with the formation of IDEO, a design consultancy firm, and Delft University of Technology's first Research in Design conference (Cross, Dorst, & Roozenburg, 1992). Design thinking can be used to create products, systems, strategies, and services. An essential aspect of design thinking is that the underlying problems with current systems and strategies are discovered and understood before any solutions are proposed.

Design Thinking's approach to problem solving consists of five stages:

- *Empathize* - Gather information and understand as much as possible know about the problem or need.
- *Problematize* - Formulate and reformulate the problem by analyzing collected information from multiple perspectives.
- *Ideate* - Convene brainstorming sessions to generate as many ideas as possible. There are no bad ideas, no matter how unconventional.
- *Prototype* - Take the best ideas and build prototypes through rapid iteration.
- *Implement* - Bring a minimum viable product into production.
- *Evaluate* - Perform rigorous assessment, both formative and summative, through user feedback and observation to measure success.

Design is an entire disciplinary world that has inspired the creation of intellectual traditions and dedicated schools, while also fueling fierce ontological debates (Vinsel, 2018). It is important to recognize Design Thinking as a branded, corporatized, and commodified concept devoid of substance and used as currency in a marketplace for consumer attention. Hence, when teaching and learning about Design Thinking, it should be presented alongside salient critiques, such as its tendency for perpetuating hegemony (Iskander, 2018). The concept and critique can be brought together through initiatives like equityXdesign reimagine Design Thinking to address racism and injustice (equityXdesign, 2016).

In the abstract, the objectives of design are to "create things people want" (Konsorski-Lang & Hampe, 2010) by "addressing problems or ideas in a situated context" (Binder et al., 2011). Design Thinking has emerged as a framework for the application of design oriented approaches to problem solving in a variety of organizational contexts (Brown, 2009). As Herbert Simon (1969) put it, "Everyone designs who devises courses of action aimed at changing existing situations into preferred ones." These objectives are aligned with some (though certainly not all) of the objectives of librarianship.

DESIGN THINKING IN LIBRARIES

Rachel Ivy Clarke (2018) has argued that there is a significant overlap between design thinking and librarianship. Classic library science techniques such as the reference interview have a strong affinity with qualitative information-gathering techniques, such as user interviews in human-centric design. A prominent example is the *Design Thinking for Libraries Toolkit* (2018), which provides practical guidance, processes, and tools for libraries to improve patron services and enact organizational change. Funded by the Bill and Melinda Gates foundation, the toolkit was created by IDEO in partnership with Chicago Public Libraries and Aarhus Public Libraries in Denmark. Large professional organizations have explored this topic through articles and conference presentations in an effort to help their membership understand design thinking. ACRL ran a "Keeping up with…Design Thinking" article about the value of design thinking in academic libraries (Leuzinger et al., 2018) and the Library of the Future initiative from ALA (2018) lists Design Thinking as a trend that is particularly relevant to education. Design thinking can influence and improve how libraries serve researchers and learners, organize library spaces, and improve their own services. As design thinking gains more mindshare in the professional community, the need to educate new information professionals on the approaches and methods of design thinking becomes clear.

DESIGN THINKING IN LIS EDUCATION

The inclusion of design thinking approaches in MLIS programs has been proposed at various levels, from experiential learning, to individual classes, to completely new graduate degree programs. A CLIR Report (2008) envisioned innovative, client-centric experiences as a central theme for future curricular design in MLIS graduate programs. The report advocated for studio-based education and facilitating interaction between students and real-world clients, modeling the MLIS on Design School pedagogy. Clarke and Bell (2018) write about the need to transition the MLS to the MLD - Masters of Library Design, which integrates design thinking throughout the coursework, encourages learning by doing, and uses a studio-based education format. They commend the work being done to integrate some design thinking coursework at the University of Washington, Simmons University, and San Jose State University, but advocate for a more comprehensive integration of design thinking within LIS curriculum. Pitt determined the ideal curricular mechanism for incorporating design thinking into the MLIS curriculum would be to create an extended, multi-course experience that synthesizes design thinking theory with real-world engagements to put theory into practice. Design thinking and methods have been integrated into the MLIS curriculum to create a bridge outside of LIS, including with other programs in the School of Computing and Information, where Pitt's MLIS is housed. Design thinking is the conceptual framework used to structure the instruction of multiple, related concepts and techniques that are not exclusive to design.

