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# **GALLOPING INTO THE UNKNOWN: UTILIZING DESIGN THINKING TO REIMAGINE INSTRUCTION, COLLABORATION, AND INNOVATION**

**PATRICK TOMLIN, STEFANIE METKO AND LISA BECKSFORD**

## **INTRODUCTION**

Virginia Tech is a public, land-grant, research university with over 33,000 students at both the main campus in Blacksburg and at extended campuses across Virginia (Virginia Tech, 2017). Over the last few years, the university has seen a new president, a new provost, a new strategic plan, and a new undergraduate general education program, while the Libraries have seen a reorganization and dramatic renovations. Given these changes, design thinking as a model for harnessing change is a natural fit for both the Libraries and the institution. Our team needed to embed design into the heart of our enterprise and wanted to reinvent the way that people work, teach, and think about change itself.

Our use of design thinking was a response to several factors. On a rapidly changing campus, the Libraries needed to position itself within the broader university strategic directions emphasizing digital literacy, experiential learning, and interdisciplinary research. Many of these initiatives required us to rethink our goals and how we accomplished them. It also required a shift in mindset and desire to create thoughtful services for our users. We wanted a way of thinking that would strengthen our identity as a team by creating a common vocabulary and a shared framework for change. With its emphasis on empathy, ideation, and rapid prototyping, design thinking provided a set of principles that allowed us to stay user-focused when creating new instruction programs and spaces, while also evaluating how we worked as a team.

## **WHAT IS DESIGN THINKING?**

Design thinking was developed in the world of design, at Stanford University's Hasso Plattner Institute of Design. Design thinking provides a framework for approaching challenges and creating a culture of continuous improvement and flexibility (IDEO, 2016). Design thinking consists of five phases, which do not necessarily happen linearly: empathize—learn about users; define—articulate the challenge at hand; ideate—brainstorm solutions; prototype—turning ideas into something to try; and test—try out prototypes and make improvements (Hasso Plattner Institute of Design, 2017).

Though it began in the design world, design thinking has been embraced throughout education, including libraries, with modifications of the original five stages. The Design Thinking for Educators toolkit, designed for K-12 education but applicable to higher education, also has five phases: discovery, interpretation, ideation, experimentation, and evolution (IDEO, 2013). A similar toolkit, Design Thinking for Libraries, transforms the five steps into three—inspiration, ideation, and iteration—intended to move a project from “getting started” to “getting to scale” (IDEO, 2015). In recent years, many have advocated the use of design thinking in libraries, particularly in user experience (Bell, 2008) and library instruction (Bell & Shank, 2007).

## **CASE STUDY: LIBRARY INSTRUCTION PROGRAM DEVELOPMENT**

As with many library instruction programs, Virginia Tech has faced challenges with sustainability and scale. Part of the impetus for reexamining our instruction program was the new administration's shared vision for the future of learning writ large, including modular-based learning, an emphasis on credit-bearing courses, and opportunities for interdisciplinary collaborations.

While exciting, this vision also provided some challenges to the design and implementation of our library instruction program, which had been largely focused on one-shot instruction within our first year program. Currently, deeper level engagement with first year experience and upper level instruction occur through a decentralized liaison program with liaisons reporting within various units and not within the instruction unit. Another challenge was that the University Libraries are not a college and instead are organized as an administrative unit that reports through the Provost's office. In order to offer credit bearing courses, the Libraries would need to partner with academic units. In addition, the Libraries did not have the technology or personnel infrastructure to support modular-based learning, which would involve not only increased digital content production, but also a broad view of the curriculum within the Colleges and the co-curricular initiatives. For example, the Libraries were asked by the Provost to take on leadership for two university-wide initiatives: ePortfolios and Digital Literacy. With this charge came the need to rethink how we structured our program. With the new ePortfolio initiative, we wanted to make sure we were situating instruction around ePortfolios within an emerging framework for digital literacy, while also keeping for-credit and modular learning at the forefront of our consciousness while designing those programs. The challenge was that both of these initiatives often need to be incentivized to gain student and faculty buy-in and that would be difficult without the backing of a college.

