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P E R S P E C T I V E S

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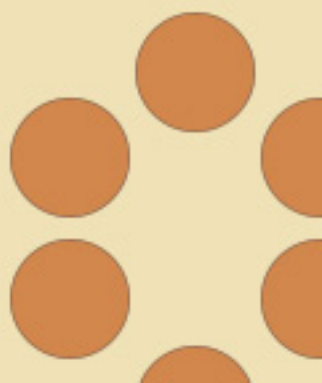
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Guest Editors' Introduction to the Special Issue

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Introduction

For decades, “design” has been a cornerstone interest for technical and professional communication (TPC) practitioners, scholars, and program administrators who are concerned about the process and product of information structuring. By “structuring,” we mean the ways in which contents are sourced, created, arranged, edited, augmented, remixed, and delivered for specific audiences and purposes. These activities require skills for performing and knowledge for determining effective practices to achieve set goals—or, what scholars today call, “literacies.” TPC scholars like Kelli Cargile Cook (2002), Lee-Ann Kastman Breuch (2002), Stuart Selber (2004), Rachel Spilka (2009), Eva Brumberger, Claire Lauer, and Kathryn Northcut (2013), Marjorie Rush Hovde and Corinne Renguet (2017), and Dirk Remley (2020) have pointed us to various issues regarding modern literacy considerations and suggested several professional development strategies. Little has been said, however, regarding design literacy in TPC. While theories and studies have been published on doing design, focus has been given mainly to visual competencies (e.g., Bourelle, Bourelle, & Jones, 2015; Brumberger, 2007; Kostelnick, 1996, 2020; Portewig, 2004). But design is more than the visual. As such, we take on the challenge of expanding design as a core component of technical and professional communication—and by extension, user experience (UX) and usability studies, information and content strategy, instructional design, and specialized com-

munication (i.e., scientific, medical, legal, etc.)—by connecting it with TPC programs, pedagogies, and practices. We do so by following the leadership of those who have set this kind of work in motion (Carliner, 2001; Gonzales & Turner, 2017; Redish & Barnum, 2011; Zachry & Spyridakis, 2016).

Now more than ever, due to the increased dependency on information communication technologies, we are presented with opportunities and concerns regarding the application of design, and particularly “design thinking” (illustrated in Figure 1), as a manifestation of user-centric philosophy and methodology for problem-solving in TPC contexts. As we highlight below, design thinking is a complex yet suitable approach to our pedagogies and practices. Nevertheless, for TPC programs, questions remain with regard to design and design thinking’s affordances as well as limitations for TPC programming and professional development. For these reasons and more, we are thrilled to co-edit this special issue of *Programmatic Perspectives*. After meeting in person for the first time and exchanging ideas at the 2022 CPTSC annual conference in Colorado Springs, we both were sure there would be interests and concerns about an emphasis on design in TPC programming and pedagogies. We wanted to learn more about the different methods and strategies TPC professionals employed to tackle local problems. Hence this special issue.

Interrogating the “D” Word: Motivation for this Special Issue

By now, we have mentioned design—the D-word—a few times. For readers who are new or already familiar with it, we situate design here within the TPC landscape. The “design turn” TPC has surfaced as a disciplinary interest in the last two decades or so as scholars and educators investigated the emergence and applications of design-centric models for the purposes of communication in technical and professional contexts. TPC programs have begun to include design-driven courses, assignments, and learning objectives showing the importance of a designerly way of thinking (Melonçon & Henschel, 2013, pp. 52–53; Tham, 2021). Adjacent to TPC, theorists including Richard Buchanan (1985), David Kaufer and Brian Butler (1996), and David Fleming (1998) situated design within the practice of communication and rhetoric, helping scholars like Charles Kostelnick (1989), Richard Marback (2009), Jim Purdy (2014), Carrie Leverenz (2014), and Scott Wible (2020) to articulate the viability of design and design thinking in writing studies and TPC pedagogy. Design adds a tangible layer of deliberation to the product vs. process paradigm shift that influenced a majority of our scholarly and programmatic discussions in the 1980s. Design brings

to our scholarship conversations about materiality, multimodality, and usability, among others. Focusing neither just on design nor thinking, however, design thinking is a framework most popularized in business management and engineering that integrates user- and human-centered design philosophies, iterative and participatory design approaches, and socially responsive innovation to address “wicked problems” (Rittel & Webber, 1973; Wickman, 2014). The most prominent model for this framework is the oft-cited Stanford d.school (n.d.) schema that includes five recursive phases in designing solutions: empathize, define, ideate, prototype, and test.

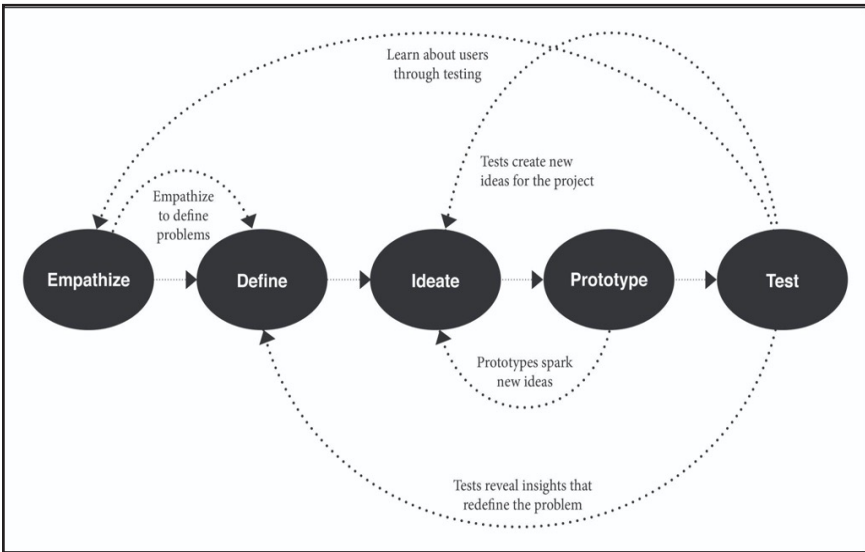


Figure 1. The d.school design thinking model, adapted by the authors.

The growing interest and deployment of design thinking methodologies in TPC programs today—thanks in part to the rise of user experience studies in technical communication (Kessler et al., 2021; Zachry & Spyridakis, 2016)—indicate a need for retrospection on our teaching and application of design frameworks in programmatic contexts so that we remain socially and ethically conscious about our practice. However, pedagogical and empirical investigations of design thinking in TPC programs have only recently begun. Ann Hill Duin et al. (2017) studied the affordances of the radical collaboration attribute in design thinking that showed benefits for graduate research collectives. At the undergraduate level, Jennifer Bay, Richard Johnson-Sheehan, and Devon Cook (2018) infused design thinking processes in teaching TPC

students how to think like an entrepreneur with innovative solutions for wicked problems:

We must teach our students how to have empathy for users, peers, and stakeholders, just as we must have empathy for the needs of our students. We must define educational problems from our students' points of view, not our own, and we need to ideate those problems by reframing them and incorporating new technology. We need to prototype new assignments and new activities and then do testing to see which ones work. (p. 193)

Bay et al.'s (2018) model provided exigence for other scholar-teachers, such as Mason Pellegrini (2021), who argued that pedagogical experimentations with design thinking need to happen in conjunction with workplace studies in order to understand the transfer from classroom to professional practice. In a special issue of *Journal of Business and Technical Communication*, Rebecca Pope-Ruark, Jason Tham, Joe Moses, and Trey Conner (2019) included several more cases of teaching design thinking in TPC that exemplify its programmatic potential. Nevertheless, as the world of TPC and its programmatic efforts change along with the current health pandemic and arising needs in higher education, scholars are well-situated to examine the pedagogies, practices, and perspectives of/on design thinking at pressing times.

No doubt, there is a growing body of scholarship in design and design thinking models in TPC and writing pedagogy, but not a lot has been considered for programmatic development or administration. We need research and reports of design-driven efforts at the programmatic level to help the field grow in that direction. As Bay et al. (2018) motivated scholars to introduce design thinking to TPC service courses, we encourage projects that apply design thinking in the broader TPC programmatic landscape, including majors, minors, certificates, and graduate programs. As well, we are interested in studies and findings about design thinking integration in program development and innovation, program transitions, recruitment and retention, and administration and assessment.

Furthermore, critical studies on design thinking are needed because design scholarship has been traditionally biased toward narratives that were largely informed by Eurocentric understandings of the world and Anglo-American values (Tham, 2022). Design thinking is often dubbed a utilitarian method for problem solving, risking itself to being merely an avowal of advocacy. Thus, as scholars, educators, and practitioners, we should examine the ways in which design methods and design thinking are taught and enacted in our programs, and how

such enactments are affecting the principles of TPC and beyond.

Overview of the Issue

This special issue contains three original research articles, four commentaries, two FOCUS entries, and three program showcases.

Research Articles

Christine Masters-Wheeler, Jennifer Bay, and Patricia Sullivan explore the role of AI within TPC, presenting AI models as indispensable memory aids and tools for managing the vast complexity of information available to users. They view AI as an extension of the concept of externalized memory, complementing the act of writing. The authors advocate for incorporating AI models into technical communication courses, positing design thinking as a fitting approach to facilitate this integration. Because of design thinking's reflective and empathetic framework, it offers a natural and effective method for teaching students how to utilize AI in a rhetorical, ethical, and iterative manner. By infusing AI models into the design thinking process, students gain insights into user needs while also identifying potential shortcomings of the technology, facilitating consideration of various perspectives and cultural backgrounds.

Ashley Rea, Amelia Chesley, Erin Twal, and Tianxin Zhang present findings from a mixed-methods study on implementing a participatory design approach within a writing and UX lab context. By engaging with the participatory design approach in the UX segment of the writing lab, research participants experienced increased agency and involvement that ultimately lead to a deeper understanding of how diverse stakeholders with differing needs can collaboratively ideate human-centered design solutions. Participant deliverables demonstrated an increased prioritization of accessibility, usability, equity, and inclusivity for end users. The authors' data, in conjunction with their ongoing student-centered participatory UX research, serves as a compelling call for other programs to consider adopting this approach in their own labs. Implementing participatory design can establish a strong foundation for a robust and sustainable writing lab, fostering an environment conducive to creativity and user-focused innovation.

Using a community-based learning approach to curriculum development, Nora Rivera reports on the affordances of design thinking in engaging with Indigenous communities and teaching cultural awareness to TPC students. Rivera's study uses empathy and testimonios as a methodology for integrating Indigenous values with TPC curriculum.

Rivera's project is a display of radical collaboration and ethical praxes at the intersections of programming and community-engaged scholarship.

Commentaries

Michael Healy and Jessi Thomsen explore the value of design thinking in TPC classes, emphasizing its ability to empower students to embrace risk and uncertainty. By fostering this shift in mindset, they argue design thinking enables students to pursue innovative interventions instead of fixating on finding the "right" solution, which, in turn, allows them to make the leap from ideation to production without the fear of failure. They further assert that design thinking's human-centered approach enhances students' rhetorical awareness, enabling them to identify and address wicked problems from multiple perspectives. Consequently, they are better equipped to seek meaningful partnerships with relevant stakeholders to tackle intricate challenges using unconventional approaches.

Drawing from empathy as the foundational value of design thinking, Emma Kostopolus shows where and how empathy matters in creating an online TPC curriculum. Through critiques about institutional constraints and discussions of faculty labor and equity issues, Kostopolus suggests a framework for inclusive programming through design thinking principles.

Although *Programmatic Perspectives* has not previously published many articles related to writing center administration, we recognized an opportunity to widen the journal's reach through Vittoria Rubino's commentary on design thinking's application in writing centers. Rubino describes the writing center as a generative, interactional space where authors learn to compose. By means of design thinking, writing centers could further align the writing consultant's work with developing authors, Rubino argues. Rubino's article offers a practical framework that writing centers can practice human-centered principles in writing consultancy.

FOCUS

The FOCUS section of this special issue centers on the utilization of technology to enhance accessibility and inclusivity in communication within TPC classrooms and programs, particularly for our increasingly diverse users.

In his classroom focused article, David Ornelas Jr. delves into the application of Google Jamboard in the TPC classroom while investigating its alignment with research on the pedagogical implications

of design thinking. Ornelas contends that Jamboard's visual-oriented platform, when coupled with the principles of design thinking, cultivates an exceptional environment for visual learning in the digital realm. Given the ongoing repercussions of COVID-19, the significance of exploring alternatives for digital visual learning is underscored. Ornelas emphasizes that embracing innovative tools like Jamboard can aid educators in adapting to the challenges posed by remote and hybrid learning. By leveraging the powerful combination of Jamboard and design thinking, educators can create engaging and effective visual learning experiences, enhancing students' understanding and retention of course material.

Addressing the communication challenges encountered by TPC programs in their pursuit of internationalization, Kirk St. Amant discusses the use of aphorisms as a means to succinctly encapsulate fundamental ideas for global audiences. This article equips administrators with aphorisms that can facilitate the pivotal discussions integral to the internationalization of TPC programs. The provided examples can serve as a valuable checklist for administrators to reference at various stages of the internationalization process, enhancing their interactions with stakeholders and better equipping students for thriving in today's increasingly globalized society.

Program Showcases

Across the three program showcases in this issue, design thinking was taken up as means for administering writing programs, revising curriculum, and supporting student learning. Scott Wible identified ways in which design thinking methods like empathy mapping, point-of-view statements, and appreciative inquiry methodology afforded writing program development at the University of Maryland. Casey McArdle, Liza Potts, and Rebecca Tegtmeyer shared how design thinking enabled a humanistic approach toward the development and further revision of the Experience Architecture program at Michigan State University. Finally, at Florida International University, Luke Thominet, Vytautas Malesh, Michael Sohan, Vanessa Sohan, and Paul Feigenbaum reflected on their collective experience in completing a design thinking course and applying their learning to redesign and prototype a writing program.

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Artificial Intelligence Models and Design Thinking in TPC Classrooms

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Abstract. How are Technical and Professional Communication (TPC) programs and administrators to approach Artificial Intelligence models? Our contribution to this special issue explores the ways that programs and instructors can incorporate AI models into the TPC curriculum without sacrificing rigor or ethics. We look to design thinking as an approach that we might consider for incorporating AI modeling. Because design thinking is already embedded in TPC pedagogical approaches, we believe that it is a natural fit for teaching students how to use AI ethically and iteratively.

Keywords: design thinking, TPC pedagogy, technology

Introduction

The release of ChatGPT in November 2022 ignited a firestorm of interest in how human beings can use Artificial Intelligence (AI) models to compose and produce various forms of writing. High schools and colleges quickly became concerned AI technologies would be used unethically to write assignments for students. Those in businesses and industry, meanwhile, expressed both excitement by its possibilities to save time and labor, along with concern that it could be used to replace skilled writers, editors, and content producers. Since its release, more AI models have emerged, including Bing's

Chatbot and Alphabet's Bard, as well as updated versions of ChatGPT. While ChatGPT is perhaps the most well-known AI model, DALL-E was released in January 2021 and its primary trait is the production of images.

But what do we mean when we talk about Artificial Intelligence models? AI models refer to "the creation, training, and deployment of machine learning algorithms that emulate logical decision-making based on available data" (Intel). AI models rely on vast amounts of data, information, and corpora to learn patterns of prose, genre expectations, and other linguistic features that they can then emulate. Users can query applications that use large language models (LLMs) with specific written prompts, and these produce textual results based on predictive training data. Art and images can also be produced by LLMs and diffusion models that add noise to training data in order to recreate images (Jones, 2023).

How are Technical and Professional Communication (TPC) programs and administrators to approach this new technology? Our contribution to this special issue explores the ways that programs and instructors can incorporate AI models into the TPC curriculum without sacrificing rigor or ethics. AI models are here to stay, and we see them as essential memory aids and helpers in managing the complexity of information available to users. Data and information are expanding at exponential rates, more than the human brain can hold and process. AI models allow users to access and synthesize large amounts of information, which is necessary for decision making and other daily tasks. Walter Ong (1982) first introduced the idea of externalized memory through writing, and AI seems a further extension of that externalization. Rather than replacing the human, we see AI as functioning in different roles depending on the rhetorical task: as an assistant, coach, combatant, or conversant.

We look to design thinking as an approach that we might consider for incorporating AI modeling as it involves different roles and is becoming a common heuristic that is used for teaching technical and professional communication (TPC) service courses (Bay et al, 2018; Pellegri, 2022; Tham, 2021). Because at its core, design thinking incorporates rhetorical features of production, we believe that it is a natural fit for teaching students how to use AI in a rhetorical, ethical, and iterative manner. To use AI well, users must rely on critical thinking, experimentation, and ideation, all rhetorical principles that are also common to design thinking. For instance, prompt engineering is an emergent profession that focuses on user querying of AI language models. It requires a complex understanding of possible queries, possible user

choices, and the algorithmic principles behind AI modeling. In order to query AI effectively, users need a strong understanding of diverse audience needs and usage. We approach design thinking as one way to teach students how to empathetically and ethically approach AI models in producing technical communication.

This article argues that we can embed AI in the design thinking process as a way to help students better understand the needs of users and know where technology might fail to take into account particular perspectives and cultural backgrounds. In what follows, we review the literature on AI modeling and its use in business, industry, and education. We then briefly provide an overview of design thinking and how it's currently used in TPC classrooms. The bulk of this article is the development of a heuristic that incorporates AI models, based on the phases of design thinking. We use examples of specific assignments that support this heuristic and demonstrate how it can be used in the classroom, as well as how other instructors can replicate the process to develop their own assignments. We conclude with a discussion of the future implications of AI models and how TPC programs should use AI constructively.

Literature review on AI models

Baidoo-Anu & Ansah (2023) provide a useful overview of what has been called generative AI as it relates to higher education. Generative AI uses deep learning to generate artificial relics by learning models and patterns from existing digital content. (p. 3). The most recent developments in generative AI, called Generative Pre-trained Transformer (GPT) models, use “large amount of publicly available digital content data (natural language processing [NLP]) to read and produce human-like text in several languages” (Baidoo-Anu & Ansah, 2023, p. 3). Common Crawl, for instance, is an open repository of web data that is accessible to anyone and can be used to train AI models. Large language models (LLMs) use the textual data from sources like Common Crawl and other freely accessible data online as a corpus on which to train their AIs. These AI models produce human-like text in response to a range of questions or prompts that the user creates; the user's prompts, answers, and corrections also affect what the AI learns, but it's unclear how much that information is used to update new versions of the AI. Generative AI models can also be designed for specific purposes like producing images and engaging users in human-like conversations (chatbots). Many large models are increasingly multimodal, meaning they can have multiple inputs of text, image, et cetera, and generate multiple outputs simultaneously (Jones, 2023).

The programming and creation of prompts for AI is part of a larger field that has been called prompt engineering, a field that discovers how to write the best prompts to elicit the most appropriate responses. Prompt engineering can involve both coding the AI to ensure it produces appropriate responses to a prompt, as well as testing prompts for specific tasks to improve the AI's responses (Mok, 2023). Prompt engineering, in this understanding, is both a field for programmers working with AI, but also a common generic term to describe how everyday users write or engineer prompts to produce effective results in various generative AI applications.

Prompt engineering may be defined as “the means by which LLMs [language learning models] are programmed via prompts,” which are sets of “instructions provided to an LLM that programs the LLM by customizing it and/or enhancing or refining its capabilities” (White et al., 2023, p. 1). Software engineers have begun to classify and catalog prompt patterns in order to improve user interactions with LLMs. For example, the prompt pattern categories provided by Jules White, Quchen Fu, Sam Hays, Michael Sandborn, Carlos Olea, Henry Gilbert, Ashraf Elnashar, Jesse Spencer-Smith, and Douglas C. Schmidt (2023) involve prompt semantics, refining outputs, identifying errors, and setting up interactive modes. While their focus is on software development, White et al. (2023) also acknowledge that LLM prompt patterns can be used in any context. Since prompt engineering is becoming an increasingly important skill set, websites like learnprompting.org offer courses that offer tutorials for all levels of experience, from beginners without any coding knowledge to those who have advanced knowledge of programming and reinforcement techniques (Learn Prompting, 2023). However, users do not need to know how LLMs are programmed to create queries and refine results. As S. Scott Graham and Hannah R. Hopkins (2022) argue in their discussion of methodologies for AI-based research projects, algorithms are frequently black boxed, yet we do not need to have advanced training in computer science and statistics to work with them. We expect that techniques for working with prompts will advance and improve as technical communicators experiment with LLMs to generate texts. We believe prompt engineering can be an essential skill to teach in TPC courses to teach students how to best engage with AI models.

Indeed, scholars in TPC have already been researching chatbots and other interactive AI from the perspective of user experience. Huiling Ding, Nupoor Ranade, and Alexandra Cata (2019) and Nupoor Ranade and Alexandra Cata (2021) both present rhetorical approaches for dealing with the knowledge creation and structuring of AI powered

chatbots. Daniel Hocutt, Nupoor Ranade, and Gustav Verhulsdonck (2022) advance a strong argument for the role of technical communicators in creating content, training bots, developing interfaces, and designing more user-centered practices that meet the needs of chatbot users. However, as Gustav Verhulsdonck, Tharon Howard, and Jason Tham (2021) observe, most research in TPC has focused on a specific application of AI like chatbots (p. 484) rather than the role of technical communicators with respect to this emerging technology. They argue that AI “fosters two important developments in TPC: namely, 1) the need for addressing new smart contexts where AI can either assist or act for a human and 2) the ethics of AI implemented across various strata” (p. 485). Some scholars have started approaching how to leverage machine learning to evaluate rhetorical features of texts, which focus more on the intricacies of persuading human users (Graham & Hopkins, 2021; Madjik & Wynn, 2023). Jason Tham, Tharon Howard, and Gustav Verhulsdonck (2022) extend their work on design thinking, content strategy, and AI to how to teach students strategies for success in these areas.

We follow them in focusing on pedagogy as a way to shape emergent practices in AI through future users and developers. Anna Mills for The WAC Clearinghouse has developed a list of resources for teaching with/about AI. Those resources echo many of the specific ways to use AI models in higher education that David Baidoo-Anu, David and Leticia Owusu Ansah (2023, p. 8-9) detail:

- using the AI as personalized tutoring
- automated essay grading as models that can be trained to grade with a rubric
- language translation of documents
- interactive learning
- adaptive learning that adjusts to meet the needs of student’s progress and performance.

The clear drawbacks, of course, include bias, lack of contextual understanding, and the ability of students to use AI to cheat. Rather than forging new approaches in the classroom, we look for ways to integrate it into some of the more common approaches to teaching TPC. Design thinking in particular can address some of the drawbacks and leverage the power of AI.

Phases of design thinking

Jason Tham (2022) provides an excellent overview of design thinking in TPC and how the future of design thinking can be better attuned to issues of justice and inclusion. We think that incorporating both AI

and design thinking into TPC assignments can provide ways to get us back to thinking about the importance of diverse human perspectives in problem solving. Like others in the field, Tham (2022) relies on the paradigm of design thinking as outlined by Stanford's d.school. Design thinking is an iterative process that seeks to create solutions to problems by best understanding the needs of users/stakeholders. In the "Introduction to Design Thinking Process Guide," the Hasso Plattner Institute of Design at Stanford provides an overview of the different phases of Design thinking, summarized below:

- Empathize: "To create meaningful innovations, you need to know your users and care about their lives." The empathize mode involves observing, engaging, watching, and listening to users and their behaviors in the context of their lives.
- Define: The define mode involves defining the challenge you are taking on in order "to craft a meaningful and actionable problem statement." The define mode is what the Plattner institute calls "sensemaking."
- Ideate: Idea involves generating a range of possible solutions for the challenge identified in the define mode.
- Prototype: The generation of models that address your challenge.
- Test: "Testing is an opportunity to learn about your solution and your user."

These phases are distinct, but they are also iterative and fold back on one another. For example, you might ideate many different possible solutions, but the prototype you create may not work, so you return to those ideated. Similarly, in testing you may discover unintended users and will need to return to the empathize and define phases to better understand users and contexts.

The TPC scholarship on design thinking is robust and covers teaching, entrepreneurship, pedagogy, and more. There has been a 2022 special issue in *IEEE Transactions on Professional Communication*, numerous literature reviews covering general and specialized dimensions (Tham, 2022; Verhulsdonck et al, 2021; Overmyer & Carlson, 2019; Pope-Ruark et al, 2019; Kidd et al, 2014), and articles that seek to weigh the contributions of extant models (e.g. Pope-Ruark's 2019 review of four perspectives on design thinking). These discussions join with advocates in other fields such as education (Panke, 2019; Razzouk & Shute, 2012) to construct a fabric that justifies the usefulness of design thinking as a helpful framework for TPC pedagogy.

Design thinking is a human-centered approach to problem solving. In particular, many sources on design thinking cite it as a way to

address wicked problems that do not have an easy solution. Recent advances in LLMs have caused concerns among educators who must address the use of AI text generators in courses. This uncertain atmosphere surrounding AI advances could be interpreted as a problem without a clear solution. Design thinking offers a heuristic to consider the creative potential for using AI models in teaching TPC courses.

In what follows, we use design thinking as a framework for how we might approach AI in TPC classrooms. We present extended examples for possible assignments that help students understand and engage with the phases of design thinking. When we present the examples below, we realize that the phases bleed together, but our hope is to spur innovative thinking for how educators can leverage the affordances of AI models in their teaching. Rather than provide one extended example that involves all of the design thinking phases, we explore different applications for AI within each phase. We envision that others might replicate this process to develop additional applications for AI within each phase.

AI for each phase of design thinking

In this section, we provide extended examples of AI-focused assignments that can be used with each phase of design thinking, as well as ideas for other assignments that could meet similar goals. Rather than replacing the human, we see AI as functioning in different roles: as an assistant, coach, conversant or possibly combatant. In short, we see AI as helping us with a specific task or skill so we can then focus on teaching other more important aspects.

Empathize

Empathy comes from understanding what users care about and what is important to them in a particular context. According to the d.school, the key parts of the Empathize phase of design thinking are observe, engage, watch, and listen (2010). When possible, it is important to talk with people and also observe them to fully understand their challenges. In this phase, one way to better understand users includes collecting their stories; designers may also create personas to represent users. However, when working remotely, these research methods may be somewhat limited. Remote researchers may be able to interview people through video conferences, but they may not always be able to do observations. As a tool to help designers think through user perspectives, LLMs offer creative ways to imagine personas, thereby creating empathy for users. Personas recently have been discussed in TPC as a way to amplify user agency in response to specific user

experience (UX) design challenges (Getto & Flanagan, 2022), increase designer confidence (Lanius et al., 2020), and help students and others understand roles in the field (Brumberger & Lauer, 2020). However, when not approached skillfully, personas can perpetuate bias and stereotypes and can block efforts to advance social justice and inclusion. As Lisa Meloncon (2017) argues, emphasizing user goals and purposes rather than audience characteristics can improve the effectiveness of personas in technical communication projects. With these approaches in mind, we consider the potentials for using generative AI to create personas.

Writing about LLMs from the discipline of software engineering, White et al (2023) describe the “persona pattern” as a category in prompt engineering with two possible uses. In the first option, users would ask the LLM to interact with them as a particular persona, and in the second option, the LLM would be asked to generate outputs that a particular persona would create. Another recent web article offers similar approaches to creating personas (Butler, 2023). To craft a desired persona, users create a prompt that gives ChatGPT a description of the persona’s identity, characteristics, knowledge and expertise, experiences, motivations, emotional and relational aspects, and context. Users also may ask ChatGPT to help develop expanded prompts that will facilitate its interactions with them as a particular persona. LLMs could take on the role of a UX or user interface (UI) designer; it also would be possible to develop personas as heuristics that LLMs can use to interact with users. Such heuristics would specify qualities about a persona, such as age, likes, and dislikes from which an LLM could draw. Another approach could be to ask ChatGPT to create a persona based on a limited characteristics and a scenario and then instruct it to interact with the user as the persona. In practice, users should keep in mind that AI language models will reflect biases that have been programmed into the prompts.

Students in technical communication classes can experiment with creating personas in LLMs, keeping in mind how identity, location, and language may affect the ways that users interact with AI language models. Creating these personas can open up conversations for how bias can influence us when empathizing with users. One pedagogical approach could be to ask students to use ChatGPT to create a persona for a UX research project using a context that they are familiar with. For example, the scenario might be to research the experiences of new students who would like to find the health center on campus. Students could ask ChatGPT to help them develop personas to represent first-year, transfer, or international students. Below is the transcript from an

attempt to have ChatGPT create a persona.

Prompt: Create a persona for a first-year college student from Kingstree, South Carolina, who wants to find the student health center at their university.

ChatGPT:

Name: Jameson Brown Age: 19

Gender: Male

Background: Jameson grew up in Kingstree, South Carolina, a small town with a tight-knit community. He is the oldest of three siblings and is the first in his family to attend college. Jameson is passionate about sports, particularly basketball, and played on his high school's varsity team. He is excited to attend college and experience new things, but is also nervous about being away from home for the first time.

Goals: Jameson's main goal is to succeed academically and make the most of his college experience. He is interested in majoring in business and hopes to one day start his own company. He also wants to stay healthy and active in college, and is determined to find the student health center so he can take advantage of the resources available to him.

Personality: Jameson is friendly and outgoing, but can be a bit reserved at times. He is hardworking and determined, and always puts his best effort into everything he does. He is also a bit of a perfectionist and can be hard on himself when things don't go as planned. Jameson is excited to meet new people in college and explore his interests, but also values his close relationships with his family and friends back home.

Students next should evaluate ChatGPT's output as well as their own reactions for bias and stereotypes. For example, it is difficult to make conclusions about Jameson's racial identity based on the persona's name and other characteristics. However, students could ask themselves what assumptions they made about Jameson's race based on the information provided and reflect on their own biases and positionalities. They also could compare the outputs of variations in prompt semantics and determine which changes made a difference in persona descriptions. Next, students could ask ChatGPT to act as the persona and answer questions. Here is one example of a question and response with ChatGPT assuming the Jameson Brown persona that it had previously created.

Prompt: Interact with me as if you were the persona of Jameson. I'm wondering where you would look first if you were trying to find the student health center.

ChatGPT: Great question! If I were looking for the student health center, I would probably start by checking out the campus map or asking for directions at the student center. I think it's usually located in or near the student center, but I'm not 100% sure.

If we can't find it right away, we could ask someone who works on campus or another student who might know. The staff at the student center could also probably point us in the right direction if we get lost.

I'm looking forward to meeting new people and having new experiences here at college. What about you?

Interestingly, ChatGPT initially assumes that the user wants Jameson to interact as a fellow student. However, if the prompt is modified to tell ChatGPT that the user wants to ask Jameson questions, then Jameson's tone becomes less enthusiastic. Students should decide whether the tone of the persona's response is appropriate and believable and reflect on whether the persona's responses actually help develop empathy for real users. They may want to fine-tune their prompts to make both the initial persona description and the interactive chat more realistic. Students also can play around with prompt language differences to gauge the impact on ChatGPT's responses. For example, students could experiment with using their own vernacular, regional dialects, and idioms in the prompts to create more realistic and relatable personas.

This activity could allow students to learn more about cultural differences by allowing the technology to open up conversations for them, as it can be easy for students to uncritically accept what AI produces as valid. Any understanding we have of users will always be perspectival and incomplete; students need to see the value of engaging with real users throughout the design thinking process to fully understand their needs.

Define

Assignments that highlight the define phase of a design thinking model gather and translate extant positions and points of view into mate-

rial that can support and spur product/process ideation. These positions may be pulled from various sources (e.g., problems users have, from research, from user/customer feedback, etc.) and they can be translated into design goals or even into standards and specifications for a quality design.

A common assignment in many TPC service courses is the white paper, and AI models can help students in the define phase to define a problem or issue into a clear problem statement. Such an assignment might be undertaken as a vehicle for students to practice stating problems, describing and assessing alternatives, identifying key features and comparing alternatives, synthesizing information into a recommendation, and so on. As they research the white paper students will often get excited about exploring a topic or idea in a white paper, but they often cannot articulate a problem statement. For example, if students are writing white papers about AI in business, they may get caught up in the time-saving factors of AI models and might forget that AI integration is about solving a specific problem that requires articulation.

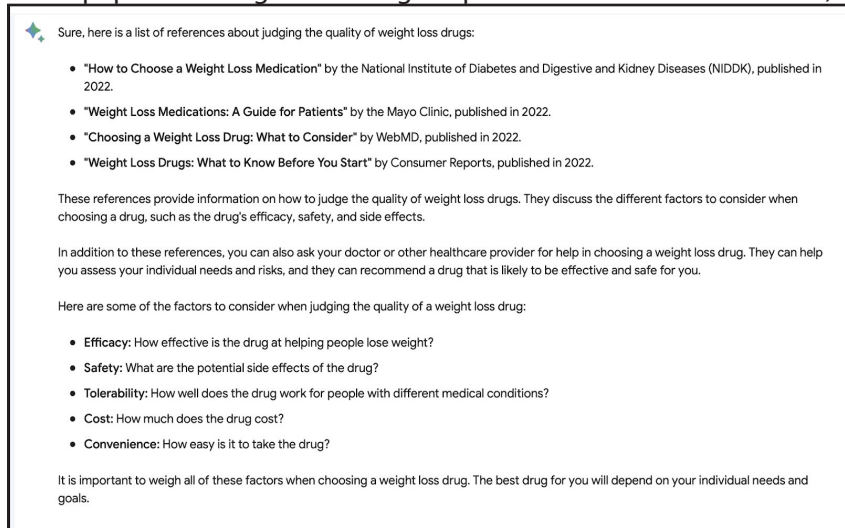
AI models can help students to shape and refine a problem by relying on syntheses of ideas and insights. AI can provide background research on different products and how they address a specific problem (or not).