THE DESIGN METHODS SEQUENCE

The MLIS program at the [Authors' Institution] is a year-long, three-term, thirty-six credit program within the Department of Information Culture and Data Stewardship (ICDS) in the School of Computing and Information. A curricular redesign process was undertaken during the 2018-2019 academic year, with the redesigned MLIS program launching in the 2019-2020 year. In the redesigned curriculum, students are required to take six courses - three on foundational LIS concepts, and three in the *Design Methods Sequence*. Students are enrolled face-to-face and online, but for the first year of the redesigned curriculum, the Design Methods Sequence (DMS) was offered to full-time, face-to-face students only.

Experiential learning is not a new feature of LIS programs (Bell, 2018). For many years, Pitt's program has included a "field experience" elective, with supervised professional work and class meetings for reflective discussion with an instructor and cohort. Instructors also embed experiential learning projects in individual courses. The DMS differs from these existing prior offerings in that it is sustained, methods-based, and group-oriented. Through multiple terms the teams of students learn specific methodologies, *Contextual Inquiry & Design,* for working with their community partners. The engagement is much more structured with specific deliverables and guidance from the instructional team than the field experience–which is a *complement* to the DMS.

The DMS begins in the Fall Term and ends in the Summer Term. Students are placed in teams of 4-5 members in the fall, and continue to work with the same team through the end of the summer. Teams are assigned to local partner organizations, with whom they also work throughout all three terms. The first course in the DMS is *Identifying Information Needs of Knowledge Organizations*, which focuses on using contextual inquiry and qualitative research methods to learn about the partner organization and the challenges posed by their information problem. Students learn and practice the design thinking concepts of *problem framing* and *ideation,* while also learning vial teamwork and project planning skills. The second course in the DMS is *Implementing Solutions for Knowledge Organizations*, in which student teams *develop, prototype,* and *test* solutions for their partner organizations. The course focuses on user-centered design, low fidelity and high fidelity prototyping, agile methodology, and iteration. The third and final course in the DMS is *Integrating Solutions for Knowledge Organizations*, which asks students to consider how to evaluate the success of their solution, and what resources they will leave with the partner organization to ensure the longevity of the solution.

Because working with organizational partners is key to the success of the DMS, faculty work with libraries and other non-profit organizations to discuss the DMS, the role of organizational partners, and what information problems would be appropriate for student teams to try to solve. After initial contact, faculty meet with potential partners to further scope their project ideas. Information problems should not be mission-critical; instead, they are problems that partners identify as persistent issues that they have not had the resources to dedicate to solving. After projects are scoped, potential partners submit an application that includes contact information, a description of the project, and general area(s) where the project fails (technology, communication, public services, etc.).
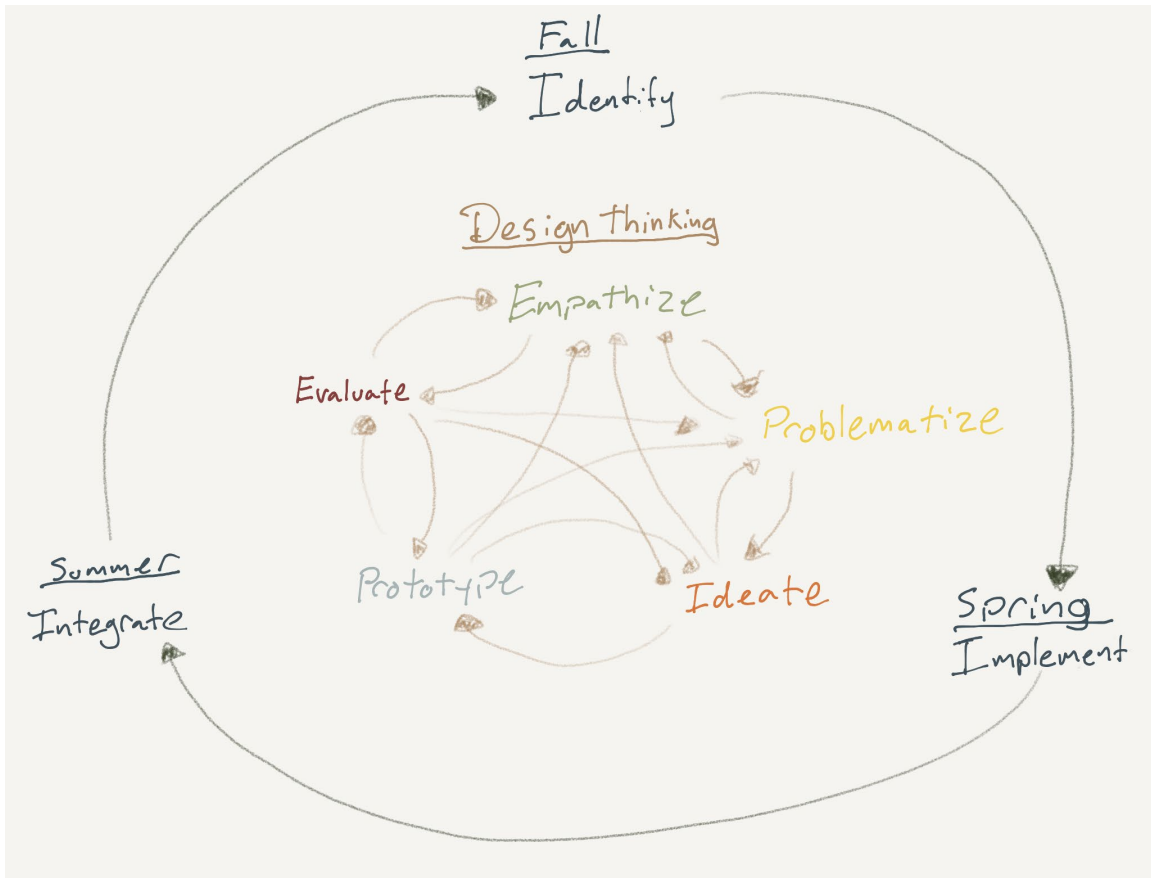
Figure 1. Representation of the three-part Design Methods sequence and the five stages of design thinking