Design thinking presented a way to think about these challenges and opportunities and to navigate change with an approach that included prototyping ideas and service models while quickly pivoting when we needed to go in another direction. It also offered a framework for how we could think about the offerings to our users. We knew that the current library instruction program was still relevant and valuable, but that parts of it needed to evolve in order to align with the new campus vision. The big question was how to determine which elements of our programs were essential and which elements needed to be adapted to fit this new model of forward-thinking and measurable instruction.

In order to achieve these goals, we had to evolve not only our instruction program, but also our instruction librarian mindset. As we embraced digital literacy and ePortfolios as core instructional service areas, we had to rethink the role of the instruction librarian, such as thinking about our traditions and core values as librarians while also welcoming non-librarian team members, such as instructional designers, to help with content expertise. Design thinking also offered a way to structure team-building activities that would address the development of core mindsets and beliefs about the role of an instruction unit.

The Stanford d.School model of "Putting Design Thinking to Work" offers the idea of selecting from three "mixtapes" when implementing design thinking in this context (Hasso Plattner Institute of Design, 2017). In the Understand mixtape, leaders empathize with their team through observation, interviews, and other people-oriented measures of understanding. For our team, this took the form of frequent communication around team roles, team culture, and our view of each other as individuals and as a team. By taking a multi-dimensional approach, we were able to develop a new culture within our instruction unit, a culture where everyone is willing to engage with an idea to support other team members, even if they do not buy into a concept up front.

In the second mixtape, Experiment, the focus is on rapidly prototyping solutions to various problems. For example, our online learning team prototyped a learning object repository as a potential solution for scaling library instruction and making time for deeper engagement in emerging areas. Developing a prototyping mindset takes time and energy, and the idea of building something that might fail was not initially an easy concept. At this stage, it was important to focus on teambuilding and leadership support of the team when failures did happen. It was also important to provide resources for innovative ideas. One example of this was an innovation grant that the team received to explore adaptive learning. While only in the pilot phase this year, the team was able to develop a series of library instruction modules that will later be used as our first adaptive learning project for our English curriculum. While the project didn't progress in the linear fashion outlined in the grant application, it was a success in that all participants were open to trying something new, and progress was made towards scaling solutions to one small area within our instruction unit. Through developing a design thinking mindset from the leadership on down, it was easier to see those successes even if the original vision wasn't realized up front.

In the Ideate mixtape, team members articulate challenges and come up with many solutions, which can be called "high-impact brainstorming" (Hasso Plattner Institute of Design, 2017). This was arguably the most important area for development within our instructional team because we were constantly having to reframe our approach as the institutional vision shifted.

For library instruction, the mixtapes analogy is important because it reframes the value in both the old and the new forms of library instruction, allowing for a dynamic and unique instruction program that is constantly evolving. The process of deliberately choosing what to keep and what to let go of is at the crux of our library instruction program development. Holding on to the past could mean missed opportunities to be a part of something great, while only embracing the newest trends could translate into a missed opportunity to remix something into a solution that truly addresses user needs.

## **CASE STUDY: STUDENT PROJECT SPACES**

Just as it did for our instructional program, design thinking—with an emphasis on user empathy, ideation, and rapid prototyping—allowed us to frame the experimental development of new student studios. After conducting an environmental scan

and interviewing students, we determined that although there were existing 3D printing labs on campus, they either charged for printing objects or required departmental affiliation for access. Additionally, while many undergraduates were involved in research projects that were entrepreneurial and interdisciplinary in nature, yet unassociated with a specific course, they had no dedicated space in which to work. To meet these different needs, we devised two spaces—a 3D Design Studio and an interdisciplinary undergraduate research hub called Fusion Studio—built upon a peer-to-peer, experiential learning service model that could be prototyped early on and updated regularly based on the changing needs of their users.