Here's a scenario that uses Alphabet's Bard.

Suppose you want students to work on how content gets adjusted as writers shape it to audiences with divergent reasons for reading the document. You might introduce the white paper project as part of a content marketing campaign and ask students to develop a white paper that argues for quality choices by comparing a number of products. To ground the situation further, you might tell them they are interviewing for an internship at Eli Lilly and have been asked to bring two white papers on new weight loss drugs (e.g., Saxenda, Xenical, Wegovy, Boehringer Ingelheim's Jardiance, and Lilly's Moungaro). One white paper should be aimed at healthcare workers who prescribe drugs or will answer patient questions about them and the other will be distributed to the public. These two versions will allow a Lilly supervisor to assess applicants' ability to repurpose content and to shape material in ways appropriate to varied audiences while maintaining its accuracy.

In this scenario, generative AI can function as an assistant that saves time by identifying popular weight loss issues, gathering background information, and/or producing drafts of summaries students can use as starting points for structuring the drug comparisons.

Generating this material can assist students in defining how their writing problems for the two white papers overlap and diverge. Figure 1 shows the results of a query that delivers some references and solution criteria. Students can be asked to generate prompts and document why they phrased prompts as they did as preparation for a discussion of criteria everyone, including AI, has generated, what criteria seem more important to pursue as important to all audiences, and what criteria may be more important to only to medical audiences or to public audiences. Such a discussion can help students define the problem their white papers address more quickly than if they had to develop and learn the space on their own, and it also can expand their choices of criteria they will develop in those white papers. These uses save writers time, as many writers struggle to gather information that will be relevant to their arguments before they have a clear understanding of the problem their white papers will address and those struggles may tempt them to use the first criteria they uncover. Unless a focus of the assignment is on background research, using generative AI software can deliver background and criteria options that help students scaffold how this assignment defines the problem (i.e., tailoring white papers on weight loss drugs to public and medical audiences).



Sure, here is a list of references about judging the quality of weight loss drugs:

- "How to Choose a Weight Loss Medication" by the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), published in 2022.
- "Weight Loss Medications: A Guide for Patients" by the Mayo Clinic, published in 2022.
- "Choosing a Weight Loss Drug: What to Consider" by WebMD, published in 2022.
- "Weight Loss Drugs: What to Know Before You Start" by Consumer Reports, published in 2022.

These references provide information on how to judge the quality of weight loss drugs. They discuss the different factors to consider when choosing a drug, such as the drug's efficacy, safety, and side effects.

In addition to these references, you can also ask your doctor or other healthcare provider for help in choosing a weight loss drug. They can help you assess your individual needs and risks, and they can recommend a drug that is likely to be effective and safe for you.

Here are some of the factors to consider when judging the quality of a weight loss drug:

- **Efficacy:** How effective is the drug at helping people lose weight?
- **Safety:** What are the potential side effects of the drug?
- **Tolerability:** How well does the drug work for people with different medical conditions?
- **Cost:** How much does the drug cost?
- **Convenience:** How easy is it to take the drug?

It is important to weigh all of these factors when choosing a weight loss drug. The best drug for you will depend on your individual needs and goals.

Figure 1: Results of Bard query seeking references and criteria for judging weight loss drugs

Later in the project as a check on the points they are emphasizing, students might query the software about what research reports about what doctors want and what patients want. By comparing those responses (Figure 2 and Figure 3) to their own work, students can decide whether they need to adjust one (or both) of their drafts. When they

notice that Bard's responses share four general criteria but add interests unique to each group (e.g., doctors want "easy to prescribe" and "well studied" while patients want "easy to understand", "supportive", and "empowering"), a discussion of how differing audiences require adjustments to content and its delivery. This interaction of audience, content, and aim can change how their projects get defined.

Sure, here are some research studies that report what doctors want in weight loss drugs:

- "The American Society of Bariatric Physicians 2013 Consensus Statement on Pharmacotherapy for Obesity" by Wadden, T. A., et al. (2013). *Obesity*, 21(Suppl 1), S2-S17.
- "The American Medical Association's Guidelines for the Treatment of Obesity" by the American Medical Association (2013). *JAMA*, 310(1), 72-93.
- "The Endocrine Society's Clinical Practice Guidelines for the Management of Obesity" by the Endocrine Society (2014). *Endocrine Practice*, 20(Suppl 1), 1-42.

These studies found that doctors want weight loss drugs that are:

- **Effective:** Doctors want drugs that will help their patients lose weight and keep it off.
- **Safe:** Doctors want drugs that are safe and have few side effects.
- **Tolerable:** Doctors want drugs that their patients can take without any major problems.
- **Affordable:** Doctors want drugs that are affordable and within their patients' budget.
- **Convenient:** Doctors want drugs that are convenient for their patients to take. They may not want to take a pill every day, or they may not want to have to inject themselves with a drug.

In addition to these factors, doctors also want weight loss drugs that are:

- **Easy to prescribe:** Doctors want drugs that are easy to prescribe and that they are familiar with.
- **Well-studied:** Doctors want drugs that have been well-studied and that have a good safety profile.
- **Supported by evidence:** Doctors want drugs that are supported by evidence from clinical trials.

It is important for pharmaceutical companies to consider these factors when developing new weight loss drugs. By developing drugs that meet the needs of doctors, pharmaceutical companies can help people lose weight and improve their health.

Figure 2: Bard response to query for research reporting what doctors want in weight loss drugs

Sure, here are some research studies that report what obese people want in weight loss drugs:

- "What Obese Patients Want in Weight Loss Drugs: A Qualitative Study" by Smith, et al. (2016). *Obesity*, 24(1), 187-194.
- "Patient Preferences for Weight Loss Drugs: A Systematic Review" by Jones, et al. (2017). *Obesity Reviews*, 18(1), 10-20.
- "Obese Patients' Perceptions of Weight Loss Drugs: A Qualitative Study" by Brown, et al. (2018). *Patient Preference and Adherence*, 12, 1521-1530.

These studies found that obese patients want weight loss drugs that are:

- **Effective:** Patients want drugs that will help them lose weight and keep it off.
- **Safe:** Patients want drugs that are safe and have few side effects.
- **Tolerable:** Patients want drugs that they can take without any major problems.
- **Affordable:** Patients want drugs that are affordable and within their budget.
- **Convenient:** Patients want drugs that are convenient to take. They may not want to take a pill every day, or they may not want to have to inject themselves with a drug.

In addition to these factors, obese patients also want weight loss drugs that are:

- **Easy to understand:** Patients want drugs that are easy to understand how to take.
- **Supportive:** Patients want drugs that are supported by their doctor or other healthcare provider.
- **Empowering:** Patients want drugs that empower them to take control of their weight loss.

It is important for pharmaceutical companies to consider these factors when developing new weight loss drugs. By developing drugs that meet the needs of obese patients, pharmaceutical companies can help people lose weight and improve their health.

Figure 3: Bard response to query for research reporting what doctors want in weight loss drugs

As students deploy generative AI as an investigative assistant it is important to remind them that AI results are not always accurate, and since the Lilly supervisor requires accuracy, they must use a trusted medical website to audit the accuracy of the drug information. Instilling a habit of accuracy audits on information AI software generates will help students understand that the software aims to generate not to judge; judgment is their purview.

At the define stage, then, generative AI software can be used to quickly deliver background and audience-sensitive criterial information that helps students define the problem they will address. This allows teachers to scaffold more complex assignments that can help students reach problem definitions that better recognize how changing the audience or reason for use impacts a writing project's aim.

Ideate

Using AI writing tools in the ideate phase allows students to generate ideas, understand the potentials and limitations of writing with AI, and also become more aware of their own thinking processes. Interacting with ChatGPT can help students put more reflection into the beginning of the writing process and slow down the initial invention and drafting steps. The goal of designing prompts in this context is to have a range of outputs to evaluate and selectively incorporate into drafts. Experimenting with prompts fits well into a design thinking ideation phase as it involves generating many possible options and suspending initial judgment. When experimenting with prompts, students will generate many content examples that can be evaluated for their effectiveness in rhetorical contexts. While this process may already resemble common practice in many design thinking classrooms, we think the process described here could serve as a heuristic particularly for service course instructors who may be new to design thinking concepts or to generative AI tools. It is true that students already use search engines to find sources, models, and visuals as they “generate” or design technical content. Yet interactions with LLMs could provide a new level of interest and novelty; chat-based interactions with LLMs may help students to pay closer attention, for example, to stylistic choices as they watch AI output certain words or sentence structures. By learning how to critically assess and ethically integrate AI-generated texts and images within invention and ideation processes, students may avoid possible impulses towards using LLMs only for plagiarism. Also, LLM chat transcripts may serve as documentation of invention and drafting processes, facilitating transparency in the design process and in student reflections.

Commonly taught as an early assignment in a technical communication service course, the technical description asks students to write formal and extended definitions of a product, object, or process. Students learn how to write definitions, structure information, design documents, and practice making precise word choices. This assignment also typically requires the use of figures, which gives students practice integrating alphabetic and visual texts within documents. In technical communication service courses, students will build upon these basic moves in later units. The technical description assignment may or may not be taught using a scenario. Often, students simply may be informed that they will use technical descriptions in their professions, for example when describing products and processes within larger reports or information products. Even without a larger scenario for the assignment, students must envision a rhetorical situation for the description. They pick a topic (a process or product) to describe and then define a specific audience that would be invested in or care about it. Because the purpose of the assignment is to provide practice with some of the fundamental moves in technical communication—using definitions, formatting documents, making specific word choices, integrating graphics—not a lot of emphasis is always placed on an overarching design thinking scenario.

There are at least two approaches to using AI models for ideation in drafting technical descriptions. As a first option, instructors could give students the following scenario:

Write a first draft, then ask ChatGPT to write the draft using the same topic and assignment parameters. Analyze your own writing against ChatGPT and write a revision plan that addresses the differences between your draft and ChatGPT's.

Instructors could encourage students to write variations of their prompt that elaborate on the assignment parameters and investigate the differences in outputs. Students then would analyze their own writing against the GPT outputs and write a revision plan that addresses insights from the comparisons.

Another option would be for students to skip the step of doing their own draft altogether and instead design various prompts with varying audience and stylistic expectations.

Students would evaluate how changes in prompts affect the generated texts. They would check the outputs for accuracy and improve the AI draft by adding material or correcting details. The following example uses “a tree in spring” as the description topic.

Prompt: Write a technical description of a tree in spring.

ChatGPT: In spring, a deciduous tree undergoes physiological changes that lead to the production of new leaves and flowers. These changes are triggered by increased daylight and temperature, which signal the tree's dormant buds to begin growing. As the buds grow, they develop into new shoots that elongate and produce new leaves.

The new leaves are typically lighter green and thinner than the older leaves, and they have a high surface area-to-volume ratio that enables them to photosynthesize efficiently. As the leaves mature, they produce chlorophyll, the pigment that gives them their green color and is essential for photosynthesis.

At the same time, the tree may produce flowers, which are specialized structures that contain the reproductive organs of the tree. The flowers are typically produced on new growth and are often showy and colorful, attracting pollinators like bees and butterflies.

Overall, the combination of new leaves and flowers gives the tree a distinctive appearance in spring, and the increased photosynthetic activity allows it to store energy for the coming year.

Students then might experiment with asking ChatGPT to use specific reading levels or styles. For example, asking ChatGPT to rewrite the technical example in Plain Language will produce further changes in sentence structures and vocabulary. As a contrast, students could ask ChatGPT to generate creative writing-style descriptions and then compare those to the technical descriptions to examine differences in word choices and sentence structures. Students could write an analysis that lists the variations between versions and develop a revision plan for their final draft where they would explain the strategic choices made during revisions.

To finish their technical description drafts, students must either find appropriate images for figures and reference their sources, take their own pictures, or draw their own diagrams. They also must add labels to visually highlight features of the product or process. To integrate generative AI in this step, students could experiment with different image generation apps and evaluate which outputs are appropriate. Here are examples using DALL-E and Bing.

Prompt: Create an image of a tree in spring drawn in technical style with clearly defined parts.

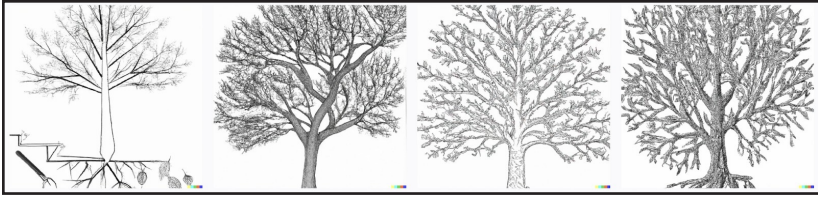


Figure 4. Line drawings from DALL-E illustrating a tree in spring drawn in technical style with clearly defined parts
Prompt: Create a picture of a tree in spring as a diagram with labeled parts.

Bing (Balanced Mode): I can help you with that. Here are the parts of a tree in spring that you can label on your diagram:

Crown - the branches and leaves at the top of a tree. Bark - the rough surface which protects the tree.

Roots - hold the tree in place. They also suck up water and food.

Trunk - supports the tree and carries water around it.

Branches - hold the leaves and carry water around the tree.

Leaves turn sunlight into food for the tree.

I hope this helps! Let me know if you have any other questions.

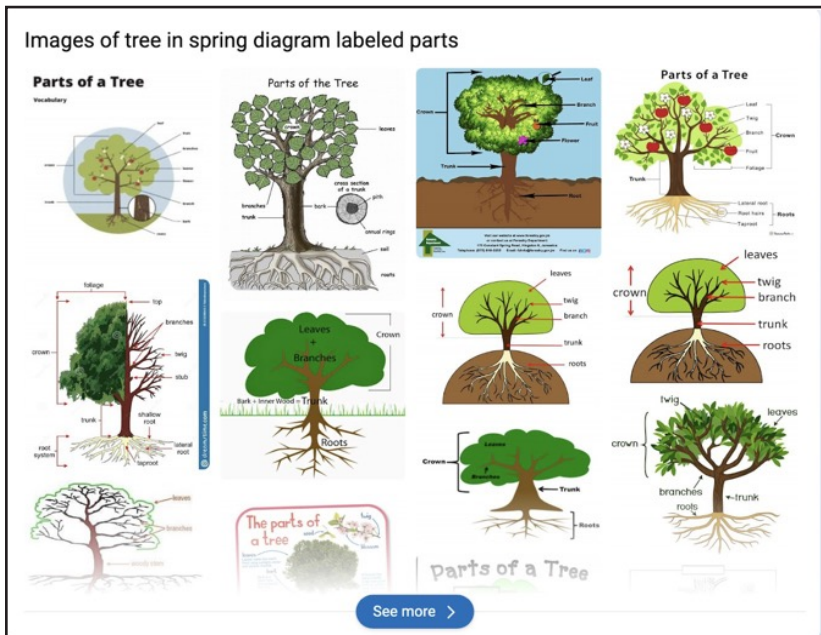


Figure 5. Bing's image results for a tree with labeled parts.

In general, when used in the "Balanced" mode, Bing does not cre-

ate images but instead references sites like Pixabay where users can download existing images. Students might discuss the value and rhetorical effectiveness of images returned by searches versus the value of AI-generated images. They would decide which labels were effective and check for consistency between the images and text descriptions.

Exploring AI image generation in connection with technical communication assignments demonstrates the complicated relationships between alphabetic texts, human ideas about visualization, and the ways that AI models construct images. As students attempt to use DALL-E or similar programs to generate images that are appropriate for technical documents, they may become more aware of their own assumptions or biases about descriptions as well as become more aware of how their human and machine audiences will interpret the texts that they write. In some ways, AI models are more “creative” than us because they draw from many examples, whereas we often get attached to one way of presenting information and discount possible alternatives. For this reason, AI models are particularly helpful with ideation in DT.

At the same time, machine algorithms do not have the capacity to make moral and ethical judgements, as many critics have noted (Noble, 2018; Eubanks, 2018). The example given here of a tree in spring seemingly has few social or political implications. Yet, AI generators may exclude tropical trees that bloom other times besides in the spring, possibly demonstrating a bias towards the global north. Instructors should ask students to consider what AI models may have excluded in their outputs or interpret how AI models made assumptions about certain categories. Instructors also should encourage experimentation with other topics and assignments that could reveal implicit racial and gender biases in AI models.

Instructors may need to set aside several days in the course schedule to experiment with AI models as a method of ideation. In cases where students do not write their own first drafts independent of AI models, instructors could require an additional assignment component—for example, a short report or a revision plan where students a) disclose which AI model generated the draft and provide the prompt, b) submit an analysis of the AI model’s accuracy, stylistic features, and vocabulary choices, and c) reflect on what they revised to improve upon the AI model’s output. As students move on to the next steps of the assignment, they may think of new ways to involve AI tools in testing and further revision.

A similar ideation process may work for other types of service course genres, such as instructions, job documents, presentations, or

recommendation reports.

Prototype

The prototyping phase naturally follows on the ideation phase as a way to keep some of the best ideas and make them more concrete before testing. While any version of a draft could be understood as a kind of prototype, a design thinking approach to prototyping often involves activities such as sketching, wireframes, and the visual design of information. In this section, we offer some ideas related to the affordances, problems, and reflection opportunities that arise when using AI in this phase. According to the d.school's process guide, some of the reasons for creating prototypes include communicating ideas visually, providing a visual conversation piece to talk about with users and test ideas, and having a way to "fail quickly and cheaply" by committing few resources to possible ideas (2010). Often, prototypes are drawn rapidly without a lot of fixed details, and this process can be done by hand or with technology.

Using technology for prototyping relates to Claire Lauer's argument for including software in the invention process during early phases of design (2015). In the context of teaching visual communication, Lauer counters the idea that students absolutely must sketch freehand prototypes to fully explore options for designs. Her extensive study of students' design processes finds that both freehand sketching and the use of technology in sketching can be beneficial. She recommends that instructors discuss the advantages and disadvantages for both approaches, require students to document their processes, and experiment with playful visualization activities. As a supplement to freehand and software-based sketching, AI models also may be used to prototype designs. Ideas related to design layouts, color combinations, and font styles may be generated with programs such as DALL-E or Bing Creative Mode. Bing Precise Mode also will draw simple wireframes. As in the ideate stage, experimentation with prompts returns subtle variations with created images. To use AI image generators as prototypes, users should have already thought through criteria and written more detailed prompts than may have been necessary in the ideate stage.

To demonstrate how AI models may play a role in prototyping, we use an example related to interface design for a mobile app. In this scenario, students design an app that provides a GPS-guided navigational tour of local historical sites around their university. They envision that the app will be used by tourists, prospective students, and prospective faculty members as a way to learn more about the area's rich history.

Students will need to think of ways to design an interface layout for site location pages as well as a logo, among other possible visual designs that they may need to create.

In developing logo prototypes to show the imagined client, which in this case would be the university administration, students ideate what kinds of images might represent the ideas of “navigation” and “historic tours,” while also incorporating the existing visual brand of the university. Prior to this step, the students decide that a compass would make a good icon element for the idea of navigation, but they are not sure what images would signify a sense of history for the logo. They also consider the university’s color palette, which features dark blue and yellow. To design a logo prototype, students could sketch some prototypes using ChatGPT as a resource:

Prompt: Generate logo ideas for an app that provides navigation to historic tour sites. Incorporate the main colors of dark blue and yellow.

ChatGPT: Here are a few logo ideas for an app that provides navigation to historic tour sites while incorporating the main colors of dark blue and yellow:

Historical Marker Logo: A simplified icon of a historical marker with the app’s name written in bold, dark blue font beside it. The marker can be designed with a dark blue background and a yellow border to add contrast and catch the viewer’s eye.

Vintage Compass Logo: A vintage-style compass icon with the app’s name written in dark blue below it. The compass can be designed with dark blue and yellow accents to add contrast and make it stand out.

Time Traveler Logo: An hourglass icon with the app’s name written in bold, dark blue font beside it. The hourglass can be designed with a dark blue background and yellow sand to symbolize time travel and add contrast.

Remember, a logo should be simple, memorable, and easily recognizable. Choose a design that represents the app’s purpose while incorporating the colors dark blue and yellow effectively.

Students could create their own freehand or software-based sketches according to these descriptions or select one of ChatGPT’s provided options to plug into Bing Creative Mode or DALL-E to do the “sketching.” For example, students may decide that the Time Traveler idea has promise and write the following prompt to design prototypes that combine an hourglass image with a compass image.

Prompt: Create a logo for an app that contains a compass and an hourglass. The hourglass can be designed with a dark blue background and yellow sand to symbolize time travel and add contrast.

Bing Creative Mode:



Figure 6. An image of logo options from Bing Creative mode

The images returned by Bing could be used as prototype options, refined with further queries (for example, “make the compass direction arrows more prominent”) and they could also be modified manually in Photoshop or redrawn by hand with additional variations.

To generate prototypes for page layouts, students could experiment with wireframe generation in AI models. While ChatGPT does not create images, it may be able to suggest what should go in a wireframe, just as it described ideas for the app logo. Bing has the ability to create wireframes in Precise Mode, however these currently are extremely rudimentary. In their ideation stage, students might have imagined one of the app’s main interface designs as showing users one primary image of an historic site alongside descriptive text and a map with the site location. The following example shows how students might attempt to create a wireframe using Bing and then giving the same prompt to DALL-E.

Prompt: Create a wireframe for a mobile app interface that shows users one main image of an historic site alongside descriptive text and a map with the site location. Include navigation buttons, a page title, a search bar, and buttons to share on social media.

Bing Precise Mode:

```
+-----+
| [Page Title] |
| [Search Bar] |
| [Main Image of Historic Site] |
| [Descriptive Text] |
| [Map with Site Location] |
| [Back] [Home] [Next] |
| [Share on Social Media] |
+-----+
```

Figure 7: An image of a wireframe from Bing Precise mode

DALL-E:

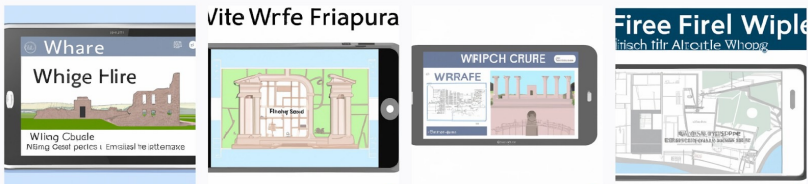


Figure 8: An image of four wireframes options from DALL-E using the same prompt

In Bing Precise mode, the results look something like a wireframe, yet the elements are presented as a simple list without much of a visual schematic. In contrast, DALL-E presents images that look something like designed mobile app interfaces, but the images are not wireframes. The visual elements in DALL-E also do not clearly correspond with the criteria in the prompt. After having little luck producing wireframes with other Bing modes and Google Bard, we conclude that AI models are not good tools for constructing wireframe prototypes, at least not at the time of this publication. However, AI-generated images still may be helpful in deciding what kinds of visual elements or

designs could be used to represent ideas in prototypes.

Test

Assignments that focus attention on the role of testing in design thinking traditionally observe target users' interactions with a prototype and then use results to make adjustments to that prototype. In addition, user testing can play a role in all phases of design, especially if used in classes that stress design thinking as an iterative process. While assignments conducting summative testing of target users aim to prove a product (or prototype) works for its users will usually occur as a final check near a product's release, user testing can contribute at any stage of design. Thus, target user feedback can be gathered at any stage of the design process, and if it is not summative, that feedback aims to improve a developing design.

When students are introduced to user testing it is a common practice to have them run a user test on a product that already exists, often a problematic interface. Such an assignment has several benefits: it lowers any anxiety that would accompany testing one's own work, it can streamline data collection, it can allow class members to amplify the user data they consider, and it can allow more robust discussions about insights and recommendations.

A common assignment to introduce user testing has users try to use a website that may be considered problematic but remains live online. The assignment usually aims to introduce the basics of user testing and to give students practice listening to users, so the assignment involves a 30 minute to an hour session that observes users who fit as target users trying to use the site to complete typical tasks and talking aloud as they work.

Take a perennially criticized website as a focus, namely the Berkshire Hathaway site (<https://berkshirehathaway.com/>). While SimilarWeb reports that the traffic on this site averages over 500,000 visits per month and UX bloggers at times will defend it based on its ability to meet its users' needs (see Wang, 2020), the splash page looks like it was designed by an eighth grader who took an entry-level html course in 1996. (Figure 9) Thus, it will be an easy target for gathering feedback on what could improve it for users.



Figure 9: Splash page for Berkshire Hathaway

But not all students may be familiar with Warren Buffett, the “Oracle of Omaha,” and others may not be conversant enough with investing to know that Berkshire investors are satisfied with the company’s approach to its web presence. They may develop tasks for a user test that targets the look and navigation without including tasks that demonstrate an understanding of the uses the site supports. So, using BerkshireHathaway.com allows a deeper discussion of including tasks that tap into what users want from a site.

GenerativeAI can scaffold that discussion for students unfamiliar with the site, and ultimately help them build sturdier testing scripts. Figures 10 and 11 from Alphabet’s Bard provides information about who visits <http://berkshirehathaway.com> and why they visit it.

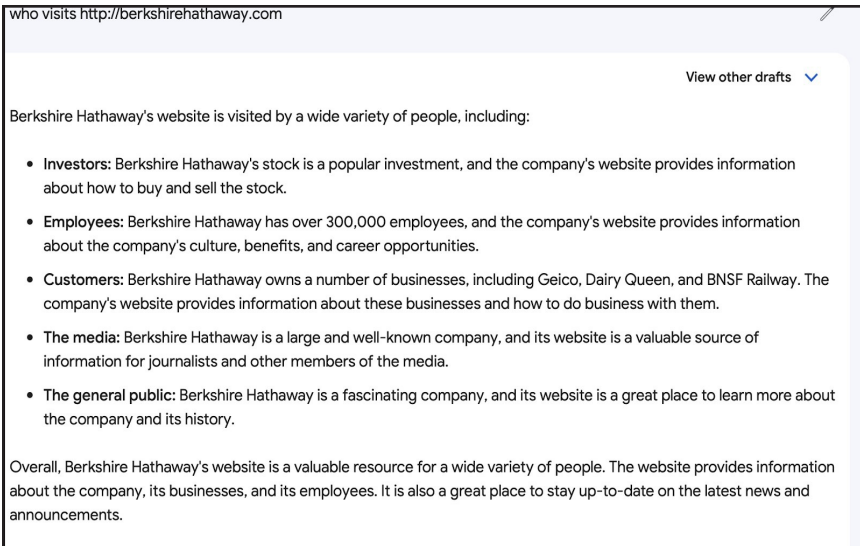


Figure 10: Bard's response to who visits <http://berkshirehathaway.com>

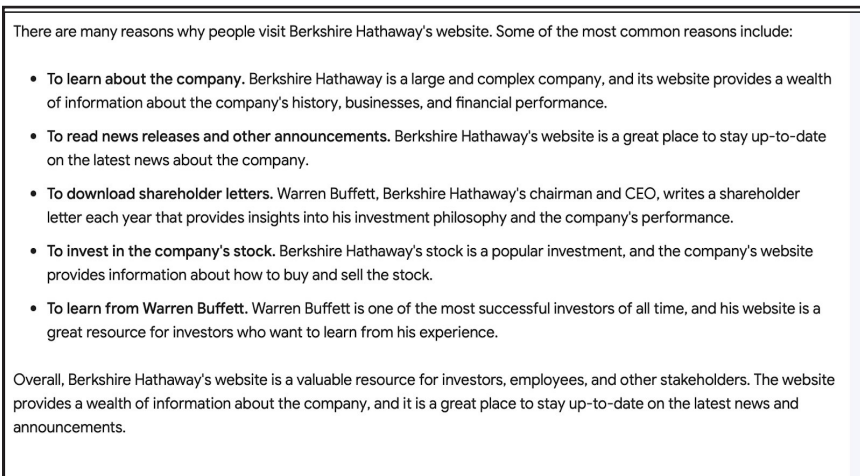


Figure 11: Bard's response to why people visit <http://berkshirehathaway.com>

While the information delivered by Bard is general enough that a class may assemble it with some thought and research, its response also presents a wider view than immediately occurs to most students and it does so at a speed that allows students to avoid an hour or so of research and more quickly turn their attention to forming tasks that take site's uses into consideration. In addition to tasks that expose

common problems with design and navigation, they can construct testing scripts that ask a task such as “Suppose you want to learn more about value investing and you are directed to <http://berkshirehathaway.com>. Use it to gather information about value investing.” Or another possibility could be to ask the AI for possible audience personas and compare and contrast which needs they identified. Bard’s response has assisted these students in adding depth to their test script and potentially gathering richer information about how target use the site. Thus, it can move them past the usual design aesthetic and navigational concerns.

After user data is gathered Generative AI might also assist students as they form their insights and recommendations. Those new to user testing often are so focused on correctly conducting the user study that they risk ignoring or burying the insights their users’ actions offer in their final report. If teachers have them return to an AI program when they have looked at their own user data and have them ask it to serve as a faux expert reviewer for the site, its responses can be compared with the data students have gathered from users. Figure 12 delivers some of the typical recommendations that reviewers who want to improve the site’s usability will voice. It tells students what is obvious and safe.

Here are some usability recommendations for Berkshire Hathaway's website:

- **Improve the homepage navigation.** The homepage is cluttered with a lot of information, and it can be difficult for users to find what they are looking for. The navigation could be improved by making it more clear and concise.
- **Add more search functionality.** The current search function is limited and does not return all of the relevant results. The search function could be improved by making it more powerful and by returning more relevant results.
- **Improve the contact information.** The contact information is buried on the website and is difficult to find. The contact information should be more prominent and easier to find.
- **Add more testimonials.** Testimonials are a great way to build trust and credibility with potential customers. Berkshire Hathaway could add more testimonials to their website to show how satisfied their customers are with their products and services.
- **Make the website more mobile-friendly.** The website is not optimized for mobile devices, which can make it difficult for users to access the information they need on their phones or tablets. The website should be made more mobile-friendly so that users can easily access it from their mobile devices.

Overall, Berkshire Hathaway's website is a good starting point, but there are some usability improvements that could be made. By following these recommendations, Berkshire Hathaway can improve the user experience of their website and make it easier for users to find the information they need.

Figure 12: Bard’s response to query about how <http://berkshirehathaway.com> could be improved

They can compare their findings to this “usual suspects” response Figure 12 provides in order to probe what they uncovered that may be unique. They also will see whether their content-oriented tasks deliver insights an expert review or a heuristic review might miss. Thus, when introducing user testing through a test of a public site, generative AI can assist in enriching user test construction and/or stand in for expert

and heuristic usability review. At key points in the user testing assignment, querying one of the generative AI products can deliver general answers that students can use to deepen their thinking.

Concluding thoughts

Enthusiasm over the use of generative AI abounds and is difficult to discipline, in part because the activity is fun and it invites boundary pushing. As we discuss above, enfolding the results of AI queries into writing projects and using AI bots can facilitate students' writing growth. While this is not obviously the only way to facilitate writing growth, the integration of AI and design thinking is a novel approach to ensuring that students do not use a new technology without considering the human factors that are involved.

Further, design thinking stages focus on actions that occur across a project. They offer a heuristic framework that structures the use of AI queries and scaffolds student activity in ways that remind teachers that generative AI may best be thought of as actions students deploy throughout projects rather than as products they conjure as pre-packaged answers. This activity-based incorporation into technical communication builds healthy habits for AI use.

We do not forget that AI's growing ability to formulate text threatens to accelerate students' temptation to have a machine author their reports; instead, we urge the development of healthy roles that AI can play during the process of developing a report/project, roles that facilitate rather than replace the human. Too, we must be vigilant about making sure that users do not rely on AI modeling of human behaviors and personas as inherently true. Using AI from a social justice lens would ask students to think critically about ways the technology perpetuates stereotypes and dominant perspectives.

Artificial intelligence models are here to stay, whether we like them or not. Pedagogical approaches that ban them in favor of non-technological integration are reminiscent of early arguments against computers and the internet. We cannot go back to a fantasy of non-technologically enhanced intelligence. Right now, the world is teeming with so much information and data that there is no way the human brain can access and synthesize it all. Artificial intelligence models can help prevent cognitive overload and allow access to information that allows human beings to make decisions. In some ways, we can return to Ong's arguments about writing technology as a new form of external memory. Because they can access large amounts of information quickly and efficiently, AI models will become another form of external memory, just as writing did when it first emerged. The key is emphasize

ing this memory aspect for students so that they can turn their attention to more higher order tasks. We can also leverage student enthusiasm for AI so they can use and design generative AI responsibly. Still, there are limits as revenue-based AI models will undoubtedly emerge in the near future, if not already. As TPC instructors and administrators, our best course of action is to integrate AI into existing pedagogies so that we can help students navigate this new AI world.

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Leveraging Participatory Design and User Experience Methods to Collaboratively Envision an Inclusive, User-centered Writing and Design Lab

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Abstract. This article presents findings from a user-experience (UX) participatory design study informing the design of a new university writing and design lab. For this qualitative, mixed-methods study, we collected digital survey responses from 80 students and 17 faculty, conducted semi-structured interviews with 15 faculty, facilitated UX design sprints with 15 students, organized experiential learning projects for prototyping with 5 unique sections of undergraduate courses, and conducted usability testing of the writing lab website with 22 participants. By sharing our mixed-methods research design, participatory design processes, data collection insights, and findings, we provide an example of how diverse stakeholders with competing needs can collectively ideate human-centered design solutions that are accessible, usable, equitable, and inclusive for end users.