The three-course DMS helps students:
- Develop a repertoire of *design methods* conceptually scaffolded by Design Thinking and values-sensitive, human-centric design.
- Work effectively in small, diverse teams on a specific task for an extended period of time.
- Collaborate with external partners, organizations, and communities to understand and solve problems.
- Learn about the mission, culture, values, and practices of specific knowledge organizations.

The following sections describe these learning goals in further detail and provide preliminary insights into how they have been met during the first year of teaching the DMS.

Develop a Repertoire of Design Methods

An objective of the DMS is to help students to develop a *design repertoire* that allows them to apply the design methods they have learned in a variety of professional contexts. Design methods comprise a repertoire of human-centric design processes, procedures, and techniques for collecting, analyzing, and using data to design solutions to problems (Hanington & Martin,

2012). By teaching students the language, concepts, and techniques of design methods they will be prepared to work as 21st century information professionals.

The first term is dedicated to teaching students *contextual inquiry and design* (Holtzblatt & Beyer, 2013), specifically interviewing and observing work-in-context. Assignments are oriented towards the main deliverables of contextual inquiry including work models, affinity diagrams, briefings, and a final report. The second term is dedicated towards implementation, so the students learn to develop and evaluate prototypes through design critiques and user studies. The feedback they obtain from "testing" their prototypes leads to several iterations on their designs based on feedback from their "users." In the final term, students focus on evaluation of the final design and project transition. The course provides an overview of quantitative and qualitative methods of assessment, and students propose and implement an evaluation plan for the design solution. Then they develop a transition plan to hand off the design to the organizational partners.

Work as a Small, Diverse Team on a Specific Project for an Extended Period of Time

Collaborative, interpersonal skills are vital for information professionals as they work in the broader world. These skills can be difficult to teach in traditional classroom settings introduced as abstract concepts and divorced from a specific context. The DMS provides a structure for students to learn-by-doing in the context of a year-long project on a small team. Further, this framework requires students to develop their project management and critical thinking skills in a collaborative setting and to successfully exchange ideas with team members from diverse backgrounds. Being able to work on teams and collaborate with other people and organizations in an ethical and thoughtful way are fundamental skills of information professionals in libraries, archives, museums, and most other contexts where our graduates will find themselves in the future.

Groups were deliberately composed of students with a variety of interests (archives, academic libraries, school libraries, public libraries) to form teams with mixed interest areas. Teams with heterogeneous interests and experience are often more effective at problem solving (De Faria et al., 2006). The assignments are primarily group-based activities, so teams need to equitably divide up the work, communicate expectations, and collaborate effectively to accomplish each task. While conflicts arise, it is primarily the responsibility of the students to work together to resolve them. The faculty must sometimes intervene to resolve group tensions, but as a mediator who helps the team develop a productive working relationship.

