

Inventing the future: Applying design thinking to NextGen online program development

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Abstract

Virginia Tech's motto is "Invent the Future." Building on this culture, the University has undergone a massive transformation in the way that it imagines its role on campus. Until recently, the Libraries' approach to online learning was more ad hoc than strategic, with no dedicated online learning staff and no clear strategy for program development. Recognizing the increasing need for a strategic approach to online learning, the Teaching & Learning Engagement unit recognized the need for new tools for thinking outside of traditional methods for online program development. The team took a start-up approach to program development using a Design Thinking framework to create a new online learning team, with a mix of traditional and non-traditional library faculty, including a web developer and an instructional designer. As part of this process, the team engaged in a university-wide needs assessment for identifying themes for program development and developing a clear mission and niche for the online learning team. Through rapid prototyping and brainstorming sessions, the team developed a learning design studio; a technology training program for librarians, staff, and teaching faculty; and a new learning objects repository for creating, remixing, and sharing online tutorials and modules.

Keywords

- Design Thinking
- Online Learning
- Program Development
- Radical Collaboration
- Continuous Improvement
- Needs Assessment Programming

Our Story

In addition to its main campus in Blacksburg, Virginia Tech, a public land-grant research university, has five extended campus locations across the state. Total enrollment in fall 2016 was 33,170, with all but 2,080 of those students located at one of the campuses (Virginia Tech, 2016). Though the student population at Virginia Tech is overwhelmingly on-campus, more and more students are taking online classes every semester: institutional data reveals that the number of students enrolled in online classes has more than doubled since the 2006-2007 school year. Though many of these students are taking both in-person and online classes, they engage with the library for their online classes as if they were entirely off-campus.

As is the case in higher education across the country, Virginia Tech is undergoing significant changes, both on the university level and within the libraries. University-wide changes within the last few years include a new president and a new provost, both of whom have new visions for the future of the university. Within the libraries, changes in the last few years include a complete reorganization, dramatic space renovations, and a number of new faculty in non-traditional library roles. The new president and new provost and the way that they have encouraged a reimagining of the university's future makes for an ideal time to develop new programs at the library, including programs for online learning. In the past, online learning efforts took place at the library, but not in any strategic way. In 2015, however, three new library faculty - two librarians and a web developer - were hired to develop an online learning program for the libraries, including an online learning platform and a learning design studio space. Faced with this challenge, the team needed an approach that would help them manage the task of creating a successful and innovative program, and they turned to design thinking.

What is Design Thinking?

Design thinking originated at Stanford University's Hasso Plattner Institute of Design, known as the d.school. The d.school calls design thinking

a methodology for innovation that combines creative and analytical approaches, and requires collaboration across disciplines. This process...draws on methods from engineering and design, and combines them with ideas from the arts, tools from the social sciences, and insights from the business world. (Hasso Plattner Institute of Design, 2016a)

In practice, this methodology translates into five steps:

- Empathize: understand what your audience or stakeholder needs
- Define: articulate audience needs
- Ideate: develop solutions to audience needs
- Prototype: turn ideas into something that can be tried out
- Test: try out solutions and get feedback (Hasso Plattner Institute of Design, 2016b)

As design thinking has been applied in a range of contexts, its definition has been expanded. Tim Brown, the president and CEO of design firm IDEO (founded by David Kelley, also founder of Stanford's d.school), calls design thinking "a human-centered approach to innovation that draws from the designer's toolkit to integrate the needs of people, the possibilities of technology, and the requirements for business success" (IDEO, 2016).

Design thinking has been embraced in many arenas of education (IDEO, 2013), including many types of libraries. Many have made calls for the use of design thinking in academic libraries (Meier & Miller, 2016), pointing out its applications in user experience (Bell, 2008); library instruction (Bell & Shank, 2007); its integration into evidence-based practice (Howard & Davis, 2011); and its application to various types of librarianship, including science and technologies librarianship (Fosmire, 2011). Design thinking's approach to problem solving is especially appealing for libraries since the library as an institution has undergone dramatic changes in the last few decades and will continue to evolve in the coming years. When design thinking is implemented in libraries, its process can evolve. For example, the Design Thinking for Libraries toolkit, produced in partnership with IDEO and the Gates Foundation, condenses the five

steps into three: inspiration, ideation, and iteration (IDEO, 2015).