The 3D Design Studio (<http://designstudio.lib.vt.edu/>) has proven a powerful resource for embedding design thinking in library outreach and student engagement. Design and prototyping are increasingly seen by faculty and university administration as critical fluencies for students to possess, yet our investigations revealed that students were infrequently exposed to those technologies requiring these skills, such as additive printing and data visualization, or rarely given the opportunity to develop them outside of their chosen disciplines (e.g., engineering, industrial design). Moreover, we found that many students with no previous exposure to such technologies were intimidated by them or found them cost prohibitive to experiment with on their own. The 3D Design Studio was thus intended to serve as a place where everyone, regardless of prior expertise, could not only learn about the processes of 3D printing but could participate in them, from the initial design stage to iteration and the final product. Rather than create a lab where students dropped off files for printing, never seeing the process behind the print, our goal became to create a space where amateurs and advanced users alike could find inspiration, interact with and learn from peer mentors, prototype their ideas, and build their creative confidence—at no cost to them.

Much like the 3D Design Studio, Virginia Tech’s Fusion Studio (<https://fusionstudio.lib.vt.edu/>) was designed through ideation and prototyping and intended to enable students to build those same design thinking skills for themselves. Inspired by incubators and “creative accelerators” like Second Home and Y Combinator, Fusion Studio is driven by a simple notion: innovation happens when different ideas and perspectives are brought within proximity to one another. The studio is used at any given time by three to six interdisciplinary groups of undergraduate researchers with access to the space (access is limited to those whose projects have been accepted), and filled with mobile, flexible furniture that can be reconfigured to meet the work needs of a variety of projects (even if that means moving all of the tables and chairs out of the way for role-playing exercises, as one group did while prototyping a design for a prosthetic device). While giving space for individual projects to blossom, the studio also facilitates connections between the different groups that can then lead to further innovative endeavors. Additionally, the studio is supervised by a studio manager whose primary task is to connect project teams with the resources and skillsets on campus needed to complete their projects. Workshops on such topics as collaborative intelligence and communication skills are also given throughout the semester by invited speakers to help teams work more effectively.

## **CASE STUDY: FACULTY DESIGN SPACES**

The Learning Design Studio (<https://ldstudio.lib.vt.edu/>) is a collaborative space for developing innovative learning objects. A former library classroom, the space features a wide variety of software and other technologies, plus the expertise of studio team members. In the case of the Learning Design Studio, design thinking provided a path for envisioning what the space could be. We started with an empty room in Fall 2015 and a vision left by a previous administrator. The space opened for a soft launch in January 2017, with plans for a full campus launch in August 2017. The design of this space took a traditional design thinking approach. In Fall 2015, online learning team members embarked on a wide-scale needs assessment to empathize with current online faculty and students who were not traditional library users. Next, the team was able to define the challenge: Faculty need content to support online learning (broadly defined), and they need space where they can create that content. Thus, the Learning Design Studio needed to be a physical space to support any learning that takes place online. We fluctuated back and forth between the ideate and prototyping phases, imagining a space with not only computer software for creating learning objects, but also to record high-quality audio and video. The team also imagined new expertise where users would train one another to become experts in all of the studio technologies, as well as vision for a space that was not only functional but also attractive.

One of the challenges of using design thinking was that rapid prototyping and the timetable of academia are not always compatible. Purchases and installations take time, so the team quickly shifted focus to maximize time. One idea prototype was scheduling a series of team-driven technology training times in the studio. When we tested this idea, we were able to see the varying degrees of feasibility. For example, we realized after one meeting that the unstructured training time would not be the most effective way to learn the technology. Instead, it was worth sending individual members of the team to professional training offerings, and then having them teach others as needed. In this way, we were able to prototype and then test our service model until finding the appropriate solution.

## **CONCLUSION**

Our experience with using design thinking in both program and space development points to the wide applicability of this model. Perhaps the most significant benefit to using design thinking for program development was how programs can efficiently

shift and how teams can grow in both mindsets and action. Though rapid prototyping was initially uncomfortable, we learned to embrace both the uncertainty and opportunities this process afforded us through developing a growth mindset that embraces change and develops people and ideas rather than just programs and services.

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