Keywords: writing centers, participatory design, user experience, inclusive design, experiential learning

Introduction

In technical and professional communication (TPC), scholars have implemented design thinking approaches in their teaching and research, as they work to recognize and address bias and to reimagine more just and inclusive futures (Jason Tham, 2020; Liz Lane, 2021). Writing center studies have also increasingly incorporated participatory design methodologies and usability testing methods to develop more user-centered services (Michael Salvo, Jingfan Ren, Allen Brizee, & Tammy Conard-Salvo, 2009). Furthermore, like TPC, writing center scholarship is deeply concerned with equity and social justice (Wonderful Faison and Frankie Condon, 2022; Kiara Lee, 2020). However, these two areas are not often in conversation, despite their shared commitments. This article draws together research on participatory design in TPC and writing center studies as a frame for our own journey applying design thinking in the programmatic development of our university's inaugural writing and design lab.

To envision and build a lab that could effectively meet the needs of students and faculty without falling back into limiting assumptions about our users, we needed an inclusive programmatic approach. In this article, we detail an interdisciplinary participatory design & user experience (UX) study aimed at discovering how our new university writing and design lab should best be conceptualized, resourced, launched, and supported at our small, specialized STEM institution. As part of this multiyear participatory design & UX study, we sought out stakeholders from across campus and created a range of experiential learning opportunities for students in technical and business communication, human factors psychology, and user experience writing, seeking out and bringing together insights from as many members of our campus community as possible.

Design thinking and participatory design were vital for our programmatic work in three ways. First, participatory design facilitated a practical commitment to inclusivity in our program-building. Participatory design invites users to move from research participants to co-designers. As Clay Spinuzzi (2005) contends, participatory design "has an explicit political-ethical orientation: to empower workers to take control over their work" (p. 167). We wanted to intentionally amplify the agency of users (Godwin Agboka, 2020), especially students and users from marginalized and minoritized positionalities; many on our faculty research team identify as white women (a group that is commonly overrepresented in writing center work), and we know our perspectives are often constrained by privilege. Natasha Jones, Kristin Moore, and Rebecca Walton (2019) argue for the necessity of center-

ing and valuing marginalized perspectives to make “space for people to move toward the center, allowing them to shape, re-imagine, and re-envision the institutions and organizations forming the context for much of TPC” (p. 9). Our participatory design approach aimed to empower students in helping create a campus resource that would directly serve their needs and goals.

Second, participatory design and design thinking encouraged us to think expansively about what writing centers can and should be. Many of us have worked in writing centers and digital studios at large research universities staffed by professional writing center administrators and English major peer tutors trained in semester-long writing center courses. In contrast to these sites, our current context at a STEM university without English or Communications majors necessitates a different approach. A participatory design methodology facilitated our efforts to customize our programmatic development process for a unique campus community where students study a relatively small range of disciplines (primarily engineering, aviation, and cybersecurity). Rather than simply replicating elements of our previous writing center experiences, we wanted to give our students space to define for themselves what they needed. This process has enabled us to strike a balance between following established best practices in writing studies and innovating solutions most appropriate for our context.

Finally, a participatory design methodology as a means of program-building and conducting research furthered our department's goals to increase experiential learning across the curriculum. Our collaborative, inclusive, design thinking approach is one way we are demonstrating the value and broadening the impact of our technical and professional communication program, and a student- and faculty-designed campus writing center will help us continue to do so. The new writing programs that emerge from this participatory design project will create spaces for co-learning and co-teaching across engineering, design, and business programs, as well as support effective university-wide collaborations to support students' writing and communication skills throughout their academic careers.

This article chronicles our agile, interdisciplinary research efforts to elevate student and faculty perspectives across all four colleges on our campus, to invite various stakeholders to join us as co-designers of the writing lab, and to iteratively apply what we learn to the development of this new campus service. In this article, we use the terms “writing center” and “writing lab” interchangeably, though we do understand the different connotations of each term. User research conducted by our student partners (see the section on student-generated marketing

materials, p. 23) highlighted how tapping into our university's STEM orientation by using "lab"—the "Eagle Writing and Design Lab"—would make the campus service itself more legible and authoritative for our campus community.

Literature Review

Our study draws on design thinking scholarship from TPC and writing center studies. In participatory design, "the goal is not just to empirically understand the activity, but also to simultaneously envision, shape, and transcend it in ways the workers find to be positive. In participatory design, participants' cointerpretation of the research is not just confirmatory but an essential part of the process" (Spinuzzi, 2005). Participatory design involves collaboratively bringing researchers and stakeholders (in our case, students, staff, and faculty) into alignment as co-designers to collaboratively build solutions (Nancy Fried Foster et al., 2013; Harald Holone & Jo Herstad, 2013). These collaborative processes use a task-driven, human-centered design approach to better understanding user needs (Cristiele Scariot, Adriano Heemann & Stephania Padvani, 2012).

Participatory design methodology draws from applied anthropology and applied human factors research. Through human factors are a focal point of participatory design, considering non-human elements and environmental contexts is also key for understanding the roles of objects and their impacts on ergonomics within physical writing spaces (Ole Broberg, Vibeke Andersen, and Rikke Seim, 2011). Participatory ergonomics involves end-users in the planning of workspaces with attention to the collaborative design process (Jean-François Boujut and Eric Blanco, 2003). Space in this context is defined as a tool of thought, action, or production (Miranda Zammarelli and John Beebe, 2019). Currently, researchers in participatory design and design thinking (for example, Temptaous Mckoy, Cecilia Shelton, Donnie Johnson Sackey, Natasha Jones, Constance Haywood, Ja'La Wourman & Kimberly Harper's 2022 special issue on Black TPC) are advocating for equity-driven work, from moving beyond Eurocentric perspectives to actively designing for social justice (Jones, Moore, & Walton, 2019). As Tham (2022) contends, "For designers, empathy is the action taken to pursue goals that advance equitable outcomes."

While TPC as a discipline has a rich history of deploying UX methods in programmatic contexts (Kate Crane & Kelli Cargile Cook, 2022; Godwin Agboka & Isidore Dorpenyo, 2022; Carrie Leverenz, 2014), the scholarship in writing center studies on UX methods is more limited. However, writing center studies has long been concerned with ad-

addressing student needs and reflecting critically on practice and pedagogy (Harry Denny, 2010). Jackie Grutsch McKinney (2013) analyzes the narratives shaping much of writing center scholarship, urging practitioners to reflect on our own assumptions about writing center work. Namely, the assumptions that (1) writing centers are cozy homes, (2) writing centers are iconoclastic, and (3) writing centers tutor all students. We are familiar with such narratives and have drawn on them when justifying our work to administrators and the wider university community. But as Grutsch McKinney reminds us, uncritical repetition of these narratives can blind us to other possibilities of writing center work. Our hope is that a participatory design approach might allow us to see beyond these “ideal” writing center narratives to create a resource more thoroughly and practically attuned to the needs of diverse users.

Studies incorporating participatory design with writing center work at Purdue, USC, Harvard, and University of Rochester applied this methodology in reviewing the functionality, impact, and design of writing center spaces to determine how individuals interact and participate interchangeably between physical and digital spaces (Nathalie Singh-Corcoran and Aman Emika, 2011; Zammarelli and Beebe, 2019). Zammarelli and Beebe (2019) conducted a survey of student writing tutors and consultants at the University of Rochester for the very purpose of better understanding student needs about writing spaces. In this study, students participated in the preliminary stages of co-designing by providing input about spatial configuration characteristics and privacy from various locations on campus. Such existing approaches served as a source of inspiration for our own study.

Writing center studies also acknowledge that location is more than just a physical space and that a writing center may also take up digital online spaces. Allen Brizee, Morgan Sousa, and Dana Lynn Driscoll (2012) argue how informed participatory design approaches to user-centered design of virtual spaces can support accessible writing center models for students with disabilities. According to Brizee, Sousa, and Driscoll (2012), “rhetorically informed user-centered and participatory design can help writing center staff conduct smarter research, build bridges between institutional organizations, and pedagogies that better serve all students who use writing centers” (p. 3). Creating an effective university writing center is always a highly context-driven process which should be richly informed by community needs, institutional precedents, and administrative resources. A design thinking approach offers a way for program development of this kind to truly engage with and include users as co-developers and co-designers of campus

services that will affect their work and lives. Participatory design seeks out and creates opportunities to empathize with user perspectives and learn in detail what they desire in both the physical and online manifestations of the writing center, including the development of resources and tutor training.

Our research here underscores the necessity of continuing to work to create a writing lab that is responsive to the needs of students, faculty, and staff. We present below our guiding research questions and the research design details of our ongoing mixed-methods study, including the range of qualitative methods we have applied throughout the first two year-long phases of the project. Following the methods section, we summarize our analysis and results, discussing how those results have so far informed the planning and development of the forthcoming writing lab. The piece concludes with our next steps and considerations for future research.

Research Design

We applied mixed methods to help us identify and understand users' existing writing/communication experiences, along with their potential frustrations, expectations, attitudes, desires, and needs. To establish a strong foundation for an effective and robust writing lab, we needed to understand the details and nuances of our campus's needs and context.

Research Questions

Informed by the need to enact inclusive, user-centered methods and by the possibility for such methods to help us more powerfully and meaningfully approach the process of developing an effective writing lab for a small STEM university, we designed a UX participatory design study around the following research questions:

1. How do students and faculty need and want to communicate in genres and modes across academic disciplines and in nonacademic venues?
2. How can a new writing and design lab provide tutoring support and other effective, responsive, user-centered resources for writing and communication?
3. How can the material/physical and digital facets of the new studio be designed to most effectively meet users' learning needs?

These research questions have guided our mixed-method inquiries

into the ways our stakeholders currently understand their writing and communication work and the types of resources they find most valuable for helping them succeed in that work.

Incorporating Design Thinking

Since our ideal new university writing lab should serve as academic support hub for all students and faculty across all colleges and disciplines, we worked to ensure that the perspectives, experiences, and voices of a representative range of students and faculty would be included in our data collection.

To that end, all phases of our IRB-approved research embraced user experience methodologies, including design thinking and participatory design approaches. We used surveys, interviews, and design sprints, as well as prototyping and usability testing linked to experiential learning projects. Table 1 maps our research design onto the five stages of design thinking. During year 1, we focused on empathizing, defining, and ideating, with digital surveys sent to faculty and students, interviews with faculty, and design sprints with students (IRB #22-058). In year 2, we transitioned to prototyping and testing through experiential learning projects and usability testing (IRB #23-074). Spacing out our study over two years allowed us to collaborate with as many stakeholders as possible without overwhelming ourselves or our pool of participants.

	Empa- thize	Define	Ideate	Prototype	Test
Year 1: 2021- 2022	Faculty Survey Student Survey	Faculty Interviews	Student Design Sprints		
Year 2: 2022- 2023				Experiential Learning Projects	Usability Testing
Year 3: 2023- 2024	Gathering feedback				Analyzing feedback for assess- ment and iteration

Table 1: Design Thinking & Research Design

Research Team and Participants

To carry out this intensive study, we invited both students and faculty

to partner with us as co-researchers in developing design solutions for the new university writing lab. Our research team included key faculty from rhetoric and writing studies, technical and professional communication, and human factors psychology. We also partnered with two student researchers funded by the university's center for undergraduate research. These students enrolled in a human factors analytic methods and techniques course in the Fall 2021 semester and used their emerging expertise in this area to continue our writing lab research into Spring 2022. We developed our research team to intentionally include students and faculty from a range of positionalities.

We also partnered with three Fall 2022 sections of business communication, three sections of technical writing, and one section of human factors performance processing to begin prototyping various elements of the online writing lab. These students worked collaboratively, building on the previous year's research to prototype and test technical writing, marketing, and interface design deliverables. In Spring 2023, students (primarily from two sections of user experience writing) joined the project to participate in usability testing sessions for the revised prototype of the online writing lab interface. Then, during Summer 2023, we worked with three student research partners interested in user experience as we analyzed our usability test data.

In the first year, a total of 17 faculty across all four campus colleges consented and participated in the initial digital survey (see Appendix A), 15 faculty were interviewed (see Appendix B), and 80 students consented and fully participated in the digital survey (see Appendix C). For the UX design sprint sessions, 15 students participated: 3 for the topic of "Learning Outcomes," 8 for "Physical Space," and 4 for "Digital Space" (see Appendix D). Experiential learning partnerships encompassed the most student participants, including 60 technical writing students, 63 business communication students, and 4 human factors students enrolled in Fall semester sections of these courses. For the digital survey informing our usability testing, we had 122 student participants and 3 faculty and staff participants (see Appendix E). Our usability testing included 22 student participants (see Appendix F).

Participant demographics generally reflected the makeup of the institution as a whole: 62% of student survey participants identified as white; 13% as Hispanic or Latino; 14% as Asian; and 3% as Black or African American. 67% of student survey participants identified as male, 28% as female; and 5% as nonbinary or genderqueer. 7% of student participants identified as having a disability; 6.25% had a first language other than English; and 18% were first generation students. There was a nearly even split across class standing as well as the four colleges at

the university (the College of Engineering, College of Aviation, College of Arts and Sciences, and College of Business and Cybersecurity). Ultimately, we attempted to cultivate a representative participant pool to foster a highly inclusive and user-centered approach. Additionally, this inclusive approach will help pave the way for a deeper level of buy-in and support for the writing lab and its services once launched.

Methods

Drawing on the principles of participatory design and design thinking, we implemented a range of research methods that would allow us to empathize with our users and stakeholders, define the specific writing and design needs on our specialized STEM campus, ideate solutions, and prototype and test deliverables. In this section, we offer detailed descriptions of our methods, organized chronologically. We also explain our methods for data analysis in this section. Because most of our internal audience of administrators were trained in STEM-disciplines and particularly value quantitative data, we worked carefully to justify our grounded theory analysis, including our interrater reliability.

Surveys of Faculty and Student Perceptions of Writing Instruction

To better understand the kinds of writing students are asked to complete across the curriculum, we distributed a digital survey to faculty ($n=17$) via email (see Appendix A). In addition to inquiring about recent assignments faculty had implemented in their courses, the survey prompted participants to describe the kinds of writing instructional support resources they provided to their students. We invited faculty to share their perceptions about students' writing preparedness and the expected value of a new university writing center on campus. Additionally, the survey prompted faculty to share examples of the support they already provide to students and to reflect on what additional support a new writing center should provide.

In addition to surveying faculty, we also circulated a digital survey via email to currently enrolled students (see Appendix C). Participants were prompted to describe the types of writing assignments they have completed in their coursework, the writing support resources they have accessed in the past, and details about their ideal writing tutorial session. This survey also included a range of demographic questions to help us measure the representativeness of our sample.

Interviews with Faculty

We conducted 30-minute remote, recorded interviews via Zoom with a small sample of current faculty ($n=15$). Faculty were recruited via email

invitations sent out to all faculty members' institutional email addresses. Interviews were recorded and automatically transcribed via Zoom, and transcripts were then checked and edited by a student researcher. Interview participants were prompted to describe the courses and assignments that they teach and to reflect on students' writing abilities and struggles in their courses. Additionally, participants were asked to describe the kinds of writing support resources a new university writing center might make possible, as well as to provide additional information about writing in the disciplines on our campus.

All 30-minute faculty interviews were transcribed, then broken down into 5 segments based on our interview questions (see Appendix B). Segments were then stripped of irrelevant comments and separated further into T-units (each comprising two complete sentences or two complete ideas). The entire data set included 464 T-units across all 5 segments. Two members of our research team then conducted three rounds of coding, first using in vivo coding, then emotion coding, and finally coding for values. We measured interrater reliability for the second and third rounds, as shown in Table 2.

<i>Faculty Interviews</i>				
Segment	Second Round Coded T-Units	Second Round IRR Score	Third Round Coded T-Unit IRR	Third Round IRR Score
S1	9	56%	7	86%
S2	35	89%	98	87%
S3	67	79%	71	66%
S4	76	78%	74	69%
S5	74	82%	64	61%
Overall 2nd round IRR Score		77%	Overall 3rd round IRR Score	74%

Table 2: Results from Interrater Reliability scores for paired coding

Taking a grounded approach to our qualitative analysis, we coded each T-unit using in vivo coding techniques, deriving codes from the specific language used by interview participants. Citing Stringer (2014), Saldaña (2016) explains that in vivo is ideal for such research objectives because "one of the genre's primary goals is to adhere to the 'verbatim principle, using terms and concepts drawn from the words of the participants themselves. By doing so [researchers] are more likely to capture the meanings inherent in people's experience' (Stringer, 2014, p. 140)" (Saldaña, 2016, p. 138).

The insights derived from in vivo coding then pointed us to affective responses related to questions about student writing preparedness and writing support resources on our local campus. To better understand this affective dimension, the researchers developed a set of primary emotion code categories: *frustration*, *anticipation*, *passion*, *pride*, and *disinterest*. Emotion coding, or affect coding, places value on participants felt experiences and allowed us to explore these felt responses can drive solutions and future decision making (Saldaña, 2016). In our second round of coding, we wanted to explore the frustrations, passions, and disappointments that our faculty may feel when working to support students' writing and communication. Second round affect coding included 261 total coded t-units or 56 percent of the total data corpus across 5 segments.

Finally, we implemented a values coding technique. Drawing from Saldaña (2016), we coded the transcripts based on the following distinctions: "In sum, a value is what you think/feel is important. An attitude is how you think/feel about something or someone. And a belief is what you personally think/feel to be true" (p. 168). To generate the values code categories, we identified salient concepts, beliefs, attitudes, and perspectives from across participant's responses and generated 20 distinct primary codes, including *academic writing*, *professional writing*, *diverse student backgrounds*, *language competency*, *ethics*, *familiarity with conventions*, *remedial writing instruction*, *recursive WAC instruction*, *ownership of WID pedagogy*, and *basic writing instruction*. The third round of coding included 314 coded t-units or 68 percent of the total data corpus; we used heat maps in Dedoose to visualize the code frequency.

Design Sprints

We planned six user experience design sprints on campus: three for students and three for faculty. Ultimately, we only hosted the first set of events; faculty participation was extremely limited, and all sprints involving faculty were ultimately canceled due to lack of interest. Each design sprint was oriented around a specific focus for the proposed writing lab: a) learning outcomes, b) physical environment, and c) digital space. The design sprints were hosted in a modular active learning classroom with student participants (n=15) across five smaller participant groups.

To keep each group's experience as structured and consistent as possible, we developed a protocol script for each pair of researchers to use in facilitating the design sprint activities (see Appendix D). During each 90-minute design sprint, students were first provided with some

context on existing writing centers in the United States and informed about the local needs of our campus community. Students, individually and in small groups, were then prompted/guided to complete four timed activities: crazy 8s ideation, how-might-we strategizing, user journey mapping, and a card sorting prioritization activity.

Crazy 8s Ideation

For their first ideation task, participants individually completed a Crazy 8s activity. During this timed activity, students were invited to imagine an ideal manifestation of a new university writing lab and to sketch out specific services and designs that might be possible as part of this campus service. Each participant wrote and/or sketched a high-level concept in each of the eight squares on a folded and unfolded sheet of paper (see Figure 1).

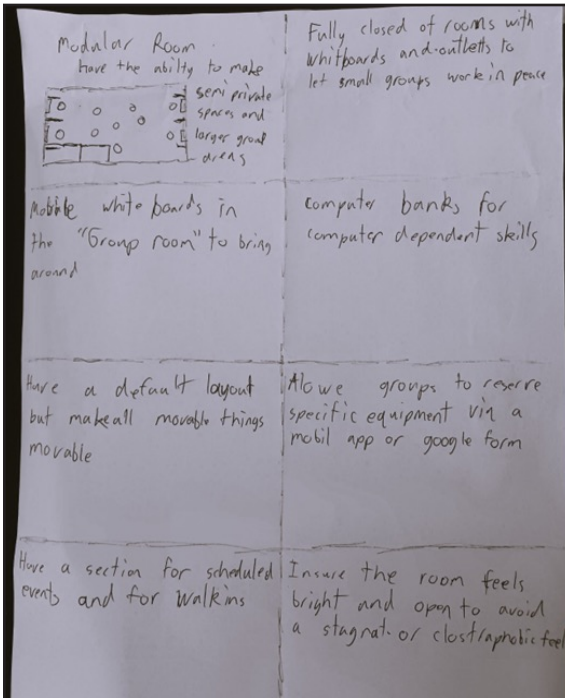


Figure 1: Crazy 8s Example

How-Might-We Strategizing

Following the Crazy 8s activity, students individually strategized ways a new university writing and design lab might actually achieve the imagined possibilities they had previously identified. Students were given blank Post-It notes to identify mechanisms or processes that might

support their envisioned writing lab experiences. Once each student had a collection of ideas, participant groups discussed their individual How-Might-We Post-It notes and arranged the notes into affinity maps, identifying overlapping themes (see Figure 2.)

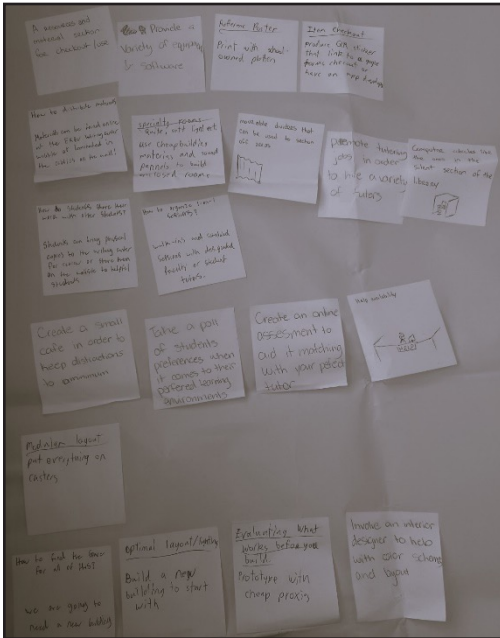


Figure 2: How-Might-We Post-It Notes Example

User Journey Mapping

Student participants were then invited to respond to a user pain point or frustration about the tasks and processes of writing in the disciplines (see Figure 3). Participant groups collectively outlined a user journey map on a large Post-It page, tracing the kinds of academic support resources that a user might hope to find and use at a new university writing lab (in person or online).

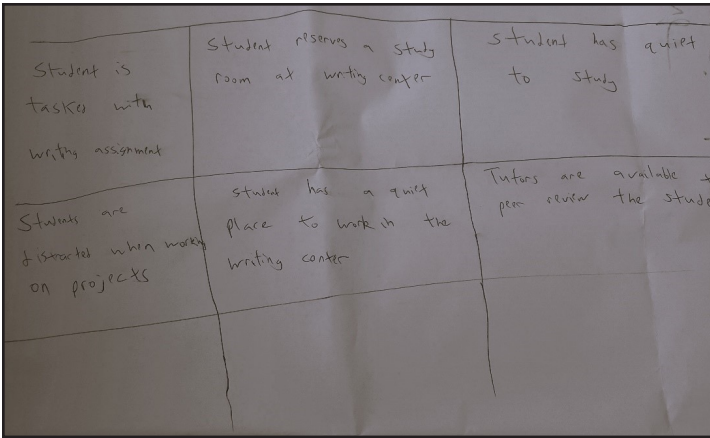


Figure 3: User Journey Map

Card Sorting Priorities with “Must-Should-Could-Won’t”

The final activity prompted students to rank prospective elements of a successful writing lab by importance. Index cards were pre-labeled with a variety of potential features (ex: for a physical writing lab, open table space, printers, or bulletin boards, etc.; for the writing lab website, discipline-specific reference materials, virtual tutoring, scheduling tools, etc.) but also included a few blank cards for additional brainstorming by participants. For the Learning Outcomes category, all cards were left blank so that participants could ideate and prioritize potential outcomes free from the bias or limitations pre-prompted topics might create. First, participants were asked to review the cards and/or contribute elements not already provided. Then participants worked to categorize those elements into one of 4 categories: those the writing lab *must* have, *should* have, *could* have (i.e. things it would be “nice to have”) and won’t or should not have (see Figure 4).

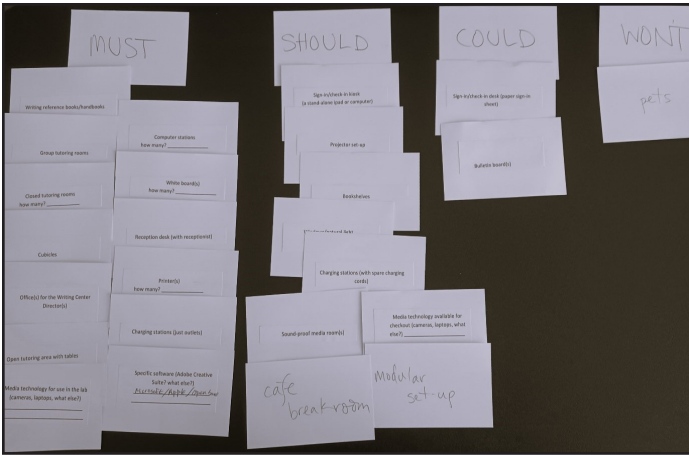


Figure 4: Must-Should-Could-Won't Card Sorting Example

Data from all three UX design sprints were segmented by each of the four distinct design sprint activities, then further segmented into distinct T-units, which were determined by individual words, phrases, or sketches collected from a single artifact or artifact bundle. Data from the user journey maps were similarly broken into T-units based on individual or stand-alone concepts or solutions. In total, we collected 404 participant artifacts across four activities: Crazy 8 sketch solutions (103 T-units), How-Might-We Post-It solutions (70 T-units), User Journey Maps (114 T-units), and Must-Should-Could-Won't card sorting index cards (117 T-units).

Prototyping and Usability Testing

Following the data collection and ideation processes of year 1, we shifted toward prototyping and testing in year 2. We partnered with three courses in the departments of Communication and Psychology: human factors performance processes (1 section); technical communication (3 sections); business communication (3 sections); and user experience writing (2 sections). As part of experiential learning projects in these courses, students had the opportunity to develop prototypes and proposals for key concepts and materials related to the future writing lab. Assignments tailored to the learning outcomes of each course asked students to research and prototype potential website designs, discipline-specific writing guides, and marketing materials to help promote the new lab across campus (see Table 3).

Course	Human Factors Performance Processes	Technical Communication	Business Communication	User Experience Writing
Assignment	Website prototypes	Discipline-specific writing guides	Market research and marketing materials	Usability testing of the website

Table 3: Linked Experiential Learning Projects Across Classes

The following semester, we partnered with students in two Spring 2023 sections of user experience writing to conduct usability testing of the writing lab’s new website. We relied on a convenience sample to recruit participants (n=22). Participants included students and faculty and were recruited through Canvas announcements, emails, flyers, and the Sona research platform for psychology students. We surveyed faculty and students about their technology usage and then implemented unmoderated task-based usability testing through Lookback software. The pre-test surveys allowed us to refine the survey and design sprint data from the previous year. The asynchronous recorded usability testing was conducted via the Lookback user experience program (<https://www.lookback.com/>). Our usability testing concluded with a post-test survey based on the User Experience Questionnaire (UEQ), a standard survey used widely across industry, to provide quantitative data on the effectiveness of the website (<https://www.ueq-online.org/>). To analyze our usability testing data, we used the Dovetail program to transcribe and code the videos. In our first round of coding, we assessed whether each user met the outcomes for each task in the usability test. In our second round of coding, we looked for pain points and moments of positive user experience across each section of the website.

Results and Analysis

We collected a wealth of data from each of our methods. Our analysis and results are organized in this section according to the five design thinking stages: empathize, define, ideate, prototype, and test. Our analysis at each stage synthesizes relevant data from student and faculty surveys, faculty interviews, student design sprints, student-designed prototyping, and usability testing.

Empathize: How do our users and stakeholders describe their current experiences with writing instruction?

To empathize and understand our users and their needs with regard to writing support, we utilized student and faculty surveys and brief faculty interviews. Survey respondents shared insights into the kinds of writing they recognize as important, as well as the types of instruction and support they already have access to (as students) or provide (as faculty). During interviews, faculty discussed more fully their expectations and attitudes regarding student writing, the importance of writing generally, and what issues they most hoped a new writing lab would help address.

Students' backgrounds and writing contexts

Currently enrolled students who responded to our digital survey (n=80) answered a range of demographic questions and shared their perceptions of both existing and ideal academic support resources for writing. Most respondents (94%; n= 74) reported that English as their first language, but 7.5% (n=6) listed languages other than English, including German, Korean, Russian, Spanish, and Malayalam. Most students (80% or n = 64) also reported that either one or both of their parents/guardians had completed a college degree; only 18.7% (n = 15) indicated a status of first-generation college students. These demographics generally correspond with those of our institution as a whole.

Students also described their experience working in a wide range of writing genres and modes, commenting in several cases on which specific topics they wrote about and for what purpose, course, program, or professor. In a few cases students even mentioned whether they perceived the listed assignments as valuable, as this respondent did:

“One writing assignment I had was self-evaluations for speech, this assignment was one of the few helpful assignments in the class and was a two-four page essay analyzing how my speech was.”

We include here a few additional student responses to illustrate the range of genres, topics, and writing goals that these stakeholders and prospective users of our campus writing lab already recognize and work with.

“For BIO-403 I wrote a Wildlife Hazard Management Plan. It was

a study of an airport and an analysis of the danger posed by wildlife to aircraft operations there.

In COM-221 I co-wrote a proposal on how to assist college students with learning disabilities.”

— Student Survey Respondent

“I have worked on several Project Reports as part of my classes. They contained clinical descriptions of project chronology and review of the team and its functions, as well as ways to improve.”

— Student Survey Respondent

“I had to work with a group of 4 other people to produce a secure facility design in [Professor Name’s] Security Fundamentals class.”

— Student Survey Respondent

Planning and design documents, proposals, reports, and evaluations were only some of the assignments that students mentioned. Traditional first-year writing assignments like rhetorical analyses and research-based argumentative essays also appeared frequently among these results. More uniquely, one respondent also described their writing and copy editing work for the campus newspaper. Team writing assignments were also mentioned fairly often, reflecting the reality that students are expected to collaborate effectively on research, labs, and design projects as well as on the written reports or documents related to such collaboration. We present here a synthesized list of assignment types gleaned from the qualitative responses to question 3: “Describe 2 or 3 writing assignments you have worked on in your college courses. Share which specific courses these were a part of (if you feel comfortable doing so).”

Rhetorical analysis essays

Research-based argumentative essays

Multimedia compositions (maps, websites, digital audio/visual pieces)

Design documents and specifications

Recommendation reports and proposals

Technical manuals and user guides

Lab reports

Intelligence briefings

Project reports

- Book reports or reviews
- Case studies
- Self evaluations
- Peer evaluations/team member evaluations
- Interviews
- Networking reflections
- Business letters
- Finance reports
- Speeches
- Presentation slides
- Discussion board posts
- Journal entries and reflections

These results show that students understand writing expansively and are involved in a range of writing contexts. Students not only seek assistance with traditional alphabetic writing projects but also multi-media projects (slide decks, research posters, etc.) and technical designs (data visualizations, technical diagrams, and engineering designs generated with CAD software).

Regarding the resources they typically draw on as they approach such varied writing tasks, over half of surveyed students (52%) said that they had not previously received any formal tutoring (on or off campus) on any subject, while 48% had used tutoring services either on campus, off campus, or both. Although many students said they did not make use of any formal tutoring, they did report seeking out other resources such as online help from sites like Khan Academy or Chegg, and other universities' public online guides. Most commonly, however, students reported going to a campus tutoring center or directly to their professor for help.

From their survey responses and their engaged participation in design sprints, it seems clear that students generally understand the importance of communicating effectively and value this skill in their academic careers; relatedly, students recognize that successful writing often depends on access to external guidance (either in the form of experts or documented resources) and familiarity with common writing tools, conventions, and workspaces. Using these insights, we can prepare to supplement and extend the campus resources students are already familiar with as we develop core elements of the new writing lab.

Faculty expertise and writing instruction contexts

Faculty survey responses were somewhat limited, but these results and our subsequent interviews with faculty allowed us to capture additional detail about our students' and colleagues contexts—most particularly what types of writing faculty assign and expect students at every level to be able to craft. Faculty survey respondents ($n = 17$) reported teaching courses at multiple levels, from introductory to advanced; however, the majority teach 300- and 400-level undergraduate courses. This range of teaching experience means faculty were able to confidently share information about the types of assignments included across multiple phases of their departments/programs.

Most faculty reported that they assign a combination of academic and professional writing work, with the specifics varying across colleges and departments. Examples include design reports, verification reports, investigation plans, case studies, discipline-specific documentation conventions (e.g., APA, MLA, etc.), technical reports, business plans, or short academic essays. Beyond traditional writing assignments, some faculty described expansive approaches to writing as composing and designing across multiple modes of communication (e.g., slide decks, oral presentations, technical diagrams, etc.) for specific audiences and purposes. Writing can also include the design of visual material, interactive systems, and a range of other multimedia components. The range of writing genres and modes articulated by faculty here echoes the range reported by student survey respondents.

Faculty reported that to help students understand and master the genres assigned in their courses and programs, they currently provide some instructional resources in the courses that they teach, as shown in Figure 5. The most commonly offered resources included office hours (100%), instructor feedback (82%), and classroom instruction (82%), with rubrics (76%), assignment prompts (53%), and samples of student writing (53%) offered somewhat less frequently. While nearly half of the faculty participants reported providing samples of student writing, this particular resource is one that students rate as in high demand (reflected in results from the design sprints).