Framework at Virginia Tech

The design thinking mindset is one where a constant reframing of ideas or solutions to a problem is embraced. The approach is human-centered and focused on action rather than reaction (Hasso Plattner Institute of Design, 2016a). In addition, the design thinking mindset embraces a culture of rapid prototyping, a concept that can feel foreign to those who like to plan for the future and maximize efficiency rather than spend large amounts of time ideating and testing ideas that may never come to fruition. Building a culture of curiosity through exploration is key to the framework we used when employing design thinking in the Libraries, and this is a quality that must be ingrained in the culture and not just in the work itself. In our case study, the work to be done became iterative and exploratory, with curiosity and risk taking being characteristics that were valued and embraced all the way through. It is important to note that this framework of combining the tenets of design thinking alongside radical collaboration is not necessarily right for all situations and all teams. It is important to have buy-in from both higher administration and the team itself, and it is crucial to accept and even reward failures, particularly when those failures are used as a way to learn more about what next steps could produce a desired result.

A paramount aspect of our framework when using a design thinking model for online program design was embracing radical collaboration, even when it was hard. One of the biggest challenges in radical collaboration is making meaning and sense out of conversations and collaborations in which we may not have a lot of background information about the unit or job functions. At Virginia Tech, this is a common dilemma as specialists such as computer programmers, software developers, and instructional designers are hired to work alongside librarians who are in traditional roles. In the radical collaboration model, it is important to connect people in varying areas together in a way that is mutually beneficial. Often this involves reframing the political, symbolic, human resources, and structural frames of the organization in order to bring people along (Bolman &