Collaborate with a Partner Organization

Providing students with real-world opportunities to experience and practice the concepts, ideas, tools, and methods they learn throughout the program is a fundamental component of the MLIS redesign. Pittsburgh is home to a plethora of potential organizational partners, including libraries, archives, museums, government offices, and for-profit and nonprofit companies. Over the course of three terms, students focus on specific, bounded, and scoped information problems within the context of a knowledge institution. In consultation with the partner organization, the students apply the design methodologies, concepts, and skills acquired from their coursework to

address their partner organization's particular problem or need. Through a sustained, year-long partnership, students and external organizations forge professional connections that will benefit them moving forward.

For the pilot year, faculty recruited partner organizations from the local community, drawing on existing relationships. These partners included academic libraries, health libraries, nonprofits, and even the local census. Partner organizations may not represent the students' anticipated career area, but the problems they face and the work they do are relevant and informative to the students. Anecdotally, when collaborating with real-world partners, the students are motivated to do good work because they are obliged not only to the instructional team, but also to their partners. While additional investigation is necessary to determine conclusively if this is a recurring outcome, students have expressed a desire to not let their partners down.

Learn about the culture, values, and practices of a particular information organization

Students have a variety of interests regarding where they may want to work upon graduation. The partner organizations provide students an opportunity to learn first-hand about real-world work. The specific nature of student's collaborations with an organization encourages them to listen, observe, and learn about the mission, vision, and culture of the organization, what it values, how it functions. This understanding will not come from abstract, classroom-based instruction but from real-world encounters with practitioners in the field. The classroom instruction instead focuses on *learning how to learn* about culture, values, and practices through design methods like interviewing, observation, and contextual inquiry. In this way the program prepares students to work in *any* information organization and to be adaptable as they grow in their professional careers.

Many of the design methods, especially those related to inquiry and investigation, provide students with the ability to learn what is meaningful to their partners. The interviewing and observation techniques emphasize setting aside preconceived notions about libraries, archives, non-profits, or municipal governments. Working with these organizations over the course of a year enables them to establish a substantive relationship where they can make meaningful contributions to their partner organization's work. Students may learn about the idealized theory of archives and records management in other coursework, but they learn about the messy reality of archival practice in their DMS projects.

FUTURE POSSIBILITIES AND CHALLENGES

The DMS has appeal to students in a number of majors and programs, beyond the MLIS program. As described, the DMS encourages students to learn about any information organization and to collaborate with the organization to develop and prototype solutions. Students in fields like information science, computer science, sociology, environmental studies, and a host of other disciplines could benefit from the DMS. The challenge is in the sustainability of the program through continued resources, especially personnel to both teach the DMS and continue soliciting and maintaining relationships with organizations in the Pittsburgh area to be

DMS partners. Additional future changes include integrating critical design thinking into the DMS and restructuring the DMS to two terms instead of three to streamline the course series.

CONCLUSION

This paper overviews the goals and design of the DMS at the University of Pittsburgh. We are currently delivering the first version of the DMS and are conducting a formal assessment involving feedback from our students and organizational partners. We intend to share future work with the instructional community, including an evaluation of our first iteration, subsequent modifications to the model, and the implementation of an online DMS experience.

In presenting the DMS, we recognize that not every MLIS program can implement a three-course requirement. Instead, we must consider how design methods might be incorporated into existing curricular structures. While there has been criticism of one-off courses (Clarke & Bell, 2018), there must be a middle ground between a single course and a three-course sequence. Such a middle ground could be incorporating design thinking into existing coursework and experiential learning opportunities. MLIS programs can introduce design thinking in introductory courses, and weave methods, understandings, and case studies of implementation as a thread through subsequent courses. Instructors can build semester-long assignments that require the application of design thinking methods. Field experiences, internships, and other experiential learning opportunities could be grounded in design thinking and used as a lens through which students can reflect upon their experience.

We believe these lighter models for incorporating design methods can still achieve a meaningful and comprehensive experience. Communities like ALISE can serve as a vehicle for sharing strategies for building design thinking into curriculum and for assessing the impact of these pedagogical efforts on the profession.

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