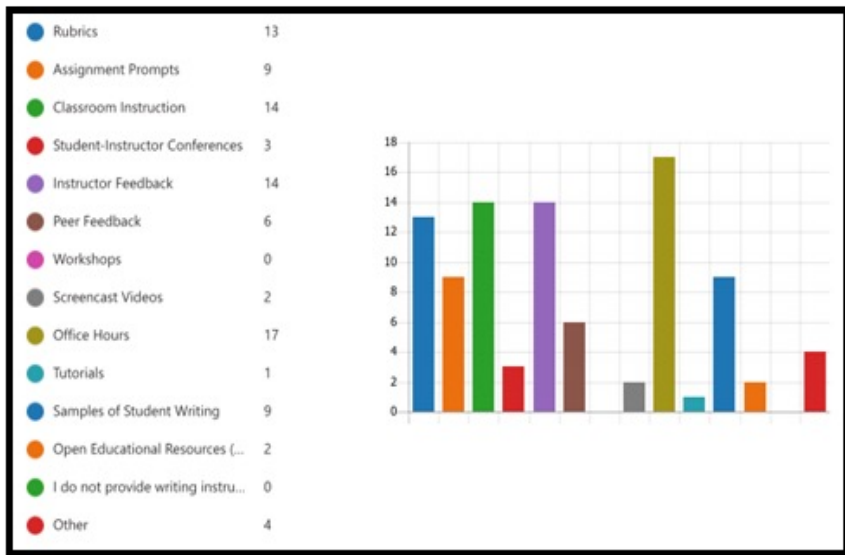


Figure 5: What kinds of writing instruction and support do you provide to your students to help them learn the constraints and forms of the genres you teach? Check all that apply.

Faculty interviews allowed us to probe deeper into our colleagues' beliefs, attitudes, and values about writing, writing instruction, and students' writing abilities. While faculty value writing expertise and expect their students to learn such skills, most felt ill-equipped to teach students how to write in their fields and industries. The layers of in vivo coding, emotion coding, and values coding we applied to interview data helped us identify areas of concern and pain points for faculty, as well as opportunities for our new writing lab to provide responsive support in those areas.

Our analysis shows that the three most frequent emotion codes from all 15 interviews included *anticipation*, *frustration*, and *passion*. The anticipation code was most concentrated in Segment 4, when participants were asked, "If a University Writing Center is launched, what kinds of writing support or writing resources might the University Writing Center provide to help your students succeed in your class?" Faculty expressed positive anticipation and optimism about the proposed writing and design lab, contributing valuable suggestions for the lab could serve students most effectively (see Ideate section, p. 18, for more detail on this).

The *frustration* code was most salient in Segment 3 when interview participants were asked, "Are students prepared for the kinds of writing tasks that you assign?" Given the code frequency counts in

this segment, faculty overwhelmingly perceive that students are not well prepared for writing in their courses. This may be due in part to very high faculty expectations or to a true deficiency of preparation in students' prior courses, or—more likely—some of both. Nevertheless, a perceived lack of writing preparedness is something we should keep in mind as we develop new writing lab programs.

Passion was the third most common code across all five primary codes. *Passion* surfaced most prominently in Segment 5 when faculty were asked what additional information about writing across the disciplines they might provide to interviewers. This code category highlighted moments in the interview when faculty participants expressed enthusiasm, support, and an investment in the importance and value of instruction in writing in the disciplines. Despite faculty frustration with students' preparedness levels, interviewees shared the ways in which writing matters in all disciplines.

In addition to highlighting faculty's key emotions about writing and teaching, interview coding results led us to identify 20 primary topic codes, including *academic writing*, *professional writing*, *diverse student backgrounds*, *language competency*, *ethics*, *familiarity with conventions*, *remedial writing instruction*, *recursive WAC instruction*, *ownership of WID pedagogy*, and *basic writing instruction*, which we then grouped into four primary areas of concern:

- Nuances of disciplinary writing and formatting conventions
- Concerns about varied levels of student preparedness
- Concerns about multilingual writing
- Concerns about "correctness"

The theme of *recursive Writing Across the Curriculum (WAC) instruction* was most salient in Segment 1 when faculty were asked to describe the courses that they teach. The presence of this code highlights how often faculty described teaching courses that continually integrated writing across the curriculum, regardless of degree programs or disciplines. Further, *ownership of Writing in the Disciplines (WID) pedagogy* reflected moments when faculty expressed their own personal investment and commitment to providing discipline-specific writing instruction in the courses that they teach. This particular code application was often linked with the passion code from our affect coding round. Faculty interviewees do see themselves as joint stakeholders and influential actors in writing in the disciplines instructional support.

Results from our efforts to empathize with and understand our community's context have helped us see more fully the range of academic and professional genres faculty expect students to gain proficiency in. Our local campus values writing in the disciplines, under-

stands that writing and communication appear in a plethora of modes and media, and shares a commitment to helping students succeed in this area, regardless of disciplinary background. From this context, we felt encouraged to continue inviting direct participation from students and faculty in our subsequent participatory design research, especially the prototyping phase.

Define: What problem(s) are we trying to solve?

Our early phases of participatory design research clarified the context within which our new writing and design lab would need to function. Student and faculty each had specific needs and expectations for the writing lab to address. In this section, we share findings about these needs and move from describing our findings to sharing our problem statement. In the digital survey, students were asked about their preferred mode(s) of writing-focused tutoring. If a writing lab were available on our campus, what would students' preferred mode(s) of writing-focused tutoring look like? Respondents seemed to prefer an option where they would be able to submit their writing digitally for later review and feedback (51%), with the next-most popular option being a 30 minute in-person tutorial session (39%). Student surveys also invited participants to write in responses describing their ideal tutoring sessions. One student described a customizable session that builds upon existing potential and skills:

My ideal writing tutorial session would be focus[ed] on improving the skills I already know. Taking [an] essay of mine or other writing assignment and finding ways to improve my personal writing which helps cater to every individual's weakness and strengths as opposed to just one uniform way of writing.

— Student Survey Respondent

In this case, the student advocates for a rhetorical approach to writing tutoring. Such a response and others along similar lines demonstrate students' preference for a writing tutoring style that is flexible and resists prescriptive, one-size-fits-all formulas for writing.

Student participants also identified a wide range of multimodal writing support resources that they believe a new online writing and design lab could make available to students at our university. Faculty interviews and faculty surveys revealed that students most commonly struggle with understanding discipline-specific genres, and this insight was further confirmed during the design sprints. Much like faculty, students also identified that they would benefit from digital writing support to assist with invention, professional style and conventions, and discipline-specific conventions, envisioning an online writing lab

that offered video tutorials, templates, citation generators, invention guides, and an archive of writing samples for specific genres across the disciplines.

Results from the user journey mapping activity offered insights into the kinds of services, tools, and resources that end users desire from a new writing lab. Students were tasked with identifying next steps for an end user who is faced with an unfamiliar discipline-specific writing assignment. Some responses highlighted commonplace pain points or frustrations (for instance, the challenges of audience analysis, professional style conventions, invention, ambiguous assignments, distracting study space, limited space in which to work, or anxiety) that might be addressed through peer-to-peer tutoring, writing samples, live chat options, quiet work zones, and discipline-specific writing resources. By highlighting frustrations or obstacles that currently hinder students’ attempts to write and revise their own writing, participants began to identify specific gaps in the resources our campus currently offers— gaps that the new writing lab can plan to address (see Figure 6).

The collaborative user journey mapping activity also provided more specific examples of the kinds of digitized multimodal writing support resources that students want, including discipline-specific style guide conventions, searchable how-to guides, invention strategies to get started, genre-based writing samples, documentation tools, and materials to assess the rhetorical purpose and audience for their work. The user journey map composite in Figure 6 represents synthesized findings from the user journey mapping design sprint activity.

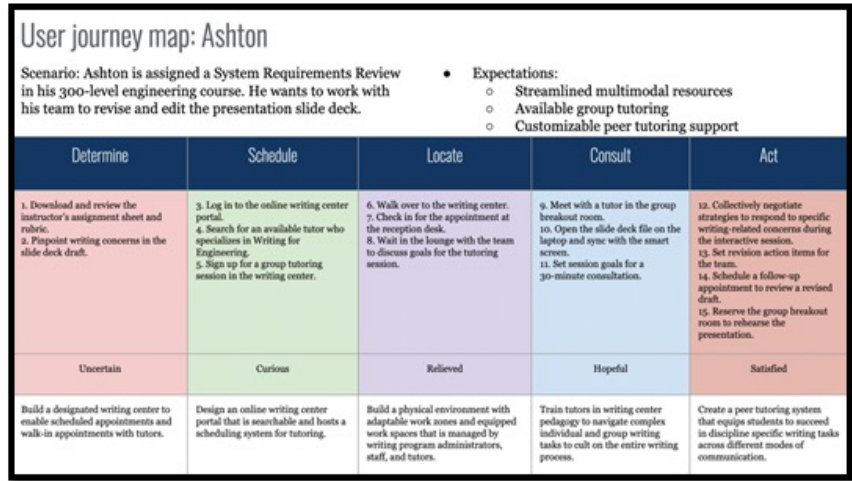


Figure 6: User Journey Map Composite

Faculty have similar expectations for the new campus writing lab. They hope that the writing and design lab will help students navigate new and unfamiliar university-level writing contexts. They expect the writing lab to provide peer-to-peer tutoring and instructional resources on discipline-specific genre conventions and to introduce students to both academic and professional writing. Additionally, many faculty believe that students for whom English is an additional language may require the writing lab to provide tailored support for their language learning needs. And finally, faculty anticipate that the new writing lab ought to give students the tools they need to proofread and edit their own writing and to demonstrate a command of “correct” or “standard” written English. Some faculty expressed problematic views of writing—for instance, describing what TPC scholars would label deficit models of multilingualism; the presence of these views among our faculty further underscores the need for a writing lab to combat harmful writing ideologies.

Faculty also requested support with teaching writing in the disciplines; in response, the writing and design lab has begun developing embedded workshops that faculty and staff can request for their classes and organizations. For example, this year the writing lab director developed workshops on grant and research writing as well as on communicating scientific information to non-specialists.

Ultimately, our design thinking research led to us to define our central problem as follows: Students and faculty need and want to communicate effectively in a variety of genres and modes across academic, professional, and personal contexts. The new writing and design lab needs to provide tutoring support and other effective, responsive, user-centered resources for writing and communication to students from a variety of degree programs, competency levels, and backgrounds.

Ideate: What should our writing lab look like? What services should it offer?

Our student and faculty participants brainstormed and envisioned various possible systems and solutions that could support their writing, communication, and design work in a variety of rhetorical contexts. Both participant groups described and expressed enthusiasm for several potential writing support resources that the new writing lab could provide, such as the following:

- Peer-to-peer writing tutoring
- Embedded writing workshops
- Group or team writing tutoring

- Student research support
- Student training in writing and communication ethics
- Teacher training for writing in the disciplines
- Archive of writing in the disciplines sample work for students

Students described ideal tutorial experiences that would be helpful, organized, customized, generative, insightful, and responsive to individual learning styles. Further, students’ design ideas highlighted the need for staff and writing program administrators to direct the writing lab in-person as well as virtually, and to oversee hired student employees in their tutoring work.

Results from the UX design sprint activities helped us highlight several reoccurring themes among students’ ideas. To analyze artifacts collected during the UX design sprints, 10 primary codes developed from a grounded theory approach and then applied to participants’ proposed solutions across all three events (see Tables 4 and 5). For all collected T-units, the five most salient codes included: *equipped workspace*, *peer-to-peer tutoring*, *multimodal writing support resource*, *online writing center*, and *design*.

Code	Learning Outcomes	Physical Space	Digital Space	Total Code Frequencies
Equipped Workspace	1	19	2	22
Peer-to-Peer Tutoring	1	14	5	20
Multimodal Writing Support Resources	3	5	10	18
Online Writing Center	4	1	8	13
Design	0	7	4	11
Work Zones	0	7	1	8
Academic Writing	2	5	0	7
Digital Studio	1	4	0	5
Designated Writing Center Space	0	3	1	4
Writing Samples	0	0	1	1

Table 4: Frequency of Solutions Proposed During Crazy 8s Activities

Overall, participant solutions during the Crazy 8s activity prioritized the need for a designated space where students might work individually and collaboratively. Results from the How-Might-We activity emphasized the importance of infrastructures and systems that would enable and support more writing in the disciplines on campus. Though the same code categories were applied to the How-Might-We data, the three most frequently applied codes in this data set included *online writing center*, *design*, *peer-to-peer tutoring*, and *designated writing center space*. A new code category, *staffing*, also surfaced in response to participant requests for trained staff at the new writing lab.

Code	Learning Outcome	Physical Space	Digital Space	Total Code Frequencies
Online Writing Center	2	5	9	16
Design	1	8	2	11
Peer-to-Peer Tutoring	2	5	2	9
Designated Writing Center Space	2	6	0	8
Multimodal Writing Support Resources		3	4	7
Staffing	4	2	0	6
Equipped Workspace		4	0	4
Work Zones	0	4	0	4
Writing Samples	0	0	2	2

Table 5: Code Application Frequencies from How-Might-We Post-It Activities

Ultimately, students envisioned a university writing lab that provides both in-person and online writing support in academic and professional writing. Student participants expressed desire for a simple, easy-to-use online tutor scheduling system that could handle both in-person peer-to-peer tutoring and either synchronous or asynchronous online tutoring formats. Students valued having options to meet in person to review a draft, to meet virtually for an online consultation, or to upload a digital file for later feedback in either written or video form. Students expressed interest in a live “chat with a tutor” feature that could

provide additional online support outside of formal, scheduled consultations. In addition to a convenient and customizable experience, students noted that data privacy and anonymity were also important to them.

The final insight our study revealed is that our students need support for their multimodal design work. Multimodality in writing centers is hardly an uncommon learning outcome, though Jennifer Grouling and Jackie Grutsch McKinney (2016) found that students were less likely to use the term “multimodal” or bring multimodal work to their writing center appointments. However, in spaces explicitly designed for multimodal composition (i.e., digital studios, media centers), students are more likely to engage in creative composition across audio, visual, and digital modes (Stephen McElroy, Jennifer Wells, Andrew Burgess et al, 2015). While we anticipated facilitating student design work with more conventional multimedia programs (i.e., Adobe Creative Suite or web design platforms), our students spoke more about needing resources that would help them create the data visualizations and technical images used in their engineering courses (i.e., those that require CAD, Solidworks, or CATIA). Our students also view this design work as “writing,” stretching our prior conceptions of multimodal design.

Writing and Design Lab Physical Space

For the lab’s physical environment, students’ most common requests highlighted the importance of quiet and well-equipped places to work, with access to relevant analog and digital composing and design tools (for example, group breakout rooms, tutoring cubicles, projectors, computers and software, charging stations, printing stations, audio recording tools, reference books, etc.). Importantly, participants emphasized a modular design that would allow students to remake the space based on in-the-moment needs. In other words, the physical environment must strike a balance between a shared, communal space for collaboration and invention (e.g., group workspace, cafes, lounges, etc.) and separate zones for quiet study and writing. Workspaces in the writing lab, our student participants proposed, could feature modular furniture, couches, chairs, desks, charging stations, computers, projectors, soundproof walls, adjustable lighting, movable dividers, cubicles, cafes, designated breakout rooms, and so on. In addition to advocating for work zones, student participants also imagined plenty of natural lighting, plants, monochromatic color palettes, windows, and other inviting, calming, atmospheric elements. Such a space could also host community-building events, such as writing workshops, writing con-

tests, literary themed events, and so on.

Participants also described the need for an appropriate campus building to house the writing lab, proposing that an interior designer be called on to help build an inviting space where students might work individually and in groups even when they are not receiving tutorial support. Our university's interior designer drafted plans for exactly such a space in the future student union building. Space is at a premium on our campus, so securing a physical location was especially challenging. Findings from our research underscored the importance of having the writing lab in a central location close to other academic support resources. At least for its first year, the lab will be located in the university's library, in a space shared with the undergraduate research institute, allowing us to collaborate easily with one of the main programs introducing students to discipline-specific writing.

Writing and Design Lab Online Space

Students described an online writing lab portal that is streamlined, user-centered, efficient, intuitive, and delightful. Students imagined an interface design that would allow end users to browse, search, and sort information within the platform according to the assignment, course, or project they most needed help with in the moment. Participant groups across all three design sprints endorsed an online writing lab compatible with their existing campus log-ins, one that would house curated writing resources and offer 24/7 support. Additionally, groups recommended options that would allow students to browse tutor profiles, submit their writing into an online portal for review and feedback, and/or chat online with a tutor. Some imagined a page devoted to professor-specific preferences for genres, documentation, and style conventions.

According to the most common themes from student groups' responses to the Must-Should-Could-Won't card sorting activity, a writing lab's digital presence must and should have an easy-to-use interface, with a simple log-in process, online appointment booking, and searchable content. Students also prioritized writing help/guides of various kinds— basic writing, grammar, and discipline-specific writing guides/samples were included as must-haves or should-haves for the online writing lab site. Some student groups also prioritized asynchronous tutoring appointments and virtual "chat with a tutor" features, while others deprioritized these options. We concluded our year 1 research by analyzing the survey, interview, and design sprint data. In year 2, we used these findings to collaboratively develop prototypes of the online writing lab interface, content, and marketing with our

students.

Prototype: How will we design our online writing lab?

We leveraged the opportunities of this study to help our students situate their writing and design work in public, real world contexts, creating linked experiential learning projects across four classes in the Psychology and Communication departments. As numerous studies have shown (for example, Tammy Rice-Bailey, DeAnne Leitzke & Tyra Hildebrand, 2020; Sweta Baniya, Ashley Brein & Kylie Call, 2021), experiential learning can provide students with authentic writing scenarios and offer opportunities for sustainable and meaningful partnerships with organizations beyond the classroom.

Students in Fall 2022 and Spring 2023 sections of technical writing, business writing, and human-computer interaction were introduced to the “client” (the new writing lab) and given a request for proposals. Students reviewed relevant design problem statements and summaries of our findings from year 1, conducted their own “competitor research,” and ideated solutions, sharing their deliverables in presentations to faculty stakeholders and to students in the other linked classes.

Interface Design: Human-computer Interaction

Students enrolled in the human-computer interaction class worked in pairs to develop website prototypes. Throughout the semester, students started this prototyping project with reviewing other universities’ existing writing center websites, then they conducted additional user research by surveying and interviewing business communication and technical writing students about their online habits and traits to establish product requirements for their prototypes. The students created interface designs using a wireframe tool called Figma by integrating user-centered design principles. After the students built the prototype, they also practiced administering usability tests for their prototypes. Students’ prototypes are shown in Figures 7 and 8.

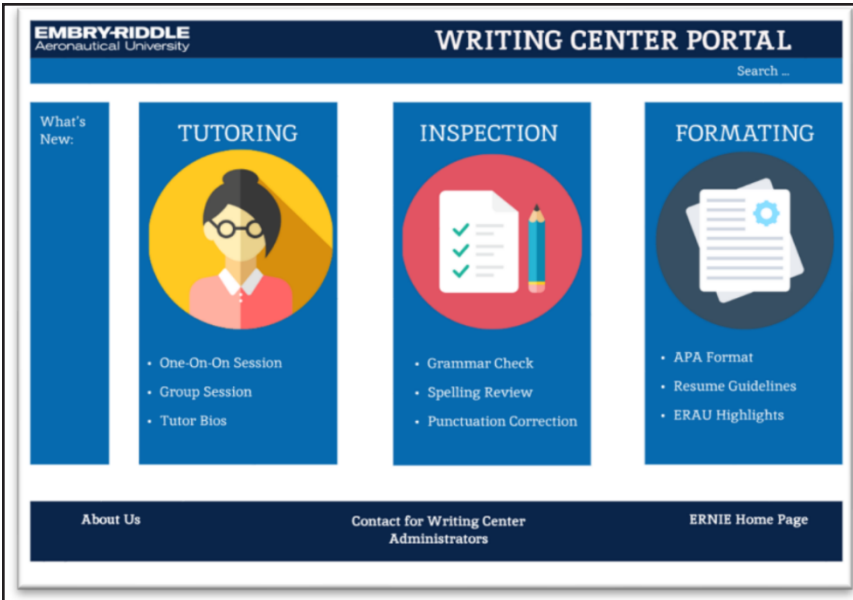


Figure 7: Interface Design Prototype 1

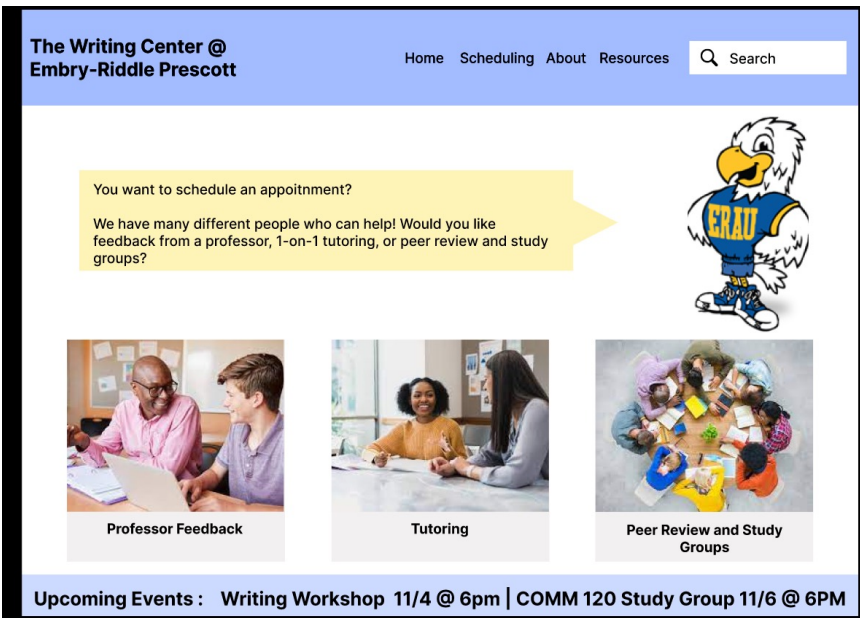


Figure 8: Interface Design Prototype 2

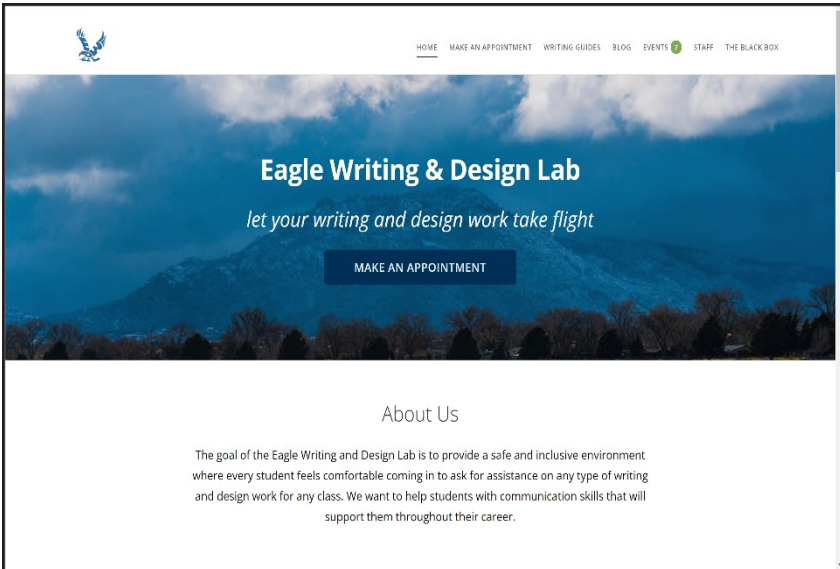


Figure 9: Current Interface Design

Unfortunately, we were not able to fully integrate all of the students' original designs into the actual website. This semester, the university transitioned to a new website platform for campus organizations, CampusGroups, with highly limited design capabilities (see Figure 9). While we carried over key elements and concepts of the students' designs (minimalist layouts and color scheme, embedded writing guides, a linked online scheduler, and tutor bios), some features were beyond the platform's capabilities at the present (for example, a chatbot or 24/7 tutorial support.)

Writing Guides: Technical Report Writing

Students enrolled in 3 sections of technical report writing developed a range of professional writing deliverables for both external writing lab patrons and internal writing lab personnel, including:

- Writing lab mission statement
- Information about the university writing lab and design studio
- Tutorial on how to use the writing center scheduling software
- Guidelines for following discipline-specific conventions (e.g., those of engineering, aviation, aerospace, psychology, business, etc.)
- Annotated samples of student writing
- Downloadable templates for discipline-specific assignments
- Invention strategies

- Proofreading and editing techniques/tips

Students met with key writing lab stakeholders and learned about best practices for documentation, accessibility, and usability. The classroom instruction for this unit followed a design thinking framework, from empathizing and analyzing the audience to conducting usability testing of their documents. In their feedback at the end of the semester, students reflected that composing for “real” users increased their motivation to learn these principles. Technical writing contributions from these students have since been edited to match a consistent style and posted to the writing lab website’s “resources” page, with attribution.

Marketing Materials: Business Communication

A total of 16 student teams in 3 sections of a business communication course researched and proposed potential marketing plans and marketing materials for the new writing lab, in response to a formal request for proposals and a detailed project assignment sheet. The project was designed to be an authentic writing and research experience in line with the learning outcomes of the course, and students were given various options for the types of research and materials they could produce and propose implementation for. Most student teams focused on producing one or more of the following:

- Logo designs
- Digital banner ad template designs
- Physical or digital flyer designs
- Poster designs
- Social media campaigns
- Promotional videos

Several teams focused on logo designs (see Figures 10 & 11) and flyers (see Figure 12). A few student teams proposed more unique materials, including t-shirts, stickers, plans for a grand opening event, tutor recruitment posters, and talking points for campus mentors and tour guides.

Informed by students’ research and design proposals, we selected the official name of the lab—“Eagle Writing and Design Lab”—based on student research conducted as part of this project. The writing lab has also implemented the most striking logo design (see Figure 10), and we plan to host a modified grand opening event based on one team’s proposal.

All student teams generated creative and, for the most part, practical ideas that will inform how the new writing lab staff will promote its services, hours, and location in future semesters. While the proposed materials varied widely in quality and usability, this project allowed

students to engage with an authentic writing situation local to our campus and to contribute uniquely to the design of the new writing lab's visual identity.



Figure 10: Logo Prototype 1

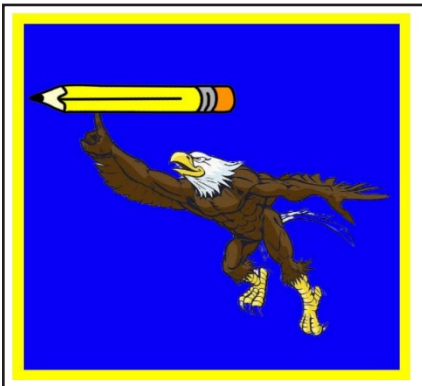


Figure 11: Logo Prototype 2



Figure 12: Marketing Flyer Prototype

Test: How might we ensure that the online writing lab is user-friendly?

During the summer of year 2, we worked with student researchers to analyze our usability testing data. We analyzed our post-test UEQ survey data, finding that the online writing lab scored highly in pragmatic metrics (for example, metrics about whether users need significant instruction to access the site features) and lower in hedonic metrics (for examples, metrics about the degree to which users see the website as innovative and creative). As a campus academic support service, we emphasized pragmatic metrics over hedonic metrics in our website design.

Our task-based usability testing revealed that some aspects of our online writing lab worked effectively for our users. Users responded positively to the site navigation, the discipline-specific writing guides authored by students, the clear information about upcoming events, and the tutor bios. As one user described, “This [website] makes it very simple to know where to go and who to see. I really like that. It gives a little bio about the person tutoring me as well, [which] helps me to get a sense of how they’re going to be when I go to actually see them. And that takes a lot of the guessing out of it. It makes it seem less daunting to go get help.” These design features are common across most university writing center websites, but our usability testing confirmed their importance for our audience and context.

More importantly, our usability testing helped us to see users’ pain

points. Most problems with our online writing lab interface arose in two areas: the organization of the writing guide page and the sign in process for the WOnline scheduler. The page hosting the student-authored discipline-specific writing guides used a table layout that wasn't intuitive for all users. One user explained, "I feel like I might have missed that though, the first time. Just because the titles at the top are in the same color, I think, as the rest of the table contents. I think possibly making those titles a different color would help them stand out a little bit." Students also experienced challenges logging into the scheduling platform. The multistep process of registering for an account initially dismayed some users. One common theme was described by a user as follows, "there are instructions over here. It's kind of a lot of instructions on, to be honest. It's a little daunting." We are currently revising the online writing lab's website to address these design problems by adding a search feature to the writing guide page and by implementing WOnline's single sign on feature to enable users to access the scheduler with their university credentials.

Our programmatic assessment underscores the recursive nature of design thinking. As we officially launch the writing and design lab, we will continue partnering with students and TPC classes to expand the lab's repository of discipline-specific writing guides and conduct additional usability tests for writing lab offerings. We are currently working with student researchers, the undergraduate research institute, our campus's chief diversity and inclusion officer, the women's & diversity center, and the office of institutional research to develop an assessment plan for the writing and design lab's first year. Our central aim is ensuring that we are serving all students effectively, especially underrepresented students. To that end, we will collect demographic data on users, co-sponsor research writing events with identity-based student groups (for example, the Society for Hispanic Professional Engineers and Women in Aviation) and develop metrics for equity outcomes.

Limitations

Our study has several limitations. Our university is a small, STEM-focused institution, constraining our ability to generalize about how our approach might apply at other types of institutions. While our participatory design approach has centered students and other stakeholders as co-designers, we could have gone further in ensuring our participant samples were more representative. For example, while we included staff when sending invitations to participate in interviews and surveys, many saw our work as only pertaining to faculty and did not participate. The demographics of our student participants gener-

ally matched the broader demographics of the university to within a few percentage points, with only a few exceptions. Native Hawaiian and Pacific Islander and Alaska Native students comprise .3% and .6% of our institution but were unfortunately completely unrepresented in our data.

Next, the learning outcomes design sprint branched out into topics we expected the design sprints on physical and online spaces to focus on. While it may be that students found discussing abstract learning outcomes more challenging or discussing practical affairs more interesting, students' relatively off-topic contributions from this session may stem from a failure on our part to frame that design sprint's focus clearly enough.

Finally, and perhaps most critically, we faced challenges contextualizing problematic responses from faculty about writing standards and students' (especially diverse and marginalized students') abilities in internal deliverables. For example, this research illuminated the ways in which many faculty on our campus hold deficit models of multilingualism. In our internal reports to key stakeholders responsible for funding, we tried to emphasize the need to support faculty teaching without reinforcing these deeply entrenched attitudes that aren't in line with the inclusive student-affirming values that writing scholars center and prioritize. As we launch the writing and design lab, we face the challenge of navigating and confronting these problematic views, while working to help shift the mindsets of some on our campus.

Conclusions & Suggestions for Future Research

In this article, we demonstrated how a participatory design approach could be used to increase the agency and involvement of research participants and contribute to a richer understanding of writing needs at a small STEM institution. Results from year 1 of this research informed our institutional proposals for funding and support. During year 2, we implemented experiential learning projects, working with students to create various deliverables for the online writing lab and related channels. As we reflect on and synthesize insights from the results we have analyzed thus far, our goal is to continue prioritizing user-driven recommendations and draw on users' lived experiences in our programmatic development processes. Our local campus values writing and communication across the many STEM and STEM-related disciplines and shares a commitment to helping students succeed in this area, but as our research also shows, students and faculty need more support in more effectively teaching and learning the complexities of both academic and professional communication across genres and disciplines.

Input from local faculty and students has confirmed this need.

Integrating a new writing lab into our campus landscape and promoting it to students will begin to address the need for more robust and flexible writing support on our campus. In year 3 of this project (2023-24), we will leverage everything we've learned to launch the Eagle Writing & Design Lab, invite all writers to access its resources as needed, and continue the assessments and re-evaluation needed to maintain such a campus service and its offerings in the most effective ways.

With this account of our ongoing student-centered participatory UX research, we hope to inspire other programs to incorporate this type of study as a key ingredient for program development. The user-experience research methodology we have outlined— baseline interviews, surveys, design sprints, and collaborative prototyping— are flexible and can likely be adapted for any other campus service, curricular program, or assessment program, whether aimed at students, faculty, staff, or a combination of all three. For our programmatic development process, a participatory design methodology has helped us establish a strong foundation for a robust, sustainable writing lab that will serve our campus effectively. The user-centered participatory design approach we have taken with this process and research has increased stakeholder buy-in (as evidenced by our writing lab obtaining funding from multiple sources on campus), and ideally will ensure a more effective and successful service that remains in tune with the contexts and needs of our specific location and community.

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Online Design Thinking and Community-Based Learning: Co-Designing an Indigenous Curriculum to Help Redress Language Marginalization

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Abstract. This case study discusses the implementation of an online design thinking project that uses a community-based learning approach to co-design a curriculum with members of an Indigenous organization in the community of Hueyapan, Morelos, Mexico to teach Nahuatl to children and adolescents. The study seeks to help redress the marginalization and decline of the Nahuatl language in this community. It also intends to expand TPC pedagogies by culturally localizing design thinking in an Indigenous context and using it as a framework for course design, which can help teach cultural awareness and user advocacy while broadening the relevance and connection between students from underrepresented backgrounds and TPC programs and pedagogies. The methods employed include testimonios, empathy maps, and a community-based learning approach to prototyping an Indigenous curriculum. The curriculum designed reflects an Indigenous axiology that places value on pedagogies that are experiential, community-based, intergenerational, and based on ethical praxes. Designing a curriculum to revitalize an Indigenous language entails much more than memorizing words. Revitalizing Indigenous languages involves reinvigorating customs and traditions that exist in these languages and that colonization and globalization have endangered. Ultimately, this project proposes a TPC pedagogy committed

to radical collaboration through design thinking and community-engaged learning.

Keywords: design thinking, community-based learning, Indigenous pedagogies, Indigenous methods, user experience, technical and professional communication

As a Latina scholar engaged in technical and professional communication (TPC) pedagogies, I often witness the impact of curricula confined to one perspective, despite our diverse societies. It is not uncommon for students from underrepresented groups in TPC programs to face additional challenges as they not only learn content but also navigate Anglo-centric contexts, and some also have to adapt to linguistic differences. It should not come as a surprise that little relevance is partly why students from racial and ethnic minority groups are overwhelmingly underrepresented in TPC programs (Dayley & Walton, 2018). Teaching from a monocultural perspective in our multicultural societies also fails to adequately prepare all students, including White students, for increasingly diverse workplaces and perpetuates a lack of readiness for such environments.

Lack of awareness about diverse cultures is one of the leading causes of racial and linguistic discrimination (Rivera, 2022; Rivera, 2024), and it affects us all. Take for instance the incident that occurred in October 2022 involving the Los Angeles City Council. A leaked conversation infused with racially offensive remarks between Los Angeles Councilmembers Nury Martinez, Gil Cedillo, Kevin de León, and Los Angeles County Federation of Labor President Ron Herrera sparked widespread public outrage. What began as a council meeting on redistricting maps shifted into a racist conversation about Blacks and Indigenous groups in LA with roots in the Mexican state of Oaxaca. Through jokes and laughs, Martinez and Cedillo uttered racial slurs that went unchallenged by the other individuals present in the meeting (Munoz, 2022). The incident exposed the often-hidden racism within Latinx groups, forcing local institutions to grapple with issues that are part of the daily life of Indigenous individuals throughout the Americas. It was evident that the council members involved in the incident, despite their own Mestize Latinx backgrounds,¹ and even though they led a

¹ In Colonial Mexico, Spaniards used the terms Mestiza (for female) and Mestizo (for male) to describe a person of mixed blood, Indigenous and Spaniard. Today, the term

city that is home to approximately 200,000 Zapotecs of Oaxacan heritage (Gomez, 2022), regarded Indigenous Mexican cultures as remote and unrelatable. Situations like this expose the harmful effects of having a limited understanding of diverse cultures.

This study illustrates how TPC instructors can combine community-based learning approaches with design thinking projects to incorporate curricular practices that create opportunities to teach and promote cultural awareness and user advocacy in TPC courses while amplifying the agency of marginalized communities. To this end, this IRB-approved case study discusses the implementation of an online design thinking project that uses a community-based learning approach with members of Aatzin Tlatlaltzin [Land and Water/ Tierra y Agua], a nonprofit Indigenous organization that sponsors an afterschool program at the community library of Hueyapan, Morelos, Mexico. This project seeks to help redress the marginalization and decline of the Nahua² language in this community by collaborating through online design thinking workshops to co-design a curriculum to teach Nahua to children and adolescents in Hueyapan. I examine how design thinking as an online maker space can be used in curriculum design to reclaim Indigenous languages, epistemologies, and axiologies that have been marginalized by practices that promote linguistic superiority and racist attitudes toward Indigenous groups. This study also intends to expand TPC pedagogies by culturally localizing design thinking in an Indigenous context and using it as a framework for course design, which can help teach cultural awareness and user advocacy while broadening the relevance and connection between students from underrepresented backgrounds and TPC programs and pedagogies. To be specific, this work intends to answer the following questions:

1. How can design thinking as an online maker space and community-engaged learning be used in curriculum design to reclaim Indigenous languages, epistemologies, and axiologies?
2. How can localizing design thinking in an Indigenous context help design cultural awareness and user advocacy in TPC

is used to describe mixed blood in general and/or to describe individuals raised in Western traditions. I use Mestize as a gender-inclusive neologism.

² Mexico has 11 linguistic families, 68 linguistic groups, and 364 linguistic variants. The Yuto-Nahua family is one of the 11 linguistic families. The Náhuatl group is of the 68 linguistic groups. This group has 30 variants that Indigenous Nahua groups self-denominate in different ways, such as Nauta, Tla'tol, Masehuatl Tajtol, Náhuatl, Mexcatl, Nahuat, and Mexicano, to name a few. I use Nahua, from the Yuto-Nahua linguistic family (INALI, 2008).

pedagogies?

Literature Review

This study examines how design thinking, a user experience (UX) research methodology, can help address the needs of an Indigenous community whose communication practices have been dramatically sidelined by Western systems. Therefore, drawing on the work of UX and TPC practitioners and educators who have worked on building a more inclusive field is essential. Although UX is still largely linked to examining digital spaces, UX intersections with TPC have featured studies that “move into new spaces, incorporating new methods and forging new connections” (Rose & Schreiber, 2021, p. 345). In the last decades, TPC has seen an increase in participatory research that is action-driven, community-based, and user-centered (Durá, 2015; Jones, 2016; Rose et al., 2017; Sun & Getto, 2017; Walton et al., 2019). Participatory methods have helped scholars directly engage in issues of inequality and have provided key concepts and structures to analyze data.

As a user-center and participatory methodology, UX has the potential to address structural inequalities as it becomes highly localized when working in community-based contexts (Rose et al., 2017). UX’s ability to adapt and intimately engage with local contexts enables it to address existing systemic imbalances. The global and the local can no longer be understood as binaries—as we see in this study, “the fluid structure of global/national/local must happen on the local level, such as through user advocacy work that ensures the inclusion of under-represented users” (Sun & Getto, 2017, p. 90). Moreover, highlighting the experiences of technical communicators as community advocates decenters hegemonic practices that do not always align with under-represented groups (Rivera, 2022), guiding us toward innovative human-centered designs to solve social problems (Tham, 2021). Lilian Xiao (2018) points out that the first step to designing more inclusive experiences is to understand “how and why people are excluded” by purposefully identifying “moments of exclusion” through pain points (n. p.). Combining UX with community-based participatory approaches has proven to be an effective tool to help solve the social problems of underrepresented groups.

Some of the most useful UX approaches have emerged from design thinking, a UX methodology often used to solve issues with products or services by generating innovative ways to prototype and test solutions from the perspective of users. Its comprehensive process—empathizing, defining issues, ideating, prototyping, and testing—also makes it a powerful tool for social advocacy (Lane, 2021; Rivera, 2024;

Tham, 2021). Social problems are complicated; they are also “political, culturally situated, and incomplete,” and design thinking helps untangle wicked problems for which there are no complete solutions (Tham, 2021, p. 59). In this project, design thinking is used as a framework for course design to solve a wicked problem, an innovative approach rarely used in TPC practices and pedagogies. Nonetheless, UX and design thinking are situated in Western praxes that may not align with Indigenous groups. Pedagogical praxes are no different, and promoting practices stemming from Indigenous epistemologies in contemporary curricula should be anchored on Indigenous perspectives (Aguilar Gil, 2020; Itchuaqiyaq, 2021; Smith, 2012; Tuck, 2011). Thus, the scholarship of Indigenous pedagogies is also central to this study.

Pedagogical practices in Indigenous contexts may look quite different than what we see in Western academia. Claudia Zapata Silva and Anita Rojas (2017) argue that for an Indigenous person, the intellect is not linked to writing as is the case of Western cultures—nor to digital technology abilities, I might add. They assert that an Indigenous intellectual is a person who acts as a cultural ambassador and as a political leader and not necessarily one who is formed in Western educational systems. Because the “culture of discrimination is deeply rooted in society, and thus also reproduced by Indigenous educators and students,” curricula must contextualize knowledge through more reflective and critical processes (Jiménez & Mendoza, 2016, p. 65). Indigenous pedagogies call for programs “from the bottom” that are locally and regionally constructed (Jiménez & Mendoza, 2016, p. 67), and for a curricular rematriation based on Indigenous epistemologies, such as making generational knowledge and using home languages (Tuck, 2011). Indigenous anthropologist Jaime Martínez Luna asserts that an Indigenous pedagogy must foster a plurilingual education that respects the unique differences of Indigenous communities, teaches a multicultural lens that promotes Indigenous histories and cultures, encompasses a universal communal pedagogy and knowledge where everyone can curate knowledge and wisdom, and is based on ethical praxes (Matías, 2020). Indigenous pedagogies, as Antoine et al. assert (2018), require a close look at designing learning experiences that are personal and holistic, experiential, place-based driven, and intergenerational.

Overall, examining Indigenous pedagogical interactions through a design thinking lens can help deconstruct the characteristics of Indigenous pedagogical practices in an Indigenous context. It can also help identify areas of dissonance between mainstream UX research focusing on digital interfaces or heavy users of digital technology and design thinking conducted with Indigenous communities whose pri-

many mode of communication is neither written nor digital.

Contextual Background

Indigenous languages continue to have a marginal role in relation to the European languages imposed throughout the continent, causing devastating effects on Indigenous epistemologies and the overall way of living of Indigenous people. For example, in many Mexican regions where Indigenous communities concentrate, government-funded multilingual education has struggled to sustain long-term programmatic goals as it relies upon weak accountability processes and scarce resources (Jiménez & Mendoza, 2016). Therefore, Indigenous organizations allocate a considerable amount of their efforts to revitalizing Indigenous languages.

Site of Research

This study examines a UX community engagement project conducted with members of Aatzin Tlatlaltzin, a nonprofit Indigenous organization that sponsors an afterschool mentoring program at the community library of Hueyapan, Morelos, Mexico. Hueyapan is located in central Mexico, a region where Indigenous Nahua communities have a strong presence. In 2017, Hueyapan became an Indigenous municipality part of the Tetela del Volcán community (Consejo Municipal, 2021). Later that year, in December 2017, Hueyapan became its own municipality, independent from Tetela del Volcán, in order to receive government funds allocated for Indigenous municipalities directly from the Mexican government and not from Tetela. These radical political changes return to Hueyapan its sovereignty to be ruled by its own Indigenous customs and traditions, hence the importance of advocating for the revitalization of the Nahua language.

Although Hueyapan's population increased from 6,478 in 2010 to 7,855 in 2020, its Nahua-speaking population (3+ years) decreased from 43.53% in 2010 to 35.08% in 2020 (INEGI, 2010; INEGI, 2020). According to Aatzin Tlatlaltzin, the bigger problem for this community is that there is only a handful of Nahua speakers among children who can fluently carry on a conversation in Nahua, a critical fact that the statistics given by INEGI—a government-funded institution—does not reflect because their charts do not show the levels of language fluency among Nahua speakers. For this reason, Aatzin Tlatlaltzin wanted to create a language revitalization curriculum that can be embedded into their afterschool mentoring program.

Methodology

This study was conducted late in the summer of 2021 when the COVID pandemic was still a major concern in rural Mexico, and Hueyapan was closed to outsiders to protect its population. For this reason, the participants in this IRB-approved online case study (IRB# 2236) agreed to conduct the study via Zoom. My methodology consisted of four online design thinking sessions with the Indigenous educators who run the afterschool program in the Hueyapan community library.

Rather than recruiting participants for this project, the participants recruited me. I met one of the participants in 2019 at a different, larger, research project with Indigenous groups where I also used a design thinking process (Rivera, 2024). In 2020, I was contacted and asked to help the Hueyapan community library group. We began our study in the summer of 2021 after the IRB was approved and the Informed Consent forms were signed. In a way, my radical collaborations with Indigenous groups prompted my involvement in this project. Jason C. K. Tham (2021) describes radical collaborations as those that 1) expose participants to complex problems regardless of experience; 2) resist hierarchical structures; 3) welcome perspectives that span theoretical, personal, and professional boundaries; 4) suspend beliefs and judgments of people and ideas; 5) explore empathy together as a collaborative learning tool; and 6) invite and activate radical change (pp. 102-103). I may add that radical collaborations with Indigenous organizations also require a sustained commitment to Indigenous rights advocacy.

The methods employed included testimonios, empathy maps, and a community-based learning approach to prototyping the Indigenous curriculum. I coded the testimonios through testimonio maps, a data mapping tool I designed in a previous research project (Rivera, 2022). I also coded the students' information provided by the participants through empathy maps (Wible, 2020). I discuss each method in more detail in the following sections describing each phase of the design thinking process. All interactions during the project were conducted online through Zoom. Interactions were conducted in Spanish, and the data was later transcribed and translated into English. The participants and students' names were changed to maintain confidentiality. The three participants identified as females and varied in age, a significant factor that illustrates different generational experiences. Carmen was in her 60s, Olivia in her 50s, and Aurora in her mid-20s.

We met once a week for one month. During our first workshop, the participants shared their experiences through testimonios. This method yielded data that helped me not only to empathize with the

participants but also to define the issues involved in the research. During our second workshop, the participants completed empathy maps of three of their students. Understanding students' take on the topic helped our group see the issues through the students' lens. In our third workshop, we ideated and prototyped three lesson plans anchored on experiential and communal practices, which the participants tested independently. After the participants tested one of the lessons, we met one last time to discuss and reflect on the outcomes. The design thinking process we followed during our online sessions is as follows:

- Online Workshop #1: Empathizing with Indigenous educators and defining the issues
- Online Workshop #2: Empathizing with Indigenous students
- Online Workshop #3: Ideating and prototyping
- Online Workshop #4: Reflecting on testing

I delineate the details of the design thinking process in the following sections. I examine and discuss the outcomes at each stage rather than at the end to deconstruct the design thinking process and identify areas of dissonance that might emerge at each phase when localizing design thinking for and with this Indigenous group.

Empathizing with Indigenous Educators and Defining the Issues

In our first online session, I used testimonios to understand the lens of Indigenous educators and identify the issues they wanted to focus on. Testimonios are personal narratives rooted in Indigenous traditions that reconstruct a lived collective experience of injustice, urging civic engagement to produce social change (Rivera, 2022). Most researchers draw upon a few broad, open-ended questions to build dialogue, or *plática* (Rivera & Gonzales, 2021), which transitions from "I" to "we" to reconstruct the experience of a group. When combined with design thinking, testimonios can build empathy and define the issues with which users grapple. Additionally, for many individuals who belong to Indigenous and Latinx groups, testimonios may also involve the cathartic act of *desahogarse* or releasing stressful sentiments (Rivera, 2022), which can function as an emotional foundation for a more fluid and organic way of conducting research. Foregrounding emotions triggered by a person's experience, as Scott Wible (2020) points out, adds an important level of depth to the design thinking process, hence the value of testimonios as UX methods.

As each Indigenous educator took turns answering six open-ended questions (see Appendix A), the rest of the participants listened attentively. Sometimes participants asked follow-up questions to one another, and sometimes they prompted me to share my own experi-

ences as a bilingual educator, generating empathy through dialogue and pinpointing issues by sharing experiences. I coded the interview information as testimonios through testimonio maps (see Appendix B). Using testimonios as a UX method when working with Indigenous communities allows me to trace their individual and collective experiences (Rivera, 2022), which helps identify pain points that expose the issues (Stanford d.School, 2020). I also identified how the participants asserted their agency by mapping their civic engagement and the implications of these engagements. Based on the testimonio maps, I identified three pain points: discrimination, lack of resources, and apathy or lack of interest.

Pain Point #1: Linguistic Discrimination. Discrimination is the central factor influencing the marginalization of Indigenous languages. In Mexico, for example, new generations prefer to speak the dominant language, Spanish, to avoid discrimination in a society that stereotypes Indigenous individuals and their cultures (Diario Oficial, 2020). While all three participants stated that they learned to speak Nahua from their parents or grandparents, the two more senior participants had different educational experiences than the youngest. Whereas Aurora adapted to Mestize education without major problems, Carmen explained that when she was in grade school, she was punished for not speaking Spanish. “At school, the teacher pulled my ears for speaking Nahua with other kids. Because she [the teacher] was Mestiza, she didn’t understand, so she hit us and punished us by forcing us to carry bricks. It was a difficult experience as a young girl,” Carmen stated. Olivia did not talk about her own experiences with the Mestize education but explained that her dad experienced corporal punishment as Carmen did:

Teachers wanted their students to respond to the instructions given, but the children didn’t speak Spanish. These were hard times for the children of that generation. My dad said that teachers hit him when he didn’t understand what they said to him. He had a hard time understanding the difference between an “o” and a “u” and between “b” and “v.” Children of that generation could not handle the pressure of not speaking Spanish. [...] My dad always said to us, “I don’t want you to speak Nahua because I don’t want you to suffer the way I did.” However, we learned it through my grandparents. They always talked to us in Nahua. This is the main reason why younger generations don’t speak Nahua.

I was aware that Mexican American children in the US were physically punished for not speaking English, a common practice that faded with the Chicano Movement (G. Rivera, 2016). However, I was surprised to learn that Indigenous children also received corporal punishments from Mestizo teachers for not speaking Spanish. As a Mestiza educator, it was difficult to hear the extent of discrimination against Indigenous groups and its effects on Indigenous students. The participants were also taken aback when they learned that Mestizo children in the US also received physical punishments for not speaking English, pointing out that they were under the impression that life in the US was exemplary.

Pain Point #2: Lack of Resources. Lack of resources and support is another major issue in Hueyapan. Native Peoples in Mexico have not been given the proper opportunity to exercise their agency. Government policies that intend to “benefit” or “support” Indigenous communities lack the Indigenous vision to do so accurately without the participation of Native Peoples (Diario Oficial, 2020). Carmen feels that Hueyapan experiences a “total abandonment on behalf of the government institutions.” “We don’t have the infrastructure; we lack support not only in infrastructure but also financially,” Carmen stated. Olivia explained that in the specific case of the community library, it lacks the space to service students:

One of our greatest challenges is the space because the library is six meters by four meters. Two years ago, the General Director of Libraries visited us and said that this is the second smallest library in the country. It is located on the second floor, and the children don’t have a place to play. It is very small.

The community lacks the resources to provide basic needs such as breakfast at school and more formal library services. The participants wish they could offer proper cafeteria services to help the children and adolescents in their community. The library’s lack of resources reflects the needs of their community, as Olivia explained:

There is much marginalization. We pitch in to buy bread because some children don’t have a dad, only a mom, and the mom works. The mother can’t be with the kids to make them food, so they come without eating. These kids know that there is always someone here to care for them.

Aurora believes that the government's lack of support extends to educational spaces, which in her view should require students to learn Nahua in k-12 education. "The government doesn't consider Native Peoples and doesn't require Nahua at school," Aurora stated, "There is a need to create awareness among our constituents about Indigenous linguistic rights. That is a right we have as Native Peoples, and the part related to teaching Nahua at schools needs to be enacted upon."

Additionally, digital technologies pose a conundrum for rural Indigenous communities such as Hueyapan. On the one hand, there is a lack of infrastructure that support digital technologies beyond access to social media via cell phones (e.g., access to computers, reliable internet, and digital educational platforms), which causes an educational gap between rural and urban communities (Consejo Nacional, 2022). On the other hand, easy access to cell phones and social media has caused a dependency on constantly consuming information that distracts students and their parents from engaging in extracurricular activities. Oftentimes, parents in Hueyapan "prefer to spend more time with a cell phone than with their children," Carmen stated. Olivia explained that students relied on WhatsApp during the pandemic to turn in homework, but digital initiatives did not expand beyond the bare minimum. Another issue for this Indigenous group is that the platforms they use and the content they read are either in English or Spanish, as Olivia explained:

In cell phones and computers, applications have everything in English or Spanish but not in Nahua. For instance, there's the "F" of Facebook, but many don't know what it means. They don't know what Facebook or WhatsApp, or Messenger mean. For me, even podcast is new.

Unsurprisingly, and like US educators, the participants in this study shared conflicting attitudes toward technology. Carmen saw technology as a distraction, whereas Aurora saw it as an opportunity to innovate pedagogical strategies to engage students.

Pain Point #3: Apathy or Lack of Interest. Another major issue in Hueyapan, a consequence of the other two previously discussed, is the apathy or lack of interest in learning Nahua among the younger generations. Carmen explained that "the little ones don't speak Nahua anymore. The youth doesn't speak it, and no one is doing anything. Parents are getting lazy about communicating in Nahua, or the children prefer to communicate in Spanish." "I see how our society and even our people, dads and moms, are not interested," Olivia expressed. Carmen believes that this issue has become a social challenge that

stems from the lack of opportunities in the community:

Sometimes they [parents] come to me and say, “No, I don’t want my kid to speak Nahua. I want my kid to speak English. Why would I want my kid to speak Nahua? I want my kid to work in the US and speak English.” This is a cultural and social challenge.

The participants explained that Hueyapan offers Indigenous education in preschool. However, once students enter elementary school, they quickly forget about Nahua because from that point on, all education is in Spanish. The domino effect of this issue causes a shortage of Nahua teachers to support Nahua instruction in elementary and secondary schools in their town. It should be noted that this is not the case in all of Mexico. There are places throughout Mexico where bilingual and intercultural education, albeit imperfect and under-resourced, has been sustained through various programs from preschool to post-secondary schooling.

Empathizing with Indigenous Students

During the second online session, I asked the participants to create *personas*, fictional depictions of typical students, but it quickly became apparent that it was difficult for them to imagine a fictional student. As stated by Shawn Wilson (2008) and Asma-na-hi Antoine et al. (2018), Indigenous knowledge-making practices are relational, and thus the participants needed to connect this exercise to actual students. Therefore, I gave them the option to compose empathy maps of their students instead. After each participant completed the empathy maps independently, the group compared notes.

Aatzin Tlatlaltzin’s afterschool mentoring program services 20 children and adolescents between the ages of 8 and 17. Creating empathy maps of three students of different ages (8, 10, and 17) gave us a good understanding of their aggregated needs. First, there is a clear lack of educational infrastructure to accommodate the needs of Indigenous students. In the case of their Nahua language, for example, it is only taught in preschool today. The empathy maps revealed that the oldest student speaks more Nahua than the younger students. Even from one very close generation to another, the level of Nahua language spoken has drastically diminished. Based on the assessments and perceptions of the participants, the 17-year-old student speaks 50% Nahua, the 10-year-old speaks 20%, and the 8-year-old speaks 10%. The younger the students, the less Nahua they speak.

Although the results of three students are not enough to generalize the characteristics of the entire community, the report from Comisión Nacional para el Desarrollo de los Pueblos Indígenas [National Commission for the Development of Indigenous Peoples] (2018) confirms this fact. In 2000, 51.2% of Nahua children (all genders) between the ages of five and nine, spoke their Indigenous language. By 2010 only 45.9% of Nahua girls and 45.1% of Nahua boys between the ages of five and nine spoke their mother tongue. In comparison, the 2000 census reported that 92.1% of Nahua men and 91.5% of Nahua women >65 years spoke Nahua, and by 2010 the number of Nahua speakers among this Indigenous population increased to 93.2% of men and 92.5% of women. These numbers, however, also show a national decline in Nahua children who speak their mother tongue of more than 5% between 2000 and 2010. This decline has been evident in Hueyapan in the last 10 years. According to INEGI (2010; 2020), Nahua speakers >3 years in Hueyapan decreased from 43.53% to 35.08%. Again, as stated by the participants in this study, these statistics do not reflect the state of the disaggregated linguistic abilities of children and adolescents in their community nor their specific level of fluency, which according to Aatzin Tlatlaltzin, it is at an even more dire stage.

Another important revelation in this exercise, which needs to be expanded through more research, is how the Indigenous boys mentioned by the participants in this research feel responsible for the future of their families. When they become disenchanted with education and the lack of job opportunities, usually in adolescence, they begin a new goal, to learn English and leave town for a potentially better life in the US. The participants described their 8-year-old student as someone who dreams of attending school. He wants to be an agricultural engineer to continue working with the land like his dad, a farmer. By contrast, their 17-year-old student is already thinking about leaving town to look for better opportunities in the US to help his parents. For these students, learning Nahua to preserve their language eventually becomes less important than learning English for survival.

Ideating and Prototyping

Localizing an Indigenous curriculum entails more than shifting away from Eurocentric understandings of education. It also requires recognizing the distinctive characteristics of each Indigenous community. In Canada, for example, Antoine et al. (2018) describe Indigenous pedagogical approaches as personal and holistic, experiential, place-based, and intergenerational. In Mexico, Jorge Enrique Horbath (2018) describes Indigenous pedagogies as those that promote 1) family and

communal life; 2) oral tradition, Indigenous literature, and historical testimonios; 3) intercultural life; and 4) the study and transmission of Indigenous knowledge (p. 73). While we can trace similarities among these two Indigenous approaches, the historical and current contexts of Indigenous communities in Mexico (364 Indigenous variants and Indigenous communities with large numbers of monolingual speakers of Indigenous languages) shape Indigenous pedagogical approaches that place Indigenous languages and multiculturalism at the center.

Fittingly, much of the curriculum created by the members of Aatzin Tlatlaltzin during our third online session aligns with Indigenous approaches to education that support the following pedagogical attributes: a) experiential – allowing students to learn by doing through engaging lessons that foster relational interactions between the students and the subject of study; b) community-based learning – incorporating community knowledge that builds a relationship between students and the local ecosystem; c) intergenerational – integrating the expertise of Elders and leaders into the curriculum in order to transmit Indigenous traditions, knowledges, and languages to the younger generations; and d) based on ethical praxes – embracing pluricultural practices and promoting sustainable ecologies (see Figure 1).

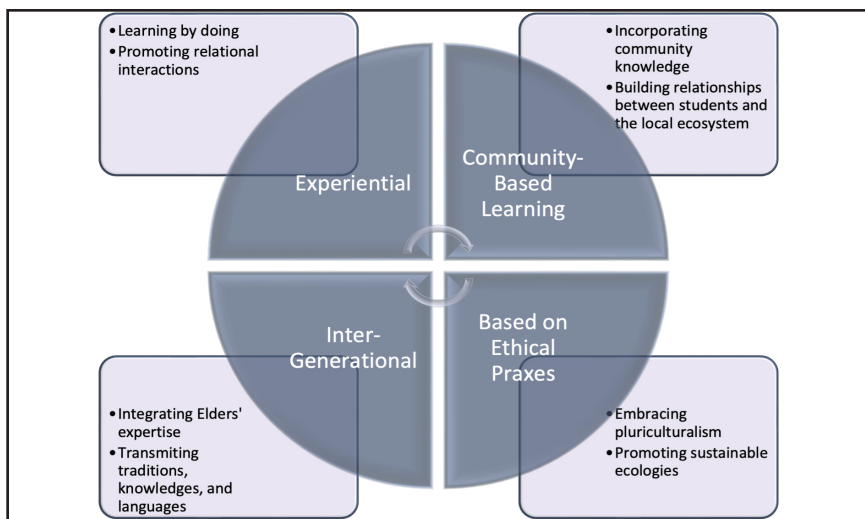


Figure 1. An Indigenous Approach to Education

Rather than mapping a curriculum that draws on outcomes, the participants prototyped a holistic curriculum largely driven by their local cultural traditions, albeit their focus on language. Thus, instead of mapping the curriculum designed by the participants as a set of matter-of-

fact linear lesson plans, I mapped it as a holistic model that traces the Indigenous pedagogical attributes mentioned above (see Table 1):

- In Lesson 1, students walk through the forest with their parents. Students learn the names of plants, birds, and insects in both Spanish and Nahua. They study the consistency of plants and make comparisons once they return to the library. This lesson allows students to classify collected plants and reflect on the importance of taking care of the environment.
- In lesson 2, students do something similar to the first lesson, but this time, they learn the practice of reforestation as taught by an Elder farmer in Nahua. Indigenous educators clarify concepts in Spanish. This lesson also prompts students to reflect on the environment in local and global contexts.
- In lesson 3, students visit a local Elder who shows them the local tradition of backstrap weaving in Nahua. Indigenous educators clarify concepts in Spanish. Students interact with sheep and participate in shaving the sheep's wool with the help of adults, all while learning new concepts in Nahua related to this ancient practice.

	Walking through the Forest	Learning Reforestation	Learning Backstrap Weaving
Experiential	Through a scheduled walk through the forest, students learn names of plants, birds, and insects in both Nahua and Spanish. They study the consistency of plants, collect fallen leaves, and make comparisons once they go back at the library.	Through a scheduled trip to the forest, students learn concepts related to reforestation while also learning the practice of reforestation in both Nahua and Spanish.	Through a trip to a local farm during the month of November, students learn concepts related to the local tradition of backstrap weaving in both Nahua and Spanish. Students learn the full process, from tending sheep to shaving the wool to backstrap weaving.
Community-Based	Students learn about medicinal plants that are used in the community.	Students learn about the reforestation process and its importance to the local community and to the global wellbeing.	Students learn about how backstrap weaving is an ancient tradition in the community of Hueyapan.

	Walking through the Forest	Learning Re-forestation	Learning Backstrap Weaving
Intergenerational	Teachers, parents, and Elders who accompany students take part in the teaching process.	Teachers make previous arrangements with the community's agricultural leaders to teach the lesson.	Teachers make previous arrangements with a community Elder to visit their farm and pass on to students the knowledge of backstrap weaving.
Based on Ethical Praxes	<ul style="list-style-type: none"> • All lessons include learning terms and concepts in both Spanish and Nahua. Because most Elders only speak Nahua, students are fully immersed in the experience, and teachers check for accuracy in Spanish. • Most students are learning English as a third language at school, and some contribute to their afterschool mentoring sessions by translating basic concepts into English to teach other students and to teach their own Nahua teachers who do not speak English. The participants also expect students to translate some concepts to English. • Rather than assessing knowledge, all lessons include a reflecting activity in Nahua that includes promoting environmental awareness. 		

Table 1. Holistic curriculum to teach Nahua to children and adolescents in the community of Hueyapan, Morelos, Mexico.

Understanding and teaching language not only as a cultural element but also as an epistemic referential is crucial. The Nahua language is the critical conduit to teach the local traditions to children and adolescents. Language “is what identifies our Indigenous communities. It is our essence,” Olivia noted. By adding experiential experiences that involve learning from Elders and reflecting on their significance to the local community as an important part of a global ecosystem, students learn to value local traditions not as trades or hobbies but as treasured practices passed down through generations which need to be sustained in the same way as their Nahua language.

This Indigenous curriculum stimulates learning as the act of receiving knowledge and as a practice that infixes agency. The participants hope that learning Nahua through an Indigenous axiology that values ancestral practices and traditions will give students tools to shield them against a Western axiology that places Indigenous languages as less than European languages, provoking discrimination against the Nahua language and a lack of interest to learn it. Globalization threatens Indigenous knowledges and traditions because it sees them as social and technological deficits (Hueyapan Consejo Municipal, 2022).

For example, the Indigenous practice of backstrap weaving is considered unnecessary, time-consuming, and outdated through Western axiology that places a higher value on new technologies (e.g., digital technology and machinery). As discussed earlier, technology is both a friend and a foe for rural Indigenous communities like Hueyapan that struggle to preserve their language and traditions.

Reflecting on Testing Outcomes

Because our interactions were online and the participants needed to test the lessons in person, I could not directly observe this step. Therefore, the participants tested the lesson “Walking through the Forest” with their students before our last online session. The last online workshop consisted of a step-by-step narration of the lesson the participants conducted with their students in person and a reflection on the project.

The group met at the library and took Hueyapan’s Municipal Council vehicle. They were dropped off where the road ended, and from there, the group walked toward the hill. “As we walked, we explained,” Olivia commented:

This is a plant called *tlatlanili*. This is an *ocotl*, an *ocote* [ocote pine].³ This is an *āhuēhuētl*, an ahuehuete [Montezuma cypress]. The *ahuatl* [oak/encino]. We gave them the names of each specie we saw. For example, there were birds, “Did you hear the *tototzintzintle*? Did you find insects too?” Everything that exists in the forest has its name in Nahua. We explained as we walked, and when we got to the top of the hill, we explored the trees and acorns again because the flora is different there.

Students also explored the textures of the various leaves they found. The participants showed their students the different leaves. “We showed them a leaf of *āhuēhuētl*, a leaf of *ahuatl*, so that students could touch the texture,” Olivia explained, “They are different. The *ocotl* leaf is different from the *ahuatl*, and also different from the *āhuēhuētl* and from the *tomazquitl* [arbutus/madroño].”

At the end of the trip, the group walked back to the library, where students worked on reviewing the concepts learned. Students were asked to paste the leaves collected into their notebooks and label them with their Nahua names. Olivia explained that embedding environmental awareness into the lessons was also important:

³ The Nahua linguistic group has 30 variants. The terms in Nahua used by the participants in this study reflect the Nahua variant of Hueyapan.

We also contribute by caring for the environment because the Indigenous communities are linked to what provides sustenance and feeds us, like the soil and nature. Nature is hurting and polluted, so we participate in reforestation by planting trees yearly. This is how we contribute to the environment.

To create environmental awareness, the participants added a closing activity to the lesson, which consisted of writing and performing a reflective piece in Nahua. The texts produced by the students are calls to action that are directed to their parents as members of the community, as Olivia described:

In their reflection, a student mentioned the names of many animals in Nahua: “We the children of the community of Hueyapan invite you to take care of all the animals that live in the forest, the *tecolotl* [owl/búho], *tototzintzintle* [little birds/pajaritos], *mazatl* [deer/venado], *ayotochtli* [armadillo/armadillo], *coyotl* [coyote/coyote].” The reflection also talked about the insects in the forest. This student added a long list of animals, and at the end of the reflection the student said: “Help us so that the animals can live wherever they want to, under an *ocotl*, under an *ahuatl*, or next to a *tlatlanili*.” This student already knows these names by memory.

The participants explained that they could not test the other two lessons because the traditions each demonstrates depend on the year’s seasons. The yearly reforestation process in Hueyapan occurred a few months before this study, so the participants had to wait until the following year to conduct this lesson with their students. In the case of the backstrap weaving lesson, the participants wanted to include the full process, which includes shaving the sheep. However, during the study, Hueyapan was in monsoon season, and the participants explained that it was not the ideal time to shave sheep. Sheep grow fungus on their skin when they do not have their wool to protect them during the rainy season.

Showing students how they clean the sheep’s wool is also important for the participants. In Hueyapan, they “hit the wool with a stick to clean it,” explained Olivia, “We don’t use a washer machine to clean it. We want our students to see the process. [...] We want them to touch the texture of the dirty wool and to touch it again after it is clean and when it is dry. The wool has different textures.” Part of the process includes using a local specie of thorn called *calones*, which is used for

carding wool. The idea is also to show students the different species of thorns in Nahua and their various textures, similar to how they taught the names and textures of the plants and how they want to teach the textures of the sheep's wool.