RADICAL COLLABORATION MODEL

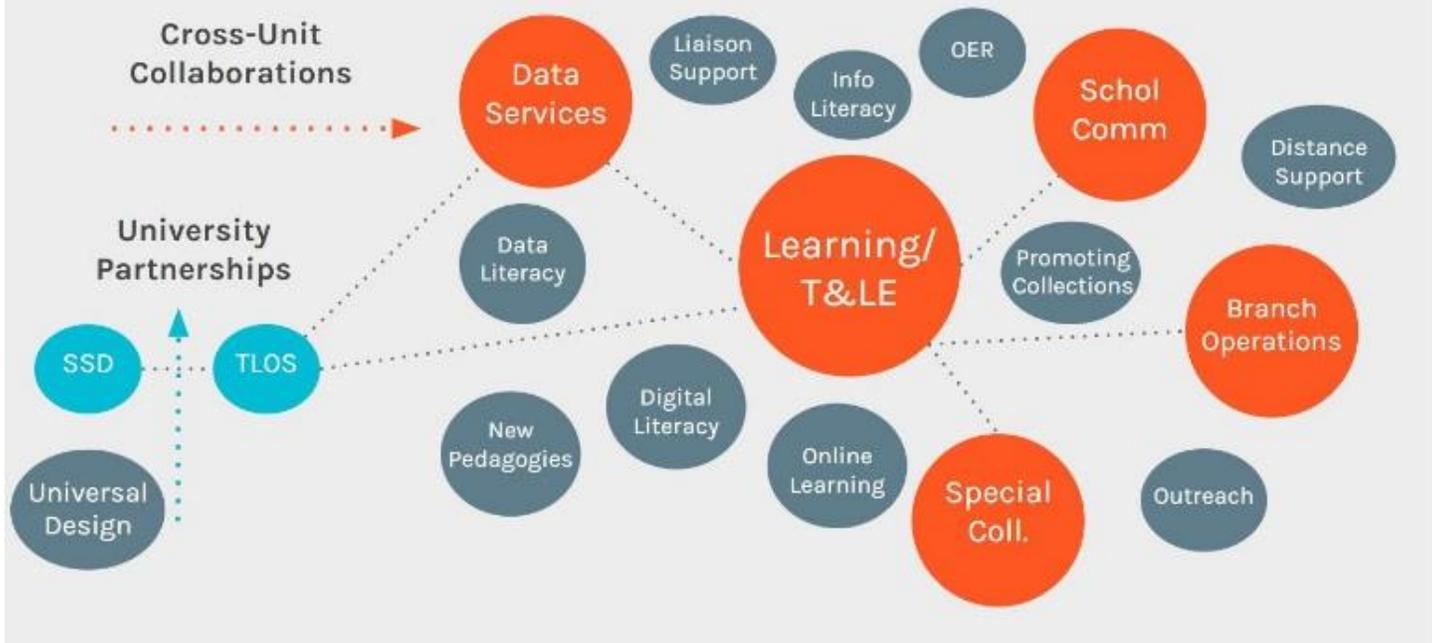


Figure 1: Radical Collaboration Model at Virginia Tech
This model is adapted from that of the Hasso Plattner Institute of Design at Stanford.

Deal, 2013). Radical collaboration embraces the trepidation involved in exploring the challenges and opportunities of bringing together library units who traditionally have been siloed in order to capitalize on strengths and expertise that previously was unknown to others in the building. Radical collaboration reduces silos, but requires a tremendous amount of openness, curiosity, and perseverance when breaking down barriers between different units, particularly when there is two-way limited knowledge about what each unit’s core function is and how each unit could collaborate effectively. The mere act of performing design thinking tasks can help to break down these silos since ideation sessions tend to be low stakes.

One of the biggest challenges in implementing the design thinking model in a library setting, especially within a multi-functional team, is getting over the hurdle of the traditional library mindset that there is one right way to solve certain problems. Traditionally, and perhaps stereotypically, librarians are excellent planners, and often there is a temptation to have all our planning complete before we launch into production mode, especially within instruction units

that are accustomed to lesson planning and contingency plans for every obstacle that could happen in the classroom. The same goes for the way in which we collaborate. It is difficult to imagine a library culture where everyone puts aside competition for resources or attention in order to come together to accomplish a greater goal. In some libraries, there can often be tension between units, especially when units don’t understand what other units do. In the model employed at Virginia Tech University Libraries’ online learning team, it was important for us to employ design thinking not just in creating programs, but also in fundamentally accepting the tenets as a cultural shift in the way we “do business.” In part, creating a design thinking mindset among teams and across the libraries involves more than just going through the steps; it requires being open to the unknown.

To put this model into practical terms, Figure 1 displays how cross-unit collaborations within the Libraries can be cross-cutting, addressing disciplinary boundaries, programs and service area boundaries and University partnerships.

How we applied design thinking at our institution

Empathize

When we were tasked with developing an online learning program and platform for our library, we quickly realized that there was a lot we didn't know about the students who would be interacting with our platform and learning objects. Because online learning is so decentralized at Virginia Tech, we realized that there was no one at the university who could really tell us what we wanted to know. In order to discover our context, in October 2015 we embarked on a large-scale needs assessment consisting of faculty and student surveys, interviews with librarians and other campus stakeholders, and visits to the extended campus locations. Though we had an idea of what we thought we would find, we were really surprised by some of the things we learned. For instance, we realized that the line between online and distance students was often poorly-defined. Many students based in Blacksburg still took classes online, and when it came to those classes, they were interacting with the library entirely online, as if they were online students. Students who were taking classes at one of the extended locations were also interacting with the library as if they were online students, because only one of the extended campus locations has a library. We also realized that many of the students and faculty at these extended campuses felt left out and neglected by the main campus in Blacksburg, and the library could help make them feel connected. This needs assessment gave us not just specific information about our population, but also the drive to complete our project in order to reach these students.

In addition to understand our users, we had to take time to understand the culture that we were working within and how we could adjust our framework to ensure success. As a new online learning team, the culture we were instilling was just as important as the project creation itself. Building culture takes time, and it was important that we take the time to employ design thinking while also observing and taking inventory of personal comfort levels on the team. We wanted to be sure that we were empowering our team to create from a spirit of

curiosity and a tendency toward action and not reaction (Hasso Plattner Institute of Design, 2016a). We wanted to build a culture where prototyping was second nature as opposed to maintaining the status quo. One way we ensured that design thinking would work at our institution was to get buy-in from higher administration from the very beginning. One way to gain this buy-in was through the radical collaboration model, a model that mirrored the vision and mission of our Dean and the University as a whole.

Define the Problem

After conducting our needs assessment, we were able to define the challenges facing the development of an online learning program. Our needs assessment was prompted in part by the fact that no one at our institution could tell us the information we needed to know, and after conducting our study, we realized more fully the types of challenges with which the decentralized online model would present us. In addition to the lack of readily-available data on our online students, the decentralized model meant that there was no group on campus with which the library could partner to advocate for and support online students.

In addition to the challenges presented by the decentralized online learning model, we realized that we needed to create content to support online learning, and in order to do that, we needed spaces that could support online learning. These spaces needed to include the technology to create learning objects and a place to consult with the faculty with whom we were working. In addition, we imagined that a physical space devoted to online learning would draw increased attention to the needs of online students. Finally, we also needed the expertise to create learning objects and experiences. While our existing team members were hired in part because of their skills in this area, we would need both to hire additional staff to support these efforts and to further develop the expertise of the existing library staff in order to create the volume of materials required.

Ideate

The ideate phase of design thinking focuses on the process of problem-solving through creative brainstorming. In this phase of design thinking, the


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The Learning Design Studio

The studio is open to any university staff, teaching faculty, graduate teaching assistants, or administrators interested in developing learning objects or learning experiences.

The mission of the Learning Design Studio can be summed up in our tagline:

Creativity

The studio encourages creativity and innovative approaches to learning through cutting-edge technology and a willingness to experiment with emerging pedagogies.

Collaboration

The space is designed to enhance collaboration between our team, with our expertise in

Contact Us

Newman Library room 209.

For more information, email us at learning-design-studio-g@vt.edu.

Keep up with us on the VT Libraries social media feeds.



Figure 2: The Learning Design Studio

The homepage of the Learning Design Studio. More information can be found at <http://ldstudio.lib.vt.edu/>

focus is on having as many ideas as possible until the team has exhausted all ideas that are ready to be explored.

The Learning Design Studio (Fig. 2), an unused office space that was reallocated into a new studio space for collaborative design, was planned as a technology-rich space for ideation. The space was envisioned as a place where faculty, librarians and instructional designers could come together to create learning objects and meet to conceptualize learning design project development and have discussions around pedagogy. The space was retrofitted with state of the art recording technology, including a WhisperRoom sound booth, a One-Button Studio, and software such as Adobe Creative Cloud, Camtasia, Articulate Storyline, Audacity, Inkscape, GNU Image Manipulation Program (GIMP), and Garageband. The space also included a small library of books related to instructional design, emerging technologies and pedagogy. Having a dedicated space for brainstorming and meeting with other like-minded faculty who wanted to create with and explore new technologies or with online pedagogy was crucial for building a culture that supported a design thinking mindset, and

that enabled innovative approaches to new programs and services in support of online learning. Even in the early days when the space was still developing, it became a hub for design thinking.

For our team, the ideate phase was particularly iterative as we were designing a new service and a new model for online program development. Building off what we had learned in the empathy phase, we had many ideas that did not end up being adopted, and oftentimes we had ideas that needed to be scaled up or down depending on the situation. Learning to accept the iterative process was part of adapting within a design thinking mindset and helped in being creative while also realistic during the program development phase. In our experience, there were many times during the design thinking process when our team would fall back into the ideate phase as new ideas formed and old ideas proved to be unrealistic or not within alignment to changing University priorities. It is important to note that in this particular case study, the ideate phase often proved to be the most creative and fun aspect of the project in the beginning. As time passed, however, it also proved to be the most frustrating phase, as it was oftentimes hard to know

when to move from the brainstorming phase into actual production. Many times in libraries, with time and budget constraints, we can feel the pressure to succeed, and the ideate phase may be rushed or even eliminated in favor of the status quo. For our project, this phase was crucial to the success of both the program development and team morale, leading to higher rates of success in the long term when trying to create innovative new service models.