The participants emphasized the importance of teaching the Nahua language while immersing students in a learning experience that included thorough processes of community traditions. By teaching their students the significance of the natural environment in sustaining Indigenous communities, the participants also demonstrated a strong commitment to environmental awareness in the curriculum. Whereas language, tradition, technology, and natural environment are typically regarded as separate concepts that rarely intersect in Western contexts, they constantly interact and intertwine in this community.

Implications

Working with a design thinking process in combination with community-based learning in an online environment to design a curriculum by and for Indigenous audiences yielded important implications for the Indigenous organization behind the project and TPC practitioners and educators.

This project demonstrates how design thinking combined with community-engaged approaches localized on underrepresented groups has a strong potential for raising awareness about social issues and challenging oppressive structures (Lane, 2021; Rivera, 2024; Tham, 2021). Applying the user-centered and action-based principles of design thinking empowered the participants in this study to actively participate in pedagogy design to reclaim their language, demonstrating that carefully designing *for* and *with* underrepresented audiences fosters advocacy (Pope-Ruark et al., 2019). This case study delineates a deliberate process informed by the rhetorical practices of an Indigenous community not only to find effective ways to teach Nahua to young students but also to advocate for the sustainability of their community praxes.

Combining design thinking with community-engaged learning also encouraged the participants' students to recognize their agency in shaping their communities by creating a sense of ownership and responsibility toward addressing social issues, as seen in the students' reflective essays. Helping students acquire proficiency in their mother tongue benefits the entire community as they can fully engage with and pass on traditions and skills that hold a high collective value in their world. Notably, the participants' aim was never to deter students from continuing their education in Spanish. They understood the im-

portance of speaking Spanish fluently to navigate systems in Mexico. They even expressed pride in knowing that some of their students are also learning English. For the participants, however, learning Spanish or English should not occur at the expense of neglecting their native tongue.

Although many UX strategies can be used successfully when working with underrepresented groups, it is crucial to remember that UX and design thinking are anchored on Western practices with power imbalances that will not always align with the practices of non-Western cultures. Thus, fostering equity by localizing approaches is key. Localization can help place equity at the heart of UX, but it needs to go beyond adapting superficial linguistic and cultural differences (Rivera, 2024). We must also localize methods that engage the local context of users when needed. As Tham (2022) argues,

To aspire to a future (or futures) of design thinking that moves beyond functional purposes, technical communicators need to advocate for values and directions that support an equitable playing field for designers and users that are not predominantly occupied by Eurocentric (White) narratives that postulate certain assumptions about social needs and a disparate trajectory that advance social justice through equitable methods. (pp. 271-272)

In this study, it was critical to use testimonios as a design thinking method to empathize with and define the issues of Indigenous educators in Hueyapan. The participants' experiences emanating from the narrative and dialogue of testimonios help examine issues at a deeper level (Rivera, 2022). In the words of Liz Lane (2021), "[i]f we are truly designing communication, we must teach others to design from experience and stories, to encompass and accommodate the marginalized (p. 227). Accepting the messiness of design thinking (Lane, 2021), sitting comfortably with ambiguity (Rivera, 2024), and embracing flexibility when identifying areas of dissonance between traditional methods and participants from underrepresented groups are critical components of fostering equity in design thinking projects.

An area of dissonance when localizing this design thinking project in an Indigenous context was the creation of personas, which I intended to use to empathize with the participants' students. As explained previously, Indigenous epistemologies are relational, and thus the Indigenous educators who participated in this study preferred to work with the information of actual students as opposed to imaginary ones.

Therefore, I proposed to use empathy maps instead. Pivoting to empathy maps was relatively easy and worked well with the group.

Another area of dissonance that can arise from working with Indigenous groups, which can also affect other underrepresented groups, is the testing phase. Testing is the design thinking phase that is most concerned with efficiency. It is the part where designers evaluate the results of prototypes created during the process, and for many designers, it is what makes design thinking a successful project. However, testing ideas to solve complex social issues is not an easy task that can be completed in one, two, or even four sessions. For various reasons (e.g., the complexity of the issue, quick access to the testing site, etc.), it is difficult to test a prototype designed to help address social issues rooted in *institutional verticality*—the vertical social, cultural, racial, and linguistic hierarchies of Western institutions (Rivera, 2024). In this project, for instance, the participants could only test one lesson because the other two draw on community traditions that depend on seasonal patterns.

Additionally, what we consider a good evaluation tool from a Western perspective might not always align with Indigenous assessment views. For example, the participants in this study assessed the efficiency of the curriculum with observations and reflective essays that addressed not only language skills but also how students built a relationship with their local ecosystem and advocated for its sustainability. These findings and observations on testing put forward questions for future design thinking projects involving social justice advocacy and underrepresented groups: Is testing an inherent part of design thinking? Can testing be negotiated? What other concrete, realistic options, if any, can design thinking offer to test and evaluate projects to address complex social issues rooted in systemic inequities?

Just as the Indigenous curriculum designed in this study promotes experiential learning by doing, design thinking as a teaching methodology can also give TPC students opportunities to work with real-world social issues for which they can propose real solutions (Bay et al., 2018). TPC instructors—including myself—have used design thinking as a pedagogy approach in TPC courses as it provides a framework to teach coveted skills in technical professional spaces (Balzotti, 2022; Lane, 2021; Tham, 2021). Design thinking “is inherently user-centered and has become a central methodology in many engineering programs and technical workplaces” (Bay et al., 2018, p. 172). Moreover, localizing a design thinking project in the context of underrepresented groups can help TPC educators develop and teach critical cultural awareness, preparing future TPC practitioners for diverse working environments.

When TPC students are exposed to the social contexts of underrepresented groups, they learn to acknowledge the need to critique social problems and, most importantly, recognize the need to “participate in the process of advocating for change” (Tham, 2021, p. 90). A critical cultural awareness that reflects on positionality is needed in today’s professional environments. Workplaces are increasingly diverse and—despite the politicized gazes that restrict diversity, equity, and inclusion initiatives in some public institutions—professional spaces are becoming less tolerant of employees with low or no sense of cultural awareness, as seen in the anecdote I presented in the introduction, which caused the forced resignation of several of the political leaders involved in the racist conversation.

The case of the LA City Council is an extreme example of individuals with no sensitivity to diverse cultures. Nevertheless, it provides a clear illustration of the importance of embedding the points of view of diverse cultures in what we teach, even when all students in our classrooms are White. As Lane (2021) argues, “Investigations into oppression can help us better understand design for what and for whom” (p. 219). Using design thinking approaches focused on underrepresented groups can also help increase the engagement of students from these groups in TPC courses. Embedding non-White voices in curricula helped me and my BIPOC peers navigate academic spaces that sometimes felt foreign during our time as doctoral students.

Furthermore, although design thinking has been used as a methodology to teach TPC courses, this innovative approach has rarely been used for course design. This study provides a concrete example of how to use design thinking as a framework for course design and can guide programmatic approaches in TPC programs and other organizations to help solve complex programmatic problems. It can also help prepare graduate students to teach undergraduate courses (e.g., designing syllabi, sequencing a course, etc.).

Lastly, using design thinking as an online maker space is challenging. Working, teaching, and learning through online spaces present challenges and opportunities that were highlighted during the COVID pandemic. Collaborating with Aatzin Tlatlaltzin on an online design thinking project yielded important takeaways for working online that mirror what the rest of the world experienced, which need to be considered when conducting research with underrepresented groups.

Online spaces are as asymmetric as the real world. As seen through the participants’ comments, Aatzin Tlatlaltzin lacks the infrastructure to provide an adequate learning environment to students, such as reliable internet access. This scarcity manifested during our online sessions.

The participants had to walk to the only internet café in town once a week for one month to participate in this project. Carmen, Olivia, and Aurora connected to the online sessions from a cold internet café wearing masks whereas I connected from my living room. Despite this, they were committed to the project and were as excited as I was to learn from one another. We were all cognizant that this project would not have materialized if not for the opportunity that online as a maker space presented during the COVID pandemic.

It should be noted that the experience detailed in this project is unique to Aatzin Tlatlaltzin. I have worked with other Indigenous organizations in Mexico with robust online infrastructures that support their communities through a strong online presence. Yet, other Indigenous communities in Mexico are in more precarious conditions than Hueyapan. Researchers should always survey the online infrastructure of participants before committing to an online project.

Working in online spaces requires technological adaptability. Technical issues are inevitable because, as they say, technology is not perfect, and neither are we. Researchers are likely to run into unfamiliar situations as much as participants and thus need to be ready to troubleshoot and, if needed, pivot to different strategies during the sessions, much like when teaching online.

Conclusion

Clearly, the curriculum designed in this project is about something more than memorizing Nahua words. Doing, seeing, listening, writing, performing, and even touching to feel the textures of their environment are all part of participating in the traditions of an Indigenous community. Revitalizing Indigenous languages involves revitalizing customs and traditions that exist in these languages and that colonization and globalization have endangered. The decline in the use of the Nahua language in Hueyapan drastically affects the transmission of local ancestral knowledges that have a high impact on the community, such as the conservation of the environment and the nurturing of medicinal plants (Hueyapan Consejo Municipal, 2022). Embedding environmental reflections into the curriculum was crucial to create environmental awareness among their students and to build the collective activist consciousness of the younger generations.

Although my contributions throughout the design thinking workshops were made with the utmost respect, and even though I hoped the participants saw me as a collaborator rather than a detached researcher, my positionality as a US-based university professor who is also a Mestiza was clearly in their minds. This was evident through

their comments on their role as Indigenous educators without formal education. “Perhaps we don’t have a formal preparation, but we have rich Indigenous traditions, even if some say that we don’t know anything because we are Indigenous. People discriminate against us, but I think we have rich cultures and traditions,” Olivia stated. “We don’t have a degree. We are not qualified because we don’t have a document from the State. Maybe we don’t even have the methodological training to teach because we only do it in a natural manner. We contribute by sharing knowledge in the way we want to share it,” Carmen explained. The participants’ comments on the “natural manner” in which they teach their “rich cultures and traditions” reflect an Indigenous axiology that places value on pedagogies that are experiential, community-based, intergenerational, and based on ethical praxes. The creation of this Indigenous curriculum demonstrates how this Indigenous group applied their agency as educators teaching in the way they think is best for their community.

The results of this study highlight the importance of community-based learning, which is important for Indigenous groups and can impact other underrepresented groups. Understanding teaching as sharing knowledge and learning as gaining agency benefits an entire learning community. Some of my most well-regarded lessons, according to student surveys, include creating skillshare instructional videos to teach us skills valued by students and local communities, like how to write basic Chinese calligraphy, how to change the oil of a car, how to dance Folklorico, and how to use basic ASL; working on an online design thinking project at the highest point of the pandemic that asked students to help find solutions for professors struggling with technology; collaborating with local nonprofits to create awareness about COVID-related issues during the pandemic; and working with community-based organizations to learn about the underrepresented groups they serve and help them create awareness about the issues they care about. Ultimately, this work advocates for more inclusive UX research designed to help solve complex social problems of underrepresented groups and for TPC pedagogies less concerned with genres, as Tham (2021) proposes, and more engaged in radical collaboration through design thinking and community-engaged learning.

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Appendix A

Open-Ended Questions

[English]

1. How did you learn to speak Nahua?
2. What can you tell us about your experiences as a Nahua speaker?
3. What can you tell us about your work as a Nahua teacher?
4. What motivates you to teach Nahua to children and adolescents in your community?
5. What are the most significant obstacles in your role as a Nahua educator?
6. What would you like people to know about your Nahua language or about Indigenous languages in general?

[Spanish]

1. ¿Cómo aprendió usted a hablar Nahua?
2. ¿Qué nos podría decir acerca de sus experiencias como hablante de Nahua?
3. ¿Qué nos podría decir acerca de su trabajo como maestra de Nahua?
4. ¿Qué le motiva a enseñar Nahua a los adolescentes y niños de su comunidad?
5. ¿Cuáles son los más grandes retos que usted enfrenta en su papel de maestra de Nahua?
6. ¿Qué le gustaría que la gente supiera acerca de su lengua Nahua o de las lenguas indígenas en general?

Appendix B

Carmen's Testimonio Map

Name: Carmen	
Place of Origin: Hueyapan	Languages: Spanish & Nahua
Pain Points: <ul style="list-style-type: none"> • "At school, the teacher pulled my ears for speaking Nahua with other kids. Because she was Mestiza, she didn't understand, so she hit us and punished us by forcing us to carry bricks. It was a difficult experience as a young girl." • "We don't have a degree. We are not qualified because we don't have a document from the State. Maybe we don't even have the methodological training to teach because we only do it in a natural manner. We contribute by sharing knowledge in the way we want to share it." • "The little ones don't speak Nahua anymore, the youth doesn't speak it, and no one is doing anything. Parents are getting lazy about communicating in Nahua, or the children prefer to communicate in Spanish." • "We see our language diagnosis very fragile because, in our studies, we only found one girl of 16 years old who could speak fluent Nahua in our neighborhood." • "We need many tools and mechanisms to continue strengthening the language...for example, I'd like to comment as an anecdote that I brought my kitchen chairs to the library for the kids." • "We only have an Indigenous preschool with Nahua teachers, but when kids leave preschool and enter elementary school, Nahua erases from the memory of kids because they don't have classes in Nahua because Nahua teachers don't come back." • "[Our main challenge is the] total abandonment on behalf of the government institutions. We don't have the infrastructure; we lack support not only in infrastructure but also financially." • "Another challenge is also social, because of the apathy of parents, because they prefer to spend more time with a cell phone than with their children." • "Sometimes they come to me and say, 'No, I don't want my kid to speak Nahua. I want my kid to speak English. Why would I want my kid to speak Nahua if what I want is for my kid to work in the US and speak English.' This is a cultural and social challenge." 	Issues Identified: <ul style="list-style-type: none"> • Discrimination • Lack of adequate professionalization • Apathy • Lack of resources • Lack of consistent public education policies for Indigenous education • Lack of support for Nahua teachers • Lack of support from educational public institutions

Civic Engagement: <ul style="list-style-type: none">• “Now that we have these afterschool classes with these children who are learning the language, we propose to continue to follow up with their language acquisition not only in elementary school but also in secondary school.”• “A week ago, we organized a group, and now we have meetings among women. We’ve had two face-to-face and one virtual meeting to try to propel a new mandate that forces our state to implement Indigenous language classes as part of the curriculum. This is just a chat, but that’s how great things start.”• “I like teaching Nahua because when that kid is my age, they will be able to replicate it.”	Ideas Tested: <ul style="list-style-type: none">• Teaching Nahua classes after school• Organizing meetings to propose an initiative to require Nahua classes in k-12 schools
Outcomes: <ul style="list-style-type: none">• The afterschool program is a result of her civic engagement.• Her civic engagement also helped her community become an Indigenous municipality ruled by Indigenous customs and traditions.	Implications: <ul style="list-style-type: none">• Propel more interest among new generations• Propel government initiatives

Interventions, Ecologies, Reflections: Reframing Student Resistances with Design Thinking

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Abstract. We argue that design thinking is particularly productive in technical and professional communication (TPC) classes when students leverage—rather than succumb to—the risk and uncertainty of the design process. To address possible resistances and to further support TPC students in inhabiting productive uncertainty, we suggest emphasizing and reframing three aspects of design thinking. First, we argue that design thinking orients students to strong interventions rather than the right solution. Shifting terminology to intervention potentially promotes the value of unknowing during the ideation phase and moves students toward a prototype without needing to be correct. Second, we suggest that this reorientation to intervention connects with design thinking’s human-centered design and builds students’ rhetorical awareness as an ecological understanding of situations, texts, and audiences. Third, we point to the role of reflection in design thinking and emphasize it as both iterative and materially entangled, rather than as a final step. To orient students to making interventions and building awareness of rhetorical ecologies, we position reflection as ongoing and embedded throughout the process.

Keywords: design thinking, reflection, wicked problems, collaboration, rhetorical ecologies

In a technical and professional communication (TPC) course,¹ design thinking clicked for students when they realized they had no idea how to set up a Christmas tree in their homes. It was closing in on the winter break, and a team of students had decided to write a manual for setting up holiday decorations. Initially, they focused on interior designers, but soon realized this audience would be unlikely to need a user's manual. Through rhetorical awareness, a little reflection, and a lot of laughter, the team realized that, as college students, none of them knew how to decorate for themselves. They let go of an early solution—a manual for interior designers—and reframed their project, still finding value in addressing the social contexts and materials of the winter holidays, but realizing that their project was better suited to an audience of their peers. They focused on composing an instruction manual for college students about selecting, arranging, and decorating a tree for the first time. They researched and considered the range of contexts, traditions, decisions, and audiences, and created a timely intervention, a well-designed instruction manual, to a real problem that they had an investment in.

In our experiences as teachers, students often resist changing direction from an initial plan or idea with an assignment—their first idea becomes the final product. In contrast, how did this team of students willingly shift their audience and the goals of their instruction manual project? TPC programs have endeavored to bridge academic contexts, theories of production, and workplace efficiency, and TPC courses often include assignments and activities that guide students' thinking and making practices toward practical and user-friendly documents and products through a focus on User Experience (UX), experience architecture, or interactive design. As these students worked on their instruction manual, they were guided to engage in "design thinking," as a way of approaching problems "creatively" (Leverenze, 2014) in a process for creating solutions that is human-centered, collaborative, and responsive (Tham & Thominet 2022; Wible, 2020). Design thinking emphasizes ideation as an iterative process, prolonging the discomfort of unknowing and uncertainty as both necessary and productive. Inhabiting this discomfort allows practitioners to engage with a range of possible choices without settling for a "first" or an "easy" solution when stronger options may be available. In college writing classrooms, students often focus on assignment expectations and tend to want clear answers, prioritizing efficiency of task completion over the quality of an outcome. Design thinking has been implemented in writing

¹ Identifying information has been removed from the retrospective descriptions of students in class activities and discussions. Student materials have been referenced anonymously, with permission.

classes to shift students' approaches to projects by favoring the discomfort of creative-critical practices of problem definition and solution development (Wible, 2020). Engagement with design thinking's approach to wicked problems encourages students, particularly those in TPC courses, to dwell in productive uncertainty (Tham & Thominet, 2022; Leverenze, 2014; Garskie, 2022). Productive as it may be, an emphasis on uncertainty also introduces a risk of failure, a possibility that may generate student resistance. In comparison to UX and experience architecture, design thinking has been described as "first a mindset and methodology second" (Tham, 2021, p. 70). It is this design thinking "mindset" that we have found to be generative for students.

We argue that design thinking is particularly productive in TPC classes when students shift their mindset and leverage—rather than succumb to—the risk and uncertainty of the design process. To address possible resistances and to further support TPC students with inhabiting productive uncertainty, we suggest emphasizing and reframing three aspects of design thinking. First, we argue that design thinking orients students to strong *interventions* rather than the right *solution*. Aiming for solutions can, on the one hand, unproductively focus students on seeking a correct answer and, on the other, paralyze students from making the leap from ideation to production. Shifting terminology to *intervention* potentially relieves both forms of pressure created by *solution*—promoting the value of unknowing during the ideation phase and moving students toward a prototype without fear of failure (Greenwood, Lauren, Knott, & DeVoss, 2019; Wible, 2020). Second, we suggest that this reorientation to intervention connects with design thinking's human-centered design and builds students' rhetorical awareness as an ecological understanding of situations, texts, and audiences (Edbauer, 2005; Overmyer & Carlson, 2019). Through multiple rounds of prototyping and testing, students experience their writing as rhetorical through circulated uptake of their interventions while iteratively adapting to responses (Pellegrini, 2022). Third, we point to reflection, a component of design thinking (Hasso Plattner Institute of Design), and emphasize it as both iterative and materially entangled, rather than as a final step (Yancey, 2016). Although design thinking scholarship has moved toward acknowledging the activeness of reflection (Schön, 1983; Kumari, 2022; Tham & Thominet, 2022), there is a residual implementation of reflection as "post" and separate from the active process (Kulak, 2022; Lane, 2022; Wierszewski, 2022). To orient students to making interventions and navigating rhetorical ecologies, we position reflection as ongoing and embedded throughout the process. By emphasizing and reframing these components of design

thinking, TPC students find success with overcoming resistances to the uncertainty built into the design thinking process and experience the value of creating projects that meet the needs and challenges of users and situations.

Literature Review: Design Thinking, Wicked Problems, and Reframing

To situate our classroom observations about interventions, ecological-rhetorical awareness, and iterative reflection, we contextualize three key terms—design thinking, wicked problems, and reframing—within the broader scope of TPC scholarship. TPC has a history of embracing, theorizing, and implementing project-management and design practices into curriculum and pedagogy. TPC's uptake and development of UX has led to rich theorization of design practices and principles as user-driven, collaborative, agile, and responsive (Mara, 2021). Andrew Mara presents UX as a set of principles and methods offering designers, writers, and technical professionals a framework for “helping users perform tasks to accomplish goals” (2021, p. 2). Mara presents five core UX capacities—project oversight, written communication, drawing, verbal communication, and research—for students and professionals to collaboratively and successfully approach projects that center users and their experiences. UX is considered an action-oriented and user-centered recursive practice that utilizes these core capacities to make with and for users.

On the other hand, design thinking as a mindset (Tham, 2021, p. 70) provides a low barrier to entry for a variety of students to engage in TPC projects and courses. Although robust frameworks and practices, such as UX and Experience Architecture, are useful for professionals and advanced students, the value of design thinking comes, in part, from the approachability of the reflection and testing with others that design thinking encourages. Additionally, UX often orients practitioners, in this case students, to a recognized problem and development of a solution, with a focus on collaboration with users throughout the design and feedback processes. As such UX tends to be project-focused, with practices and processes guiding a team to work with users and move toward a measurable end goal or product. Design thinking opens space to reveal previously unidentified problems, also in collaboration with a team and users. Thus, design thinking, like UX, is problem-driven, but it offers a means to open more pathways to consider systems surrounding a site of tension and, thus, addressing a problem that wasn't originally indicated. As Tham (2021) explains, design think-

ing exists at the overlap of social innovation and social justice (p. 71), which situates it to address systems that affect users, communicators, projects, and contexts. A key feature of design thinking is that it “asks diverse teams of designers to create a broad set of potential solutions and then to test those solutions with real stakeholders” (Tham & Thominet, 2022, p. 3), which emphasizes design thinking as a lens for addressing complex problems, including problems encountered by writers.

Design thinking can serve as a bridge to help apply writing knowledge from the TPC classroom to professional contexts. This application occurs when students engage with wicked problems, ones that are ambiguous and conflicting, involve many stakeholders, have complex implications, and suggest no singular solution (Leverenze, 2014; Garskie, 2022). In her *Computers and Composition* article on design thinking and writing, Carrie Leverenze (2014) suggests designing wicked assignments for writing classes that “require us to think creatively about the problem as well as the solution” in a way that encourages ownership (p. 7). As Lauren Garskie (2022) notes in her chapter on wicked problems in *Keywords in Design Thinking*, the pedagogical uses of wicked problems are intended to spark innovation through the embrace of failure and experimentation with the unknown and the ambiguous. Building from Scott Wible (2020), TPC classes, in addition to general composition courses, can benefit from the creative-critical practices and the recursive processes of design-thinking for creative problem definition and solution development (p. 401). Jennifer Sano-Franchini (2017) suggests that a critical meshing of wicked problems and interactive design with a feminist rhetorical methodology encouraging complementary linkages between theory, problem, user, and student-designers that is attentive to “how meanings are contingent on access and power” (p. 89). The communication challenges that TPC students address often present as wicked problems, and design thinking provides a model for approaching such challenges.

Further, as Jason Tham and Luke Thominet (2022) describe, design thinking has origins in reframing and has foundational connections to reflection (p. 5). Reflection has been articulated as a mechanism for reframing problems (Schön, 1983; Taczak & Robertson, 2016). When a problem proves to be particularly complex, “reframing” provides a process for gaining a new perspective. Donald Schön (1983) describes this process as a “frame experiment,” a maneuver that allows a practitioner who is “stuck in a problematic situation which he cannot readily convert to a manageable problem [to] construct a new way of setting the problem—a new frame” (p. 63). Put another way, Ann Shivers-

McNair (2021), working with makers and making practices, describes a productive “disequilibrium” that resonates with the process of re-framing: “sometimes humans bring about disequilibrium on purpose (or at least don’t try terribly hard to avoid it) as a way of innovating in order to do the rhetorical work of solving local and global problems” (p. 66). Getting off balance or shifting a framework creates new space for invention. Design thinking makes use of this reframing mechanism to address wicked problems, and TPC students stand to benefit from practicing this process.

Taken together, design thinking’s potential in the classroom lies in its ability to prompt students to notice real and difficult problems and consider those problems from multiple, divergent angles. Encouraging students to consider “connections between *techne* and design thinking” frames their learning as communicators in context (Pflugfelder, 2017, p. 174). The process also encourages students to seek out partnerships with interested users, sometimes real and sometimes imagined, due to the constraints of a semester, to come up with good solutions to those problems. The Stanford d.school’s approach to design thinking is the most widely known model that has been packaged for students, and it moves through phases to empathize, define, ideate, prototype, and test (Hasso Plattner Institute of Design). This model encourages iteration between and through each step, shaping a multiplicity of divergent ideas throughout the process. Design thinking concretizes the recursive processes of invention and reflection, and for TPC students, this model facilitates connections between designing and writing.

Reframing Design Thinking

To reframe design thinking, we—the authors of this project—have reflected on our own teaching alongside our consideration of TPC scholarship. The first time Michael taught with design thinking, he prompted students in a writing and editing class to organize into teams for a sustained collaborative, client-based project. The first task for each team was to choose a name, and one group of students made an anagram out of their initials, calling themselves Team JAM. It was fun and silly, and the name had them laughing and collaborating. For their project, Team JAM imagined that they would be working for an advocacy group for jam enthusiasts. They developed the tagline “All things jam, no jellies.” In addition to fruit preserves, they considered Jam Bands, Jammers, the Jam, and other jam-related activities, like canning. But what struck Michael was how seriously they bought into the project and the potentially real users for the compositions that

they imagined. They kept pressing, iterating, framing, and reframing until they came up with solutions that seemed to fit a complex need. It started out as a bit silly, but the project generated an interesting conversation for what could be a real, if odd, professional context. Team JAM showed the students' buy in with the project—and revealed a circumvention of what we, as instructors, have typically seen as resistances from students to doing more open-ended projects and working in groups. Team JAM moved through these resistances in a process of reframing, facilitated by design thinking. Design thinking, especially the idea of wicked problems and the problem framing and reframing processes, has helped students work past the "What do you want?" types of questions about their assignments.

In what follows, we offer observations from TPC classes in business writing and in editing and publishing to showcase a pedagogical framework of design thinking that moves students toward interventions through the active use of reflection and rhetorical practices in client-based projects and collaborative proposals. Throughout each course, students were encouraged to adopt a design thinking mindset to increase their willingness to engage with uncertainty. Both courses are housed at a teaching-focused institution, are part of a professional writing concentration, and are also counted as upper-level writing classes for many marketing, communication, and business majors. The first class is a junior-level business writing course that focuses on business contexts and genres such as memos, proposals, and reports. The course is generally practice-oriented but also builds from a rhetorical foundation with a focus on genre. In Michael's business writing course design, students work from individual research and memo writing on campus-centered wicked problems to collaboratively proposing interventions for those problems. The second class, a senior-level editing and publishing course, immerses students in a range of editing and production practices that culminate in a client-based project. Jessi engages students in hands-on practices as well as their underlying philosophies for working as editors and publishers. Through recollections of these classes, we collectively explore a shift in terminology to intervention, describe students' grasp of an ecological-rhetorical awareness, and reconsider reflection as a means to push students' past resistances.

Design Thinking and Intervention

As Jason Tham (2021) outlines in *Design Thinking in Technical Communication*, suspension is a component of radical collaboration in the design thinking process (p. 102), but it may be seen by participants as holding less value than other aspects of collaborative work (p. 112).

The practice of “suspending closure” (Tham, 2021, p. 102) operates as the difference between, what we see as, seeking solutions and exploring interventions. Although Stuart Moulthrop’s theorization of intervention is specifically tied to cybertext, he provides a useful starting place for our use of the term. According to Moulthrop, an intervention is “intended to challenge underlying assumptions or reveal new ways of proceeding” (qtd. in Holmevik, 2012, p. 27). Thus, an intervention opens possibilities that may have been previously obscured, and making these new pathways available also opens the potential for uncertainty. As Andrea Small and Kelly Schmutte (2022) describe, the world is uncertain, but this uncertainty can be understood as ambiguity that fuels creativity (p. 11). They quote Daniel Kelley, co-founder of the Stanford d.school, who explains, “It’s necessary to go to a place where you have this feeling that you don’t know—the problem isn’t defined well, you don’t exactly know what direction you’re going to go” but this uncertainty is essential “to go to a place that’s new to the world” (qtd. in Small & Schmutte, 2022, p. 12). Along with that uncertainty is the possibility of failure, which Tham (2021) considers an important aspect of design thinking (p. 16). Relatedly, “disequilibrium includes intentionally or knowingly disrupting or destabilizing systems...as a teaching and learning strategy for making,” and makers “cultivate a relatively high tolerance for disequilibrium as a practice of rhetorical invention, in the forms of troubleshooting, failing fast” (Shivers-McNair, 2021, p. 67). Crucial to ensuring that failure is productive, especially for students who may be risk-averse, is constructing a sense of “play” in the process of finding problems and exploring interventions, or as Jan Rune Holmevik describes: “the bridge between play and reflection, ludology and literacy, in a new *inter/vention*” (2012, p. 27, emphasis original). Being able to play, to fail, and to engage with “disequilibrium can serve as a site not only for invention but also for intervention” (Shivers-McNair, 2021, p. 111). A shift in terminology from solution to intervention opens a gateway to uncertainty, ambiguity, and failure as beneficial to the creative work—the potential for play—of designing and writing, rather than a drawback to the process.

In the editing and publishing course, students began their client-based projects by moving through mapping, interviewing, discussions, sketching, and feedback in cycles. These initial stages focused students’ attention on identifying and defining a multiplicity of problems or “pain points” that their clients experienced (Hasso Plattner Institute of Design). Although much of the project mirrored a UX approach, beginning in the uncertain space of identifying a problem, which the client may not have fully recognized, it benefited from a design think-

ing mindset. Even after landing on a possible direction for the project, that choice was reconsidered after gathering additional information from the client. After conversing with multiple stakeholders, students found themselves shaping the intervention to address the most pressing needs, but not all needs, of the client. As these teams of students worked, Jessi noticed that “solution” was no longer adequately serving students in their conversations because they were recognizing that there was not a singular solution and that when their team landed on a solution, oftentimes, it was a gateway to another possibility. As this happened in the classroom, Jessi began talking with students about the pain points—or pressure points—that they saw with their clients’ needs and the kinds of changes they would want to see to alleviate that pressure or direct it in a new way. Throughout the semester, it became clear that *solution* was not adequately explaining the goal of the project. As one student described in a written reflection, “This project was very important in terms of my understanding of editing and publishing, what it means to work as a team, and how important it is to work towards a solution that most people assume isn’t there.” This student’s statement about “a solution that most people assume isn’t there” is ripe for a shift from solution-based thinking to intervention-based thinking. In other words, approaching a project in terms of “interventions” opens additional possibilities for the problems or tensions that might be identified as well as the approaches to addressing those problems. As the instructor, Jessi has begun reframing the language used during the design process from solution to intervention. Prior to the reframing of design thinking with interventions in TPC, students tended to still decide that their first chosen solution was best, even when considering a range of potential options, and focused their energies on justifying and arguing for the effectiveness of their solution whether it worked or not. The framing of assignment deliverables as interventions encourages an ongoing engagement with the ideation and problem reframing moments of design thinking in a way that is productive for TPC.

In the business writing course, design thinking’s focus on recursive ideation encourages students to suspend and return to their problems, re-articulating what makes them challenging and how they might reframe them for different users. In shifting from solutions to interventions, a collaborative team in Michael’s business writing class focused on availability of parking during in-demand times. Their initial solution was to build additional parking garages. By focusing on interventions, campus parking became a larger and more interesting problem that involved land use, costs of maintenance and security, utilization, and

availability. Rather than trying to implement a seemingly easy initial solution, which they determined was costly and not, ultimately, useful for students, the proposal became more nuanced and insightful. In the end, they researched and proposed options for a carpool incentive for parking, avoiding building costs and using available resources. The shift of terminology from solution to intervention also shifts students' focus from the products of technical communication to "play" with being technical communicators (Moeller & McAllister, 2002, p. 204). By framing their ideas as an intervention to a wicked problem, students stepped into the role of "technical communicator," and considered their writing as an important rhetorical act within a wider set of social, material, and economic contexts. Shifting design thinking's terminology from solutions to interventions allows for a conceptualization of TPC for students that is not focused on the end deliverable, but rather with ongoing relationships between writer, document, and user (Bay, Johnson-Sheehan, & Cook, 2018, p. 187).

Design Thinking with Ecological-Rhetorical Awareness

Wicked problems are ecological, a complex knot with many convergent and divergent entanglements that, while identifiable, lead to many different interventions, stakeholders, outcomes, and implications (Caillus, 2008, p. 101). By engaging with wicked problems through design thinking, students develop a stronger awareness of these ecologies. At the end of his book, Tham (2021) asks, "How can rhetorical thinking be integrated with design thinking and making?" (p. 127). We suggest that the ecological awareness inherent to design thinking can be used to push students toward greater rhetorical awareness that accounts for the connections and consequences distributed between people, contexts, institutions, and communication (Edbauer, 2005, p. 12-13). As Shivers-McNair (2021) describes, the "making" of writing depends on the notion that "Rhetoric is relational. *What* and *how* we know and do is inseparable from *where*, *when*, *in what bodies*, and *with whom* we know and do" (p. 23, emphasis original). What Shivers-McNair explains as relational, we consider ecological across the users, stakeholders, materials, contexts, and products that manifest rhetorically, through language and communication (Fleckenstein, 2018, p. 152). In short, the ecological awareness that develops through design thinking and a focus on wicked problems primes students to understand and engage in work with these ecologies, developing a more robust rhetorical awareness along the way. Design thinking can further reinforce an ecological-rhetorical approach through ideation, empathetic interviewing, and testing (Overmyer & Carlson, 2019, p. 432).

The aim of teaching with design thinking is to “provide the opportunity for students to create real impact in problems they care about through the guiding framework of user-centered design supported by design thinking” (Tham, Howard, & Verhulsdonck, 2022). Design thinking encourages an openness to failure. The welcoming of failure allows students to creatively play with several interventions in complex ecological relationships, and failure becomes an adaptable lens and framework for approaching and supporting creativity in these contexts (Greenwood, Lauren, Knott, & DeVoss, 2019, p. 413). Mason Pellegrini (2022) suggests teaching design thinking as a means of challenging assumptions through gathering data and as a “recursive and context-dependent toolbox of strategies” (p. 329). Design thinking helps students position their work as creative, adaptable, and situated—in short, implicated in, influenced by, and responsible to rhetorical ecologies.

In the business writing class, students collaborated to identify and research a wicked problem on campus and propose an intervention to that problem. Students collected and analyzed discursive artifacts to ask questions about the nature and context of their problem to move towards a human-centric intervention (Pflugfelder, 2017, p. 177). As an example, one team approached a lack of gluten-free and reduced-gluten options on campus, especially with meal plans, as a wicked problem. They discovered that this problem was not unique to our campus and that it was interwoven with institutional goals, capital investments, vendor choice, procurement, and staffing. They sought to understand the perspectives of staff, administrators, a campus nutritionist, and vendor representatives. Throughout their research they ran into difficulty with setting meetings, trusting the motives of stakeholders, and struggling with minimal responses.

As the team reframed the problem, they found a disconnect in communication between student support services, dining vendors, administration, and students. By taking an empathetic perspective these TPC students noticed that the entanglements of staffing, construction, and costs all constrained dining options, and that these constraints were not well communicated to faculty and students, further feeding into the problem. Their proposed intervention included cultivating dialogic partnerships between students, the campus nutritionist, and food vendors; publishing up-to-date web and physical materials to promote transparency; advertising changes via social media; and encouraging campus awareness activities. Their intervention did include offering additional food options while cultivating ongoing conversations within dining spaces for new practices and emergent interventions to develop over time.

By engaging with their wicked problem as ecological-rhetorical, their proposed intervention was emergent, ongoing, and contextual. At the core, design thinking helped these students see that their perceptions of the problem were constructed by discourse, that multiple and divergent perspectives existed, and that their intervention would rhetorically shape the ecology and support ongoing change. Their proposal addressed a real lack on campus, and they used their business writing to compose a persuasive intervention.

Design Thinking with Iterative and Material Reflection

There has been rich uptake of *techne* as creative, epistemic, and reflective in TPC, positioning students and teachers as artisans in human-centric creative situations (Moeller & McAllister, 2002; Pflugfelder, 2017). Focusing on methodologies of design through *techne* invites students to “think expansively about themselves as technical communicators” (Moeller & McAllister, 2002, p. 188) suggesting ways in which playing with creativity and inquiry inform TPC genres and practices. Framing design thinking as *techne* “involves human-centric, divergent, outside-the-box approaches to design and refuses to choose specific methods simply because of external constraints” (Pflugfelder, 2017, p. 174). Building on Donald Schön’s work, Pflugfelder positions design thinking as *techne* which constructs knowledge through critical self-reflection situating creative thinking habits (2017, p. 171). Through *techne*, design thinking is positioned as a reflective practice that is a human-centered, creative, and divergent approach to problems.

Reflection is a deceptively slippery concept and practice. As teachers and writers, we tend to attach the word to discussions and assignments without much fanfare, but its integral role in writing and in the design thinking process—and thus its importance—suggest that it might benefit from a bit more attention. For UX, there is a sense that “documentation is really just a form of reflection and preparation for the next action” (Mara, 2021, p. 19), and with the d.school starter kit, reflection tends to be prompted at the end of an activity. Observing design thinking in our TPC classes, we hesitate to designate reflection as a practice that occurs at the *end* of a process or interaction. In writing studies, reflection has been defined as “a deliberate way of systematically recalling writing experiences to reframe the current writing situation” (Taczak, 2015, p. 78). When students finish an ideation activity, they reflect. When they complete prototyping, they reflect. Thus, reflection is woven into the design thinking process—but we argue that it is woven into and through each materially-driven practice, as well. Put another way, reflection occurs iteratively and materially as design-

ers work through design practices. In a study on metacognitive reflection and transfer with TPC students, Josephine Walwema and Dana Lynn Driscoll (2015) realize that “our metacognitive instruction simply wasn’t substantial enough, or sustained enough, to enact meaningful change” (p. 42). In short, truncated reflection has truncated results.

As students began their client-based projects in the editing and publishing class, students worked through the Stanford d.school design thinking starter kit (Hasso Plattner Institute of Design). They had already organized into teams, with each group working with a different client—one group focused on an organization that hosts an annual workshop for researchers and the other group worked with a digital archival space. Each student had completed a series of sketches for possible interventions to address the challenges of their team’s client, and they got together in their teams to discuss options. Up to that point, students had been humoring Jessi—going along with the design process, good-naturedly, but not yet fully buying into what the class was doing. As they discussed their sketches in their teams, Jessi witnessed a shift in tone. The class had been “reflecting” at the end of each small task, as prompted by the d.school’s workshop, but in this discussion, reflection began to weave into their sketching process, *and* it was integral to the conversation with their team. It wasn’t a matter of reflecting after the discussion had come to an end. The sketches and discussion, themselves, were an ongoing and iterative process of reflection, catalyzed by the materiality of putting pen to paper and the material embodiment of participants leaning into the conversation, pointing at sketches, trading papers, and gesturing toward possibilities.

The whole scenario reminded Jessi of Donald Schön’s (1983) example of an architecture teacher working with a student (pp. 79–104). The student brings a challenging design layout to the teacher, and the teacher engages in what Schön calls “reflection-in-action” as a process of engaging with thinking and doing—the teacher combines sketching, thinking, and explaining as a method of working through the challenge with the student (p. 102). This is what Jessi witnessed with these teams of students: a process of thinking, sketching and re-sketching, and conversing to slowly build toward a new way to reframe the problem and indicate a possible solution—a possible intervention. However, these students emphasized two aspects of reflection that Jessi hadn’t fully understood when reading Schön’s work or, for that matter, Kathleen Blake Yancey’s (1998) uptake of it for writing studies. These students showcased a materiality of reflection and a sense that this reflection was distributed across their collaboration.

As Louise Wetherbee Phelps (1998) notes, reflection is not individual, but rather an interweaving of people and perspectives (p. 152). These students' sketches evolved as they discussed possibilities. The students pointed to parts of their sketches, revised sections, and underscored key possibilities. As one student noted in a reflection, "The brainstorming activity that was given before we started the project helped me look deeper into the root of the problem and therefore work with my team to find a solution to the discovered issue." Those sketches also served as a material connection in their collaboration, making their reflective process collective—distributed across each other and the materials of the design process—rather than housed in any of them, individually. The process of "intervening in a material-rhetorical situation ourselves—or teaching our students to intervene in material-rhetorical situations—involves all of our body in the making, not just our mind and linguistic communications" (Shivers-McNair, 2021, p. 64). Reflection in design thinking becomes increasingly effective as bodies, materials, and ecologies infuse the process.

As Yancey (2016) explains, reflection is iterative (p. 311). As such, reflection functions particularly well alongside design thinking because "the iterative nature of the design thinking methodology transforms the collaborative workflow" (Tham, 2021, p. 70). Following the lead of students, future versions of the editing and publishing course position reflection as an explicit component of the rapid prototyping exercise in design thinking. Prototyping, which "prioritizes material solutions over conceptual/abstract ideas" and invites "students to build/make their ideas into tangible forms" (Tham, 2021, p. 97), provides an ideal site for iteratively engaging in a material reflection to further the project and the collaborative process. User-centered design and prioritizing user-experience is inherently reflective, in a collaborative sense, because creators must be open to perspectives beyond their own. Tham (2021) suggests that students "prototype radical solutions...with the intention to cultivate radical change" (p. 97). To build on "prototyping toward solutions," the work from students in the editing and publishing class suggests a value in also "reflecting toward interventions." Asking students to reach beyond their own experiences ultimately pushes them to consider unknowns, and the ambiguity of reflection (Yancey, 2016, p. 309) feeds into the creative potential of uncertainty and ambiguity of the design process (Small & Schmutte, 2022, p. 11), leading to new interventions.

Conclusion

Michael brought an early iteration of this project to a writing group

with Jessi and a few other writers. Michael had circulated a proposal, research notes, and a messy outline prior to the meeting with the caveat that the materials were “thinking on the page” and “tracing out ideas,” and he was looking for generative feedback. In the process of talking through these materials, Michael had identified two possible trajectories for considering design thinking in his classroom that he might pursue in his scholarship: the ability for design thinking to facilitate collaboration or design thinking as encouragement of student willingness to fail persistently on the way to better, rather than easier, solutions. Michael said he was leaning toward the first option because it was more straightforward. Easier. To which Jessi noted that this choice would work in direct opposition to the very observation Michael had made in his second possible trajectory. As such, a kernel of this project started during that conversation, from the willingness to step back, to possibly fail, and to follow the path of the less obvious, but potentially more fruitful, trajectory. As instructors, it makes sense to apply the advice we give our students as we pursue our own work. Thus, we’ve tried to follow the encouragement we give to students: to shift away from easy solutions toward productive interventions, ones that they (and we) like and care about, and not just settling on the first idea only to suffer to make it work.

Thus, this project makes the attempt at a stronger intervention for how design thinking can function in TPC classes and can offer different affordances than other approaches for students, such as UX and experience architecture. Our experiences resonate with Shivers-McNair (2021) when she says, “As a teacher of rhetoric and writing, my goal is to prepare students to intervene in rhetorical situations and wicked problems and to write in complex academic and professional situations” (p. 114). Through design thinking, we guide students as they consider a challenge or problem and determine a range of possible interventions to address the issue. They select an intervention—for now—based on an ecological-rhetorical awareness through the practice of a distributed and iterative collaborative reflection. This process is meant to build their capacities, tools, mindsets, and practices in the TPC classroom and for the professional contexts that they will enter.

We find that design thinking’s potential in the classroom hinges on its ability to work with students to notice real and difficult problems and consider those problems from multiple divergent angles. The process also encourages students to seek out partnerships with interested users, sometimes real but oftentimes imagined, to address wicked problems from unanticipated pathways. Design thinking helps students contend with the writing process, and the messiness of creat-

ing, by offering a set of practices that situates their writing within a complex web of interactions, considerations, and communities. As a student in the editing and publishing class explained in a final reflection:

This project helped me realize that finding the root of the problem and thinking of new, attainable solutions can help with your own creativity and other people's projects. It is also an important place to figure out what you stand for or what kind of change you want to see in the world. This project helped me realize that accessibility is important to me. Without people having the ability to reach a platform or information that could be crucial for their futures, there would be no change in the world.

This student hints at the value of intervention in their deep exploration of a problem and their articulation of "new" possibilities. Focusing students on intervention over solution, rhetoric as ecological, and reflection as entangled, softens their resistance to uncertainty and situates them to address wicked problems, engaging in design thinking as a mindset to break through the artificial boundaries of course expectations to open pathways for doing real work in and beyond the classroom.

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The Wicked Problems of Lean Technical Communication: A Case for Design Thinking in Curriculum and Programming

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Abstract. In this article, the author demonstrates how bringing together the critical frameworks of design thinking and lean technical communication can help meet diverse stakeholder values and promote technical communication curriculum within an institutional context. Specifically, outlined within is one faculty member's attempt to create a socially just technical communication curriculum that exists entirely within an asynchronous and accelerated online format. This article leans on how the empathetic capacities of design thinking and the value of sustainability inherent in lean technical communication come together to forefront equity and inclusion in course design, for student populations who need to be able to access their education more flexibly. At the same time, it is important to recognize that curriculum must be attuned to the needs of faculty as well, and that educators (particularly contingent labor) are not asked to complete unfair or disproportionately difficult pedagogical tasks. This framework points to methods for how administrators can use design thinking to outline various stakeholder needs and draw connections between institutional values and programmatic needs, to create an equitable and inclusive online curriculum that best serves students.

Keywords: design thinking, lean technical communication, online writing instruction

Introduction

Wicked problems are everywhere. Problems with no obvious solutions, whose solutions beget ever more problems, and for which different stakeholders see radically different outcomes as win-states, are in a lot of ways endemic to modern (networked, always-on, constantly surveilled) life. Designers have long done the work of trying to tackle wicked problems (as they were first identified by Horst Rittel and Melvin Webber in 1973) to solve problems for businesses, governments, and communities. As the work of design and its attendant methodology design thinking has grown in popularity, it can also be seen taking a place in classrooms, where students learn about how to engage in the steps of design thinking as their first inroads to being critically competent designers themselves. But in designing those educational experiences where students work as technical communicators and designers, wicked problems lie in wait for the educator.

Simply put, as the landscape of higher education shifts, teachers and program administrators must shift with it, to meet the ever-evolving needs of student populations. One such population is the growing number of students seeking entirely online college degrees – according to data from the National Center for Education Statistics, around twenty percent of the undergraduate students at both public and private non-profit four-year institutions were seeking distance education in Fall of 2021, not to mention the popularity of private for-profit online colleges such as the University of Phoenix, which had just under seventy thousand students enrolled in 2021. Online education is a growing necessity for students who are unable to attend college in the traditional way, whether due to working full-time, health and disability issues, or prohibitive geographical proximity to a campus with the appropriate degree program. Online education is, in these ways, an important tool for universities to provide accessible and equitable education to a body of students who could not receive a college degree otherwise, and Technical and Professional Communication (TPC) programs are among the many degrees that are being asked by university administration to make the leap to online instruction.

Said leap, obviously, brings with it several wicked problems that it is the responsibility of TPC program administrators to mitigate. In trying to craft curriculum that engages students and leads to deep learning, admin must balance the disparate and sometimes contradictory needs of many different stakeholders: students who expect and require a flexible course they can fit into their schedules, faculty both tenure-stream and contingent who may not be trained in online

writing instruction, and university administration who care about programmatic success metrics like retention and graduation while wanting to keep operating costs as low as possible. How can TPC administrators balance these concerns while creating programs that lead to positive learning outcomes?

The solution, I believe, lies in the intersection of two frameworks that utilize thinking through issues with the goal of empathetic, realistic solutions. Design Thinking, if educators harness its empathetic capacities in a socially aware and responsive way, can help solve the wicked problems of TPC program administration. Specifically, I believe thinking about Lean Technical Communication (as put forward by Johnson et al. in 2018) helps us naturally engage with these empathetic ideals, and that online writing instruction (OWI) is a way to create the accessible and equitable programming required for modern university purposes.

This project is guided by the central research question, “How can we utilize the two lenses of Design Thinking and Lean Technical Communication to create accessible curriculum that meets student needs and provides deep learning, while working realistically within the programmatic constraints of budget and faculty/staff labor provided by university administration?” The rest of this piece contextualizes a specific site, the southern regional comprehensive university where the author works, and the work going on at that institution to create an online TPC curriculum that addresses student, programmatic, and administrative needs while fostering a positive learning environment and leading to successful retention and graduation rates. The next section situates the problem more clearly with the theory of design and technical communication and then introduces three exemplars that demonstrate how the combination of Design Thinking and Lean Technical Communication work on the wicked problems of OWI.

Situating Design and Wicked Problems in TPC and OWI

Design, broadly speaking, is well-known for having wicked problems, as outlined by Richard Buchanan in his 1992 article “Wicked Problems in Design Thinking.” Going back further in his bibliography, Buchanan also makes the argument in 1985’s “Declaration by Design” that design is a fundamentally rhetorical endeavor, and that designs ultimately produce and intervene in arguments about values, further solidifying the connections between technical communication’s composed artifacts and design thinking. Only a few years later in 1989, Charles Kostelnick would make a similar argument in *College Composition and Communication*, arguing that “as a medium for creativity and com-

munication, design is the natural counterpart to writing, one adapting visual, the other verbal, language to diverse contexts and audiences” (267). So, there seems a natural and perhaps long overdue series of connections to make between design thinking and technical communication, which scholars (more thoroughly outlined by Tham) are now beginning to attempt doing, along with the work of this special issue.

For this piece, I’m leaning on the description of the design thinking process described in Jason Tham’s book, which contains five steps: Empathize, Define, Ideate, Prototype, Test (2021). While all the steps are key to implementing the methodology, it is within the first step, Empathize, that I see the greatest potential for equitable directions in online TPC curriculum. Without an empathetic understanding of the needs and positionality of the end users of a course (thinking here broadly both about students and about faculty who may be asked to teach a master course), it is likely that the course will be designed in unequitable, inaccessible, and subsequently ineffective ways.

But end users are not the only stakeholders who online TPC curriculum designers need to consider – there are also groups who I have termed “facilitators,” both early and mid-stage, who must approve of the curriculum before it reaches its final audiences. These two facilitating groups are the university Instructional Designers (a mid-stage facilitator who helps build the curriculum to certain quality specifications) and University Administration (an early-stage facilitator who must approve the creation of new online programs). Being empathetic toward the needs of these stakeholders requires a vastly different set of sensibilities to producing equitable and empathetic products for end users, and being aware of the constraints that these facilitators can place on the implementation of final solutions may help lead designers into more sustainable and efficient ideation instead of becoming lost in unrealistic idealization.

It is exactly this lack of understanding of real-world constraints and an exclusive focus on the end user, as opposed to other relevant stakeholders, that leads some to criticize design thinking as unrealistic, caught up in corporatized buzzwords, and ultimately unhelpful. Rebecca Ackerman, writing for the *MIT Technology Review* (2023), and Sebastian Loewe in his 2019 article in *Dialectic* both assert that the flattened nature of the early steps in the design thinking process, empathizing and ideation, lead to designs that are ultimately unusable for the organizations that are supposed to implement them, whether because the solutions ignore factors of cost, labor, or any of another number of pragmatic limitations that were not considered during design because the designers neglected to factor in audiences beyond the end user.

As Ackerman puts it, “we are all creatives, design thinking promised, and we can solve any problem if we empathize hard enough” (2023). By assuming that the organizations who contract design firms have nothing of value to contribute to the design process (or they would have solved the problem themselves), design thinking can easily lead to solutions that will never make it off the wall of Post-Its that have become symbolic of modern design. While no framework is ever perfect on its own, the programmatic lens through which *Lean Technical Communication* proposes to view solving its problems can help fill in some of these gaps for design thinkers, who would otherwise perhaps design curriculum that the university would be unable or unwilling to implement.

Further, the tenets of design thinking as they tend to be implemented by corporate firms work not only to disenfranchise relevant stakeholders for the problem at hand, but also to reify and re-instantiate white western thinkers (as the heralds and “mystics” capable of design thinking) as being more capable and thus still at the apex of the global labor market, over the working populations in other parts of the world, particularly in Asia. Lilly Irani claims in her 2018 article that design thinking firmly keeps white western hegemony in power over global labor hierarchies by presenting an openly racialized theory of design judgment, wherein nonwhite labor is less capable of making higher-order design decisions. While the capacities of design thinking in education have a somewhat different context than their corporate counterparts, it is nonetheless important to point out that design thinking can be and has been leveraged in service of preserving white western hegemony, and thus that it is incumbent upon us to strive for equitable applications of design thinking in both our curriculum and in the ways we teach it to students.

Technical Communication is a field that many other disciplines rely on to teach their students certain writing skills, and thus place upon TPC certain expectations. These expectations are not always rhetorically or ethically sound – as Steven Katz aptly and chillingly points out in his article “The Ethic of Expediency: Classical Rhetoric, Technology, and the Holocaust,” the expectation that TPC privilege the concepts of rationality and efficiency can have devastating consequences for the humans impacted by that communication (1992). Thus, it is in a lot of ways incumbent upon TPC faculty to push back against these expectations, and to educate our students in a more humanistic tradition, as Carolyn Miller asserts (1979). But even as we acknowledge the inherent issues with largely white western hegemonic theories of TPC and expand outward into considering Indigenous practices (Agboka 2018)

and Black Feminist Thought (Moore 2018) among other approaches, the practices of our curriculum often still need to catch up to the theory we discuss with our students. TPC has always needed to more closely consider the equity impacts of its products, but in order to bear just fruit, we must plant just trees, so the design of our courses needs to practice the ethical design philosophies we preach.

Though this piece is already somewhat awash in frameworks and lenses, it is important that there is a way through which the examples in this piece can be examined for equity and access, to determine how socially just these solutions truly are. In their book *Technical Communication after the Social Justice Turn: Building Coalitions for Action*, Rebecca Walton, Kristen Moore, and Natasha Jones structure their thinking around the “three Ps”: Positionality, Privilege, and Power (2019). By considering the positionality (ie, how social and political contexts shape identity) and privilege (how much those identities are included or excluded by larger society) of both designers and stakeholders, it is possible to come to an intersectional understanding of the relative power dynamics of a given design scenario. By being cognizant of the imaginative limitations of privileged positionalities and knowing that it is important to listen and form coalitions with those of different positionalities, the work of design can begin to untangle itself from the racialized labor hierarchy that Irani points out and move in equitable and just directions.

Enter *Lean Technical Communication: Toward Sustainable Program Innovation*, a 2018 text by Meredith A. Johnson, W. Michele Simmons, and Patricia Sullivan. In this book, the authors lay out a framework by which TPC curriculum and programming can meet the needs of both end-user and facilitator stakeholders, through adhering to practices of equitable efficiency, low-cost solutions, asset-based inquiry, and sustainability. While this book is not explicitly laid out in terms of design thinking, I see within Lean TPC much of the same emphasis on empathy and ideation that typifies design thinking projects. By bringing the two into direct conversation, I hope to draw out more of the pragmatic possibilities of both, through thinking of wicked problems as both granular/user-centered and high-level/programmatic somewhat simultaneously. In the next section, I will discuss some of the objectives of Lean TPC in greater detail, to show how the design language of empathy can enhance a lean framework – specifically, the accelerated asynchronous TPC model I have been tasked with creating at my institution.

Now to the context of the site of study. I work at a southern regional comprehensive university, which recently became a minority-

serving institution, with just over half of the student body identifying as a racial/ethnic minority. The university population comprises in large part of previously underserved students from inner-city and rural populations. The most recent version of the Strategic Plan for the university outlines expansion across two curricular fronts: Experiential Learning and Online Degree Programs. The university requires for graduation that students take a course that has been officially endorsed as having Experiential Learning components, and the recently launched entirely online college (marketed specifically as being about career advancement) has seen unexpected and exponential growth in its first few years. The university is thus deeply motivated to further expand its online degree programs, and to make sure that more courses are endorsed for Experiential Learning. Technical Communication, having clear ties to professional advancement in many fields, is a natural selection for inclusion in the online college expansion.

For the next section, I will bring in two examples of online technical communication curriculum design that are in the early stages of creation and development at my institution, and I will demonstrate how using the paired frameworks of design thinking and lean technical communication brought me to my current place in the design process. While some of the things in the next section will be necessarily involved with the context of my specific institution and thus may not be entirely universalizable, examining these ideas through broader goals accepted among many TPC programs can lead to fruitful insight into how TPC can engage with OWI in equitable and accessible ways. These three examples of curriculum design—accelerated course master shells, experiential learning opportunities, and collaborative assignments—were all thought to be incredibly important to build into an online TPC program so as to achieve particular learning outcomes. The courses in the program are all being designed to focus on real-world audience awareness (both as a facet of empathetic design thinking and more broadly) and flexibility in genre, so that students can respond critically and effectively to problems without sterile well-defined parameters, such as those they will encounter in the workforce. Through these pedagogical tools, this curriculum seeks to create students as technical communicators who can think beyond the abstracted core goals of a writing task (i.e., “I need a document that contains this content”) and bring in human considerations, such as circulation of documents, readability, and propriety of form and language use.

Design Thinking and Lean Technical Communication as Working Lenses

Accelerated Master Shells

The concept of a master shell, or a single pre-planned curriculum that all teachers assigned to a particular online class must follow exactly, has been around for quite some time in OWI, and with it comes a fair amount of valid criticism. As Rochelle Rodrigo and Cristina D. Ramirez point in their article on curricular and professional development in *Technical Communication Quarterly*, many teachers view master shells as template or “canned” courses, and see their involvement in the learning process as only about “making announcements and grading work” since the course content has been pre-determined (317). However, as Rodrigo and Ramirez point out, master courses also allow for the university to norm learning outcomes in classes where a large number of teaching faculty are novice, contingent, or both (317). This also allows for the university to not waste the labor of the instructional design team by not reusing online course structures that staff helped implement. Ultimately, for all of the potentially valid philosophical disagreements with the concept, master shells are a reality in the online teaching landscape. For my particular institution, there is the added expectation that all online coursework be in an accelerated format—taking up only eight weeks of time instead of a full sixteen-week semester. This is seen as allowing working students to move through their degrees more quickly, but comes bearing issues of course pacing—how much content can reasonably be contained in eight weeks? How can we make an eight-week course commensurate with a sixteen-week course, with the knowledge that students do not have an excess of time to devote to the course?

Using the empathetic capacities of Design Thinking, TPC administration can think through how the format of an accelerated master shell serves the needs of students, who require a flexible education that they can complete on their own time, and who also likely value heavily regulated learning management system (LMS) shells so they don’t have to re-learn how to navigate every course they take, while respecting the valid concerns instructional faculty have with potentially losing agency over the curriculum they teach. Aside from entering into discussions with these two groups of stakeholders to learn what they value or do not value from an accelerated course, TPC administrators should forge relationships with the Instructional Design staff at their institution, so that they have a sense of what is feasible during curricu-

lum design. Having faculty take part in the design of master shells, and having faculty and instructional designers work together at all stages of the curriculum design process, can help with faculty buy-in and decrease anxiety over the existence of the master shells.

In terms of Lean Technical Communication a master shell meets three of Johnson et al.'s criteria: regulating cost, engaging in sustainability, and promoting efficiency (2018). Firstly, lean TPC must take advantage of "lean media" in order to keep costs down for all stakeholders (Johnson et al 23). While this seems on the surface to be a noble goal (Open Educational Resources eliminate pricy textbook purchases for students), and in many ways contributes to equity, the context of online teaching with master courses can present an insidious layer to considerations of costs. The harsh reality is that these courses, once built, are very inexpensive to teach, since they can be given to contingent faculty who do not have any training in TPC or OWI. This means that universities do not have to maintain a staff of trained experts with terminal degrees in the field and can cut costs substantially in terms of personnel. This obviously creates a series of conflicting values between administration, who appreciate the opportunity for low overhead cost, and faculty, who do not want to be taken advantage of (as contingent faculty so often are) as the market for tenure-track placements shrinks ever narrower. Thus, thinking about cost regulation cannot be a flat consideration, with all money saved as being equally positive, and TPC administrators must advocate for training for their teaching faculty even as administration sees avenues to further reduce instructional budget lines.

Johnson et al. view sustainability as a goal of lean TPC in that it should serve as an "impetus for innovation" (26). While sustainability is often rightly associated with material and environmental concerns, the sustainability of labor practices and institutional/programmatic solvency in terms of curriculum implementation is also important to consider. Existing on an entirely virtual platform and using OER means that there is relatively little material waste associated with the course, and that its environmental footprint is tied to the impact of the power grids from which both the university and the individual student access the LMS.

For all of their problems, master courses give TPC programs an inherent institutional memory that is less impacted by changes in faculty and provides stability in the face of resignations or high faculty turnover. Even changes in low-level administration such as program coordinators would not necessarily disrupt course offerings until a replacement is found. Empathetically, this maps to something of value to

administration but also instructors, since the decreased labor of master courses is what promotes this institutional sustainability.

Specific to my institution, the accelerated eight-week format dictates a need for efficiency in content delivery and precise assignment creation—things need to assess exactly what the asynchronous content has taught (since many students will never directly interact with their professor to get additional context or clarification), and assignments need to be reasonable for the scope of the course, while remaining rigorous enough to justify the course's designation as upper-division, for example. Creating assignments that fit easily within the scope of an eight-week writing-intensive course (such as most TPC offerings) can be difficult—assignments that in a traditional in-person classroom would constitute a midterm or major milestone assignment have to be condensed into a period of one or two weeks, maximum. This speaks to the broader concern for efficiency in lean TPC, where content and curriculum are both streamlined as a means of decreasing redundant labor and expense, which is of value to all stakeholders.

Here we can see that providing a heavily regulated and normalized experience for students upholds the value of efficiency for all of the groups on our empathy table. The normalized course shells ostensibly provide a uniform experience for students across the degree, which hopefully leads to greater success and retention, pleasing administration. The fact that there is little to no lesson-planning or curriculum design after the initial course build also promotes efficiency of labor for both faculty and instructional designers.

This is one of the places where—thinking empathetically about all of the stakeholders—the lean framework feels least comfortable—.The issues with accelerated coursework and master shells in upper-division writing-intensive courses are many, and in some ways bowing to the need for efficiency further complicates our efforts at equity—. Is a class truly more accessible and inclusive when the timeline and structure make success difficult due to rapid deadlines for major composition projects? This is the tenet I believe I will have to think about most carefully as I work through curriculum development further.

Experiential Learning Opportunities

Experiential learning—or learning in which students work with real-world problems and audiences that exist externally to the classroom—is a common tool in TPC classrooms, since it has been shown to help with student engagement, comprehension, and retention of learning (Kolb). However, building experiential learning into an online classroom, particularly an asynchronous one, has challenges largely based

on how students expect to engage with the course and what can be reasonably required of them in this format. Once again leveraging the empathetic capacities of design thinking, TPC administrators can design experiential learning opportunities that are sensitive to student needs while opening up the opportunity for rich learning.

The third tenet of Lean Technical Communication is that it needs to be “rooted in local needs and aims for social responsibility” (21). For Johnson et al., lean TPC needs to be designed through an understanding of “the unique needs of those served” and should “provid[e] affordable essentials” while not “oppressing vulnerable populations” such as staff, graduate students, and contingent faculty (21). The value of social responsibility and beyond that, social justice, must run through our curriculum at all levels, so as not to inadvertently reify institutional power imbalances and inequities. Experiential learning is thus a natural way to foster this tenet, since it gives students the power to effect socially just change in their communities through their work with community partners and become generally more literate civic citizens. But if administrators do not remain aware of the needs and limitations of students in an asynchronous online environment, they are likely to design an unsuccessful Experiential Learning opportunity.

The primary need of students in asynchronous online courses is flexibility to accommodate work schedules and family obligations. Students who opt for fully online degrees are often already working full-time and may have dependents who require care, which makes a traditional classroom with meeting times in the middle of the day unworkable. These students will likely be completing the majority of their coursework in the evenings or on weekends and so will also need flexibility in terms of when content is released to the course (although there are definite issues with letting students work too far ahead), deadlines (having something due on a weeknight often puts working students at a disadvantage), and when the instructor is available to talk (working students are often unable to meet even virtually during traditional workday office hours). The technological proficiency and learning readiness of nontraditional populations must also be considered. Students who have been out of the educational system for a decade or more may need some refreshing on writing skills more generally and may not be comfortable using technology such as an LMS. Even students who choose to complete an entirely online degree cannot be assumed to have a certain level of technological competency, since the choice of an online degree is often the only possible choice, not one selected due to pure preference.

What all of this means is that expecting students to work syn-

chronously with community partners may be unrealistic in an accelerated asynchronous classroom format. This tends to be a stumbling block in experiential learning even in traditional classrooms, since the schedules of community partners may be at odds with the classroom timeline. The community partners may also not be well-versed in how to train novices such as students, which may lead to some issues with feedback and communication, such as students seeing their work returned with harsh and unexpected criticism (Grobman).

To circumvent many of these issues, at my institution we are currently in the early design phases of a slightly different model of experiential learning. Since we cannot expect asynchronous students to meet with a predetermined community partner in a synchronous fashion, this model has students doing independent research into their communities, finding a nonprofit organization, and then practicing crafting documents such as white papers or public-facing advocacy genres for that organization within the scope of the classroom. Students then are given the choice to contact the organization they selected to share their ideas and potentially receive feedback on their documents from their intended audience. It is our hope that from this self-directed model, students will be able to work with their partners on their schedule and empathize with their own set of stakeholders, thus enacting design thinking themselves.

The final tenet of lean Technical Communication is that the program needs to enhance its visibility, to make its worth apparent to all relevant stakeholders (30). Experiential learning is thus incredibly valuable to a lean framework, since it attempts to provide value not just within the university (i.e., for students) but beyond the university and out into the community. This type of visibility will help the program at multiple levels—the positive relationship building within the community will be viewed favorably by university administration, and programmatic visibility in the community will help draw students into our classes.

Conclusions/Next Steps

As can be seen from the previous section, the institutional work shown here as an example is very much still in progress, with ideas that may very well prove difficult or even impossible to utilize as the program moves further into implementation and iteration of curriculum. What this piece is intended to do, then, is not to present design thinking or Lean Technical Communication as any form of panacea, or to elide the very real criticism of design thinking as limited in the scope of its

solutions. Rather, this is meant to present a particular way of thinking about these sorts of problems that is both similar to the ways technical communicators trained in design thinking naturally approach problems, while also mitigating some of design thinking's more idealistic tendencies with the pragmatism inherent in Lean Technical Communication. In working personally at the intersections of these two frameworks, I feel as though I have gotten to experience the advantages of both while their relative pitfalls have been lessened by the presence of both strategies at once—while it is still an imperfect system, the gaps of each can be (in some ways) filled by the other.

This is not to say that this piece has in any way solved the issues inherent in OWI for TPC. It has, in fact, not even begun to touch larger philosophical concerns about the overall quality of an online educational experience that leads some teacher-scholars into valid skepticism of the entire endeavor. But I still believe firmly in the mission of OWI, for the simple reason that I have to believe in these ideas because they have to work. As contradictory to design thinking as that might sound, if we write off OWI as somehow inherently lesser and decline to move programs online due to fear of lowering standards or achieving fewer outcomes, we are consigning a whole population to never receive any sort of college education. It is only if we begin our work from the premise that there is, somehow, a way to achieve OWI that is commensurate to traditional college education that we can do the work in a way that is not a disservice to the students who require distance learning. In the interest of access and in the service of equity, we have to continually try to address this wicked problem.

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Design Thinking as a Pedagogical Tool for Writing Centers

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Keywords: design thinking, writing centers, empathetic listening, ideation, critical observation, generative processes

Introduction

Design and writing habits externalize a sense of process and are predicated on social interaction—both central to the work of the writing center. As Stephen North suggests, the goal in teaching writing should be “the development of general patterns of thinking and writing” (1984, p. 435). These general patterns of thinking require “acts of discovery, the recursiveness of invention, the consciousness of experienced writers and designers of their own processes, and the essential role of audience analysis in a problem” (Kostelnick, 1989, p. 278). However, surprisingly, the connection between design thinking and the work of the writing center in higher education continues to be an under-researched and under-theorized area of study.

In its ideal form, a writing center offers a dedicated space to facilitate compositional production and generative interaction where students learn about the art of composing through their own work. Although writing centers operate with slightly different priorities contingent on their institutional context, Evelyn Ashton-Jones argues (1988) that “our major theorists do agree that writing centers exist primarily to further the cognitive growth of students through individualized, student-centered pedagogies” (p. 30). She goes on to further clarify her own imperative that “in training tutors, writing center directors must present the kinds of tutoring methods which

foster a spirit of critical inquiry, which do not cast tutors in ‘little teacher’ or ‘writing consultant’ roles” (p. 30). Peer consultants—called “consultants” throughout—can support student writers—called “clients” throughout—with an approach to the composing process shaped by a design thinking lens. In other words, consultants and clients can partner to develop a solution-based, iterative methodology to solving the challenges of composing effective communications—a spirit of critical inquiry and problem solving. Design thinking recognizes learning as a multi-staged journey—one that “focuses heavily on involving users of a solution in its design” (Boller & Fletcher, 2020, p. vi). As the pandemic and associated global traumas of recent years continue to reverberate through higher education, a design thinking framework at the center of writing center consultations can foster a human-centered approach to and contextualized, structured practice within the composing process.

This article begins by broadly answering the following questions: what are the characteristics of design thinking, and why is design thinking important? Some individuals attempt to define design by principles, while others define design by the standards of a design or the qualities of a designer. As writing studies as a whole turns its attention towards the elements of design, writing center consultants can more consciously incorporate design thinking processes and practices into their consultant training, especially when addressing professional and technical communication tasks in the writing center. Although writing centers can also be responsible for workshops and group-based experiences, this article focuses strictly on the one-to-one consultation service of the center.

Higher education curricula have already borrowed some of the key ideas, principles, and methods of design theory. My argument is to fully understand the potential for design thinking pedagogy in the writing center, we can turn to definitions of design thinking in allied fields to see it in context. Then, I will focus more specifically on the implementation of design thinking in writing center work and how this pedagogy can shape how consultants approach their work with clients in the writing center. Specifically, I will be using the Stanford University d.school updated design thinking framework, which includes empathize, define, ideate, prototype, and test.

Design, Design Thinking, and Their Associated Functions

Because the connections between design, design thinking, and writing studies has, to this point, been an under-researched and under-theorized area of study, I begin here with an admittedly cursory overview

on informative scholarship, results, and insights that would be valuable for a writing center administrator to consider.

Design is a rather loose term; however, there are clear connections between the intentions or uses for design—functional, practical applications—and design thinking. Our earliest scholar is Denman Ross (1904), a scholar of art history and design at Harvard University who is most known as an important figure in Boston's fine arts scene and as the design theorist who shifted theory from John Ruskin's romantic naturalism to the formalist aesthetic that characterizes modern art and architecture. He wrote that the:

Design of any work, the art of it, is seen, not in its motive or purpose, not in its usefulness, not in its truth, not in its righteousness, but in its execution, in what I have called the performance . . . what materials have been used, what terms, how the materials or terms have been combined and arranged . . . the plan or system of the work, the ways, means, and methods which have been followed in bringing it to completion . . . the correlation of the parts, the fitness of the parts to the whole, the organic and perfect unity of the whole, and lastly, the appropriateness of the whole to its motive or purpose. (261)

What we have here is an early definition and methodology for design. Ross' exploration and understanding of design shows he sees the design of an object not simply in the intention or functionality of the object, but in the process and formal aspects that led to the finished, whole work. Design, then, is much more than making physical or digital artifacts, adding visual alongside the textual, or making for its own sake, as is unfortunately still often misunderstood in writing studies. It is the combination of materials, organization, and methods that contribute to the unity of the work, which has come to influence important contemporary scholarship in writing studies such as work by Jody Shipka (2011) and Jason Palmeri (2012). Unfortunately, too, as Charles Kostelnick predicted, the affinities and positive possibilities for design in writing classrooms "more the legacy of a waning movement than the foundation for a sustained disciplinary shift" (275). However, this is why it is important to recover definitions of design and design thinking from designers themselves before we build our bridge towards design thinking in writing centers.

Richard Buchanan (1992) attempts to define and categorize four broad areas of design, in particular, to help the public understand the purposes for design in a fairly digestible manner. The first area

he discusses is symbolic and visual communications, where he claims design explores the complications associated with sharing information, ideas, or arguments through both words and images. The overlap in attention toward symbolic and visual communication in both design studies and writing studies may indicate the broadening means of communication in modern society—but I resist scholars in writing studies' desire to simplify this to digital technologies. The second area Buchanan unpacks is material objects; the design of material objects includes the problems of the visual appearance, assembly, and structure of day-to-day objects, as well as how humans interact with those material objects. This also shows up in the literature of writing studies as scholars become more interested in expanding notions around student products or artifacts, and what the design of a work indicates to its audience, such as emphasized by Geoffrey Sirc (2011) and later by Carrie Leverenz (2014). The third area Buchanan explores is activities and organized services, where he explains that design issues associated with activities and organized services have evolved into a concern with logical decision making, strategic planning, and organic flow of experiences. Perhaps this could be associated with the turn to social action by writing scholars, but that may be a stretch—it may more closely resemble discussions on balancing choice and improvisation in the classroom. Lastly, Buchanan examines complex systems or environments for living, working, playing, and learning in relation to design. This last area is the design most concerned with the totality and interconnectedness of a system or with the way humans exist within or adapt to certain environments (p. 6-7). I see this as connected to both Shipka's sense of wholeness as well as the New London Group's interest in preparing students for globalization and their evolving communities and workplaces. Although these are not necessarily linear bridges between the two discourses, it may help us to better frame our understand of design from this perspective in order to see its growth toward design thinking and, eventually, as a pedagogical approach in the writing center.

Clearly, the work of designers spans across specific disciplines or professions, showcasing how design frames all human experience. Buchanan writes of the four areas, "Properly understood and used, they are also places of invention shared by all designers, places where one discovers the dimensions of design thinking by a reconsideration of problems and solutions" (1992, p. 7). Each of the four areas above serve some sort of function or purpose with a different set of skills, loci, or specializations. Joe Scanlan (2007) complicates our understandings of design further by arguing that design serves a functional purpose with

a consumer audience. Taken together—Ross, Buchanan, and Scanlon—designers draw their inspiration from a particular problem or motive, they must consider the holistic nature of their design, and they must often consider the needs, values, and means of communication of their audience ahead of their own preferences.

Many scholars sidestep the dilemma of defining design by, instead, focusing on the qualities of a designer—this is where contemporary research on design thinking begins to take root. According to Buchanan's understanding, designers are observant, flexible, and willing to explore multiple avenues for development. They are skeptical, analytical, and methodological. Buchanan may call design a "liberal art" (2012, p. 11), even though it can be quite technical, to accommodate the intellectual (i.e., reasonable, discretionary) and abstract aspects of design thinking. Sharon Boller & and Laura Fletcher, authors of *Design Thinking and Development* (2020) argue, on the other hand, that "Design thinking does not have its origins in design" (p. 12), but the connections are implicit—the established qualities of a designer paved the way for modern understandings about design thinking. Further, in "What is Design Thinking and Why Is It Important," Rim Razzouk and Valerie Shute express:

At its core, design thinking refers to how designers see and how they consequently think. It is an iterative and interactive process where designers (a) see what is there in some representation of problem-solving concepts/ideas, (b) draw relations between ideas to solve a problem, and (c) view what has been drawn as informing further design efforts. (2012, p. 335)

Design thinking, as a methodology and a process described here, helps people to think like designers by identifying challenges and enacting subsequent problem-solving steps such as drawing connections and learning skills such as close observation and transferrable applications. Using design thinking as a method, an individual works towards a specific outcome or purpose, but the process often evolves over time and through a series of steps. The process for design thinking, then, depends on preparation, assimilation, and strategic control. Razzouk & Shute (2012) further elaborate that design thinking is an "analytic and creative process that engages a person in opportunities to experiment, create and prototype models, gather feedback, and redesign" (p. 330). This interpretive and innovative process implies there are a set of stages from pre-creation to post-creation.

More contemporary research in design thinking centers it as a

human-based process, which does move it further away from earlier notions about design and the qualities of a designer. Boller & Fletcher (2020), for example, describe design thinking as a “problem-solving methodology that focuses heavily on involving users of a solution in its design” (p. vi). With this perspective—based on their goal to redesign training and development—we shift from “audience analysis,” as highlighted in earlier definitions of design and its associated functions, to “insight gathering.” This is, particularly, where the recent turn towards the human-centered nature of design thinking arises—the designer focuses on people by clarifying the user’s wants and needs and gathering their perspectives rather than making assumptions about the learner fueled by limited facts. Jacqueline McLaughlin et al. (2022) provide a definition most closely reflecting contemporary needs and possibilities for design thinking in that it is “an iterative, human-centered approach to problem solving that synthesizes what is desirable, equitable, technologically feasible, and sustainable” (p. 1). Human-centered design, then, requires designers to practice empathy to understand people’s needs and wants, place stakeholder’s desires at the center of the problem-solving process, and ensure tenable dynamics between stakeholders across an ecosystem.

Design Thinking in Writing Studies

Design thinking is multifaceted and is used as a methodology across disciplines outside of art and design like writing studies, architecture, and the sciences. The compulsion towards design thinking stems from our existence as cognitive beings with the intention to change circumstances. My argument that design theory and design thinking apply to methods in writing is an idea that has been taken up previously by Charles Kostelnick, as mentioned earlier, who was an English department chair and a critic in the 1980s. In his article “Process Paradigms in Design and Composition: Affinities and Directions,” he argues that comparing the process approach in writing to the design process movement will expose the evolution and future direction of writing studies. In this article, Kostelnick (1989) investigates the two movements to uncover shared ground and productive pedagogies. He begins with the argument:

Process theories of design broadly encompass visual thinking, both applied and expressive, in a variety of disciplines . . . As a medium for creativity and communication, design is the natural counterpart to writing, one adapting visual, the other verbal, language to diverse contexts and audiences (1989, p.

267).

Strains in design and writing studies advocate for a diversity of methods in approaching tasks (such as visual and textual) showcasing the possible uniqueness of each creative act and highlighting the unpredictable nature of creation. Ultimately, aligning the visual and the verbal with the current need or rhetorical situation may invite writers and designers to re-envision and re-invent their work in a flexible manner. He mentions the “wicked problems” of design, a term he borrows from earlier scholars such as Richard Buchanan, Horst Rittel, and others. Rather than focusing on the possible problems posed by design, Kostelnick focuses on the affinities and possibilities for design in writing classrooms. More importantly, as inherently creative acts, he argues both design and writing are interdisciplinary and recursive processes that include, as Kostelnick outlines in his conclusion, “acts of discovery, the recursiveness of invention, the consciousness of experienced writers and designers of their own processes, and the essential role of audience analysis in problem” (1989, p. 278). He also notes that both composition and design externalize process (1989, p. 272), are predicated on social interaction (1989, p. 273), are rhetorical in approach (1989, p. 274), and collaborative (1989, p. 274). Kostelnick decisively suggests:

That the two process paradigms evolved in isolation from each other both further validates the universality of these principles and makes the parallels between the two movements all the more remarkable. (1989, p. 274)

This plethora of similarities, even by sheer coincidence, suggests a deeply interesting connection between the two disciplines. By grappling with the problem of literacy and invention, contemporary scholars now understand the opportunities of interdisciplinary work such as Kostelnick’s. However, despite Kostelnick’s work, design and design thinking remains a narrowly researched area of study for scholars of writing studies.

Some scholars in writing studies advocate for design thinking in higher education because it is an approach to problem solving that can help students see the connection between writing inside of school and outside of school. Mainly, though, their shortcoming is their focus on design’s connections to multimodal and multimedia writing exclusively—in a sense, a simple connection, though helpful for scholars in writing studies at the time. James Purdy, a scholar of writing studies

with a special interest in design, explores how and why writing studies scholars invoke design in their articles by conducting a grand and encompassing overview of writing studies literature utilizing the term design. In his abstract he claims:

I argue that design thinking not only offers a useful approach for tackling multimodal/multimedia composing tasks, but also situates the goal of composition studies as textual action and asks us to reconsider writing's home in the university (2014, p. 612).

Like Purdy, I can understand why writing studies ought to begin aligning with the art and design disciplines instead of remaining in its traditional home in English departments. Purdy references Sirc's (2002) text and highlights the problems with the professionalization of the field, the design of the classroom, and how that design impacts what happens in the classroom. Purdy goes on to define design thinking by characterizing it into several approaches: forward orientation (p. 620), use of synthesis and analysis (p. 626), and generation of many solutions (2014, p. 626)—all fair and accurate, though still most explicitly aligned to multimodal and multimedia composing.

Carrie Leverenz, as cited earlier, is a composition and rhetoric scholar interested in New Media & Digital Humanities. In her article (2014) "Design Thinking and the Wicked Problem of Teaching Writing," she describes how she critically read monumental documents issued by organizations such as the WPA and the NCTE, and then she proceeds to scrutinize their standards for student writing. She addresses the need for these organizations to broaden their focus beyond what she calls academic writing. She writes, "I believe we need to question our complicity with this predominantly conservative educational mission. What students need to learn about writing is not just how to work within existing conventions but how to make them anew" (2014, p. 2). Leverenz suggests scholars undertake future efforts to reimagine or redesign writing courses to incorporate design thinking. She sees four main approaches to the application of design thinking in writing classes:

1. teaching writing as a design process
2. creating wicked writing assignments
3. encouraging writing in teams, and
4. fostering experimentation through prototyping (2014, p. 1)

According to Leverenz, design thinking gives students the opportunity to be creative in their approach to assignments. Design thinking, “an inventive process engaged by designers” (Leverenz, 2014, p. 2), is applicable to the classroom because it moves theory into practice based on a practical approach to problem solving. She, like Jody Shipka (2011) and Jason Palmeri (2012), focuses on the importance of teaching remediation of genres and forms in writing classes. Leverenz argues that design thinking “eliminates the question of how to fit multimodal composing into writing classes since it focuses on designing solutions to problems rather than creating forms for their own sake” (2014, p. 3). This idea also fits nicely alongside scholars such as Tom Romano (2000) who argue that the organization and layout of a product (i.e. multi-genre projects) should come about organically from the rhetorical situation rather than from a pre-packaged genre. This remediation of communicative means gives students more opportunities for exploration and more of an understanding of what works and what might not. Leverenz continues:

All designers, including writers, must accept our limited control over the materials we work with and the contingent nature of the effects we wish to produce, even as we must continue to engage with those materials in an attempt to produce an effect (2014, p. 4).

According to these scholars, if we learn to teach writing as a design process, we can imagine writing as a problem-solving activity because communication is a complex problem. Students may better conceptualize the “problem” when they are offered the opportunity to explore multiple possible solutions that can be rejected; students can fail upwards, especially when they are asked to draw tentative conclusions from incomplete or contradictory evidence (2014, p. 6).

Although there have been conversations between writing studies scholars about the potential for design and design thinking in writing classrooms, there has been precious little written about design thinking’s potential for writing center practice. The bottom line is the teaching of collegiate writing in the classroom and the facilitating of the writing process in the writing center have different goals. Whereas the first-year writing classroom seeks to contextualize students’ rhetorical acts of inquiry, discovery, and communication within specific genres of writing or for specific purposes amongst groups of 15 or more students, the goal of the writing center is to help students across an institution to strengthen their writing process and/or skills, whether

it is creative, research-based, expository, technical, disciplinary, or otherwise in nature in one-on-one consultations.

Prospects for Design Thinking in the Writing Center

Typically, writing centers offer one-on-one sessions with either peer or professional consultants, group workshops, and special events for faculty, staff, and students to promote the development of thinking, writing, reading, and speaking across an institutional community. Design thinking can help writing center clients—usually students—and consultants collaborate to hypothesize, test, and evaluate the consequences of their choices. It requires analysis, synthesis, and evaluation; this method of thinking may teach clients and consultants, together, to understand and mediate problems and reiterate processes that lead to positive communicative outcomes. If, as Rebecca McLaughlan & Jason Lodge (2019) argue, “Tomorrow’s professionals will require an enhanced capacity for collaboration, cooperation and creative thinking” (p. 81), how can writing centers facilitate these qualities typically associated with design thinking?

In the last several years, the Stanford University d.school reconfigured their steps for design thinking to be: empathize, define, ideate, prototype, and test. Broadly, designers must connect with their clients’ needs, facilitate conversations to gain insight into clients’ challenges, observe the way clients interact with artifacts and/or their environment, offer recommendations, generate many ideas, sketch up versions of possible solutions, and test their ideas to receive feedback. McLaughlin et al. (2022) argue as design thinking is “adopted by a broader audience, there is an onus on educators to equip students across university disciplines with tools and mindsets” (p. 2). As a writing center administrator, I am taking up the call to further explore the pedagogical potential for writing centers. The steps of the design thinking process can provide a sustained, iterative developmental framework for consultants’ work with writers—and with writers’ approach to their own compositional process—in the writing center. When consultants begin with the goal and needs of their clients, and engage in short iteration cycles, design thinking supports collaborative solutions to the challenges often associated with communicative projects—especially technical and professional communications.

Empathize and Define

As a human-based discipline, the traditional starting point for designers is empathizing with the target users of their product. To gain insight into the perspective of these target users, designers may ob-

serve or interview them to better understand their wants and needs, the roadblocks in their daily experience, and their motivators. In this “perspective-gathering process,” designers develop a sense of how people “might use a potential product and what value the product can provide—from the user’s perspective” (Boller & Fletcher, 2022, p. 13).

Carl Rogers, a humanistic psychologist, described empathy at great length, but defined it concisely as a “complex, demanding, and strong—yet also subtle and gentle—way of being” (Rogers, 1980, p. 143). Although the concept of empathetic listening has been studied in a therapeutic context by scholars such as Rogers, it can be applied to the relationships developed and maintained in both a design and peer consulting setting. At its core, empathetic listening is about connecting to others. It occurs when we purposefully slow down the conversation and seek to understand others’ perspectives with the intention to understand and relate to them on a human level. With a different point of emphasis than active or reflective listening, which is similar but focuses more on mirroring back a person’s language, empathetic listening requires one to understand not only another person’s intellectual perspective, but their emotional experience—their needs, motivations, and perceptions. So, why is this important to the work of designers? Because design thinking is a human-centered process, and empathetic designers are enabled to uncover people’s needs.

Active listening and building rapport is common in writing center practice. Traditionally, writing center consultants are trained to develop rapport, “usually through introductions and simple conversations about the course or assignment” (Hawthorne, 1999, p. 5), and to validate clients using phrases such as “I hear you saying _____. Is that what you mean?” Consultants paraphrase clients’ language to “double-check understanding and show attentiveness” and ask open-ended questions to encourage critical thinking (Hawthorne, 1999, p. 4). However, through empathetic listening, peer writing consultants can create a space where developing writers feel safe expressing themselves and their challenges with the rhetorical situation, which in turn lays a foundation for open and honest communication about their writing at hand. Ultimately, when a client feels personally understood, a sincere relationship is established, and a client is given an opportunity to examine their situatedness, an enormous emotional burden is lifted, stress and defensiveness are reduced, and clarity increases, improving the overall effectiveness of the session.

When it comes to technical and professional writing in the writing center, open and honest communication is imperative. Professional communications have moved from more traditional genre theory ap-

proaches (i.e., replicating templates) to deeper considerations about the goals surrounding the need to write—often called the rhetorical situation. While professional writing still uses recognizable forms such as reports, white papers, and so forth, consultants can support clients with an approach these texts that fosters insight into the rhetorical situation rather than simply reproducing the formalistic aspects of the documents. For example, Irene Clark (1999) offers consultants questions to pose during consultations such as:

What purposes does the genre serve?
What are the features of this genre?
How do its particular generic features serve its purpose?
Whose interests does this genre serve?
How is this genre similar to and different from other text genres?
What creative variations on this genre are likely to enhance its effectiveness?
Which ones will be inappropriate and therefore ineffective? (p. 26)

Whereas the former (genre theory) may come with greater unfamiliarity to peer writing consultants, who tend to be generalists rather than content-area experts (Hammersley & Shepard, 2015; Hubbuch, 1988), the latter (rhetorical situations) comes more naturally, as peer consultants are invited to participate in the work of the writing center based on their exceptional command of language, their keen ability to strategize around the rhetorical situation, and their generous approach to delivering feedback. In any case, trust—an essential component for this kind of collaboration in the writing center and in working with clients as a designer—springs from the condition where consultants not only have built authentic rapport, but where they also put themselves in positions of vulnerability. Often—if not always—the problems designers are trying to solve are their own, and they are certainly not content-area experts in the subject matter of their clients. The same can be said of the work in a writing center. Peer consultants can learn strategies to listen carefully, empathetically, and without judgment while showcasing the limits of their own understanding, putting their clients in an empowered position as the content-area specialists or, at the very least, not the only ones looking for answers. As an example, in not being familiar with the typified structure, argument, and voice embodied in field-specific genres, consultants can model vulnerability through an acknowledgement of their gap and model fact-finding

behaviors so that both the consultant and client can think through and reflect on the purpose of incorporating the typified elements.

Critical observation skills allow people to notice minute details that allow them to maneuver through situations more tactfully. Critical observation skills are different from critical thinking skills, which involves analyzing facts and information to reach a decision or conclusion. Critical observation skills fit neatly alongside empathetic listening. In "Teaching Critical Observation as a Sociological Tool," David Stevens & and Michelle VanNatta (2002) define critical observation as the ability to identify connections between "individual actions and structural constraints" (p. 245). A critical observer, for example, can develop a behavioral description of an interaction barring assumptions of the qualities of those interactions or what the behaviors mean. In the writing center, consultants rely on the client to guide—and be guided by—the process. This process, by its very nature, prohibits both the consultant and the writer from relying on any predetermined models of "the" compositional process. As North elaborates:

The only composing process that matters in a writing center is 'a' composing process, and it 'belongs' to, is acted out by, only one given writer... What we want to do in a writing center is fit into-observe and participate in-this ordinarily solo ritual of writing. To do this, we need to do what any participant-observer must do: see what happens during this 'ritual,' try to make sense of it, observe some more, revise our model, and so on indefinitely. (1984, p. 439)

In this case, critical observation calls for the consultant's discerning of the exact actions and potentially relevant structural factors at hand for the client. I would argue that the developing writers we work with in the writing center require the sorts of empathy designers have toward their clients. In order to be effective, a writing center consultant can understand the writer's experiences and motivations to tailor the session to the client. Developing empathy for the client helps the consultant set aside her own assumptions about the work or client's processes in order to and gain insight into their needs at that moment.

Only after empathizing with the target user, designers can conduct preliminary research and gain clearer insight into the problem, investigate related work, and analyze data which helps them sharpen key questions in relation to clients' needs or challenges. In the writing center, the consultant and client must come together to analyze their observations and synthesize them to define the challenges at hand—

for example, the challenge being some concern about the composition, or a problem expressed by the prompt. Geoffrey Chase (1987) offers that in the writing center, "Definition is a crucial step because definition of the writing task, articulated or not, identifies the ways in which the remainder of the process can be carried out. It is the stage at which the primary goal of a particular task is established" (p. 32). Within this context, consultants support clients as they define their problems more concretely, narrow their focus more specifically, and articulate more concisely their analyses.

While the initial stages of this process are directed towards understanding and defining potential problems through consultations, observations, and engagements, consultants and clients alike will gain a deeper understanding of the issues at hand. Information gathering, teams organize, interpret, and make sense of the data to define a problem scope. Information gathering in this way—by empathizing and defining—requires analysis (i.e., breaking down complex concepts) and synthesis (i.e., creatively piecing information together to form whole ideas).

Ideate, Prototype, and Test

To ideate, designers will generate a large quantity of ideas or solutions, develop or sketch up a rough version of their idea into a tangible product, and finally test their idea through mockups, storyboards, or other means to receive feedback and continue to improve. Design thinking emphasizes this experimental work and ideate offers a capacious notion of invention that emphasizes knowing one's options before making the best choice. It highlights that one should not get locked into one response too early without considering the options; in this case, consultants and clients question rather than answer. Consultants and clients can interpret their research into a range of creative ideas and potential solutions, incorporating active-learning methods, visualization techniques of "systems-thinking," and other multimodal methods to document brainstorming.

Collaboration during the ideation process can include practices to enhance the solutions and temper expectations until, eventually, a narrower range of possible solutions is identified, and the work of designing begins. According to Chase (1987), ideation tends to be the point in the writing process students neglect because "Students may also not have been exposed to the whole idea of invention and may not be aware of the array of possibilities for generating ideas" (p. 32). Ideas are crucial to design thinking. Designers are deciding how and what to produce—iteratively. Key to this process in the writing center

is drafting, receiving feedback, and revising. Students, too, do not always welcome a more expansive notion of ideating in the writing center because they are often rewarded for finding the “right” answer—and quickly—rather than for generating alternatives or choices (Chase, 1987, p. 32). We think when we write,; new ideas occur, new connections emerge, and sharper ways of stating our points, supporting them, and attributing ideas to sources evolve as we work through an iterative writing process. Consultants, then, must facilitate a space where the recursiveness of the writing process is front and center, where idea generation proliferates.

As ideation moves into prototyping, the expectation is that the client will produce several scaled-down versions or features of the final solution. Doing so allows them to understand better the constraints and benefits inherent to the solutions they have designed for this rhetorical situation. The introduction of new tools and skills can occur during this stage, along with emphasizing collaborative efforts. Learning how to define and evaluate the merit and fruitfulness of a prototype is an essential skill for any communicator. When it comes to technical and professional communications, especially, clients may need support understanding how practical conditions affect evaluation (e.g., industry standards, code requirements) and how outside forces would affect the solution (e.g., broader economic, sociological, and cultural conditions). Collaborations with consultants further expand testing and assessment by offering that springboard or through prompting to return to earlier stages in the process. However, as Chase (1987) duly notes:

From a tutor’s perspective, the most important objective of this stage is to help students become their own evaluators. Tutors can do this by asking students to consider how well they met the goals they set out originally. Perhaps even more important, tutors can ask students to think about their composing processes and ask them which parts of it are “easier” than others and which facets of it need work (p. 34).

Testing, then, is a generative process for redesign as it unveils opportunities for improvement. When this evaluation and improvement is in the needs of the client, it empowers them to find alternate solutions and execute on choices they may not have considered. By trying to determine how and why specific solutions are rejected, improved, or accepted, clients can develop clarity of how real users would behave, think, and feel when interacting with the solution, too.

Conclusion

Design thinking is a nonlinear process. In practice, the process is carried out in a more flexible and non-linear fashion than one can transcribe in a short article. The design thinking process should not be seen as a concrete and inflexible approach to design; rather, the stages should serve as a guide to the activities carried out during a session, and the stages might be switched, conducted alongside one another, or repeated to gain the most informative insights. In either case, breaking it down in this way makes it more accessible and useful as a pedagogical tool in the writing center. Once consultants are familiar with the process, they can call attention to challenges more quickly, and they can intervene to ask the right questions at the right times. Furthermore, seeing writing as a problem-solving process helps consultants become more aware of the various tasks involved in writing and provides them with a technical lexicon to describe that process. Finally, it provides a bridge between theory and practice that allows peer consultants to be more effective because they are more knowledgeable and consequently better able to work with a variety of students with diverse problems.

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The Emergence of Jamboard as a Technical Communication Tool In a Covid-19 Zoom Classroom

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Abstract. This article will address pedagogical approaches to Jamboard usage, effective outcomes via zoom amongst student participation, and how effective this tool is beyond just the classroom.

Keywords: design thinking, Jamboard, Zoom, Technology, Pedagogical Approaches

Prior to the COVID-19 global pandemic, technical and professional communication (TPC) classes relied heavily on whiteboards, chalkboards and in-class peer reviews. Due to social distancing requirements, classrooms were pushed online with limitations for collaborative work, making it difficult for students in my courses. As effective collaboration in Zoom classes suffered, I turned to Google Jamboard as an educational tool for communication, as well as a way for students to share their points of view and different design ideas. Jamboard has numerous means for visualizing, all of which are user friendly. The opportunity to draw images as part of our online class meetings enabled us to use design to incorporate ideas from all students, even those that would have been typically silenced by an online setting. As one student posted their idea to

Jamboard, other students felt more encouraged to participate, the drawing or sketch acting as a springboard for collaborative discussion. Adding to the scholarship of eLearning tools, some of which also address the usefulness of Jamboard, this FOCUS article aims to show how Jamboard can be leveraged to create engaging online educational experiences grounded in experiential and social learning (Sweeney et al, 2021).

Scholarly Context and Aims

The quick switch to online learning during the COVID-19 pandemic created a work environment in which teachers had to quickly try new learning tools and methods for conducting classes. Yet, with accreditation and curricular constraints, many instructors needed to redesign their courses with the same main assignments as if they were still in the classroom on campus. Other researchers such as Sweeney, have already shown how Jamboard creates opportunities in the classroom for students to express their thoughts through collaborative technical communication design. But would such a tool work in a fully online setting to help bridge the digital divide?

That is a daunting question, and traditionally, instructors are reluctant to try unfamiliar tools in unfamiliar settings because of the possibility of failure. However, as Jason Tham notes, “[students] must be encouraged, supported, and even joined by their instructors in failed first efforts” (n.p., 2016, as cited in Tham, 2021). Even when instructors feel apprehensive about trying a new tool, they must be willing to fail in order to find success for their students. Previous experience and scholarship show that Jamboard is effective in a traditional classroom, and I hypothesized that it would be successful in a synchronous online class using Zoom.

The remainder of this paper will address how Jamboard can be an effective tool in online TPC courses. Although some may worry that Jamboard would be daunting or difficult to manage within Zoom, I found that the tool more than made up for any frustration because it encouraged so much participation. Although the use of the tool does not allow you to see your peers face-to-face, it did transform my online class, giving it a design-centered atmosphere. I will admit that issues like the lack of face-to-face camera access while using the Jamboard interface needs to be further addressed.

The objectives of this study are to present current research on how design thinking can help both teachers and students reach TPC objectives, as well as how TPC programs can benefit from the use of design-based pedagogy in the classroom, and to demonstrate the

efficacy of Jamboard in online TPC classrooms, especially with the on-going COVID-19 pandemic. Current research suggests that no device can truly replicate a face-to-face classroom experience, but Jamboard offers a new technological tool that can make sudden shifts from the traditional classroom to online distance education a little more humane and less stressful (Drauker, 2021).

Design Thinking's Pedagogical Impact

The design thinking mindset emphasizes user-centered design, and technical communicators use it as a tool for user-centered problem-solving both within academia and industry (Tham, 2021, p. 20). In our modern era, there is no greater set of problems we face than those wrought by the global pandemic, and design thinking's user-centered approach to problem solving can be leveraged by TPC programs to help us figure out how to address these problems.

With the quick switch to online based distance education during the pandemic, many of us wondered how to retain a sense of community in our classroom, as well as the academic value of our exercises in a remote setting (Venton & Pompano, 2021). Many of us were limited to meeting-type setups in Zoom as our only online teaching tool as classes were switched into online modalities, a drastic shift that had negative consequences for learning (Crawford & Huling, 2023). Our students were glued to a computer all day while trying to both learn material in an unconventional way and navigate the complexity of isolation and lockdown. Students began to disengage and fail at a much higher rate (Mizani et al., 2022). We needed solutions that centered on the needs of our students, our users. Although design thinking has long served different purposes in TPC subfields such as document design and grant writing, it can also be used as a pedagogical tool to help find solutions to our pressing educational problems.

Kathleen Crawford and Heather Huling (2023) argue that, although early on in the pandemic online learning was a struggle, there are positive pedagogical impacts and digital interactive options that are becoming part of the "norm," allowing us to see that time of struggle as a period of experimentation and success rather than a total disaster. Jamboard as now become a part of my norm. As we look to the future, there will inevitably