Project management was also quite helpful during the ideate phase. We quickly realized that in order to manage the many ideas and services that were emerging out of those ideas, we needed a project management tool that would help to organize our thoughts and that would assign roles to individuals so that we didn't get stuck in the brainstorming phase for too long. We adopted Basecamp, a project management tool that allowed us to communicate with each other both in real time and asynchronously in order to generate ideas that later turned into task lists with assigned project leads.

By repurposing a room that had previously been used for other purposes into an ideation space, creating a clear project management plan for moving between the phases of design thinking, and having a

clear link between ideation and task formation, our team was able to clearly manage the brainstorming phase in a way that maximized time and efficiency without sacrificing productivity.

Prototype

As described above, the Learning Design Studio was essentially the team's first prototype. Originally conceptualized by the former Assistant Director for the unit, the new team was tasked with continuing the process of developing the space, including the vision, the design of the space, the purchase of hardware and software, and prototypes of different service models. There were many different iterations of the space over time and as the budget evolved, and as we walked through the empathize and ideate phases, we realized that we could expand upon and adapt the original vision, both in the technology available and in the potential uses of the space. The studio opened in a soft launch phase in spring 2017, with a full launch planned for fall 2017, and we continue today to ideate on what would be the best model for this space.

While the Learning Design Studio was being developed, we began the process of creating learning objects, building on existing partnerships with faculty



Figure 3: Odyssey
The homepage of the Odyssey Learning Objects Repository, available at <https://odyssey.lib.vt.edu/>

who had either reached out to us or been connected to us by one of our liaison librarians. While we had a plan for how our content creation process would work and how we would approach these faculty partnerships, we realized that these early projects would give us a chance to further develop our processes and our approach to working with faculty. Having completed five full design projects, we are still learning how to adapt and create the best model for meeting our goals and serving our patrons.

One of our major prototypes was the creation of our learning objects repository, Odyssey (Fig. 3). While this was something we had been tasked with creating when we were hired, we were still unsure of many of the details of this platform as we began the needs assessment. As we conducted interviews, we asked our study participants about what they needed in a learning objects repository, and their responses helped shape the development of Odyssey. We began adding objects to Odyssey in December 2016, and we will continue to tweak and improve the system.

Test

As we move forward with program development, including further development of the Odyssey learning object repository, the Learning Design Studio, and the learning design team, we are in a process of continuous improvement. For Odyssey, continuous improvement will include usability testing and other user feedback as we seek to create a user-friendly, content-rich online learning platform. This improvement means collaborating with other members of our unit to conduct this testing and make changes to the system. For the Learning Design Studio, we are using the spring 2017 soft launch phase to work out the details of our service model and the way we approach campus partnerships. In addition, as we create objects to add to Odyssey using the tools in the Learning Design Studio, we are testing out our project workflows, including the importance of developing style guides for each online learning project, ways to communicate with our team and with our clients, and the types of technology best suited for various projects; training additional members of our unit in the available technology; and settling on the kind of metadata and other information needed as we add items to Odyssey. As we test and retest our prototypes,

we find new ways to approach challenges that arise, relying on the information gained as we empathized with our users, defined the problem, and brainstormed potential solutions.

Conclusion

For our team, design thinking has enabled us to get from point A to point B, even though the two points originally seemed very far apart. Design thinking has allowed us to clearly define our challenges, helping us to transform what could have seemed like an impossible project into something manageable. In addition, through empathizing with our users through the community needs assessment, we have yielded valuable data about the state of online learning at our institution and have also been able to build connections to others across our university. While design thinking may not be the solution for every challenge that arises in an academic library, it is worth exploring when faced with something new. In many cases, design thinking can provide a clear framework for stepping outside of the status quo and moving towards more creative and effective solutions to complex problems facing our institutions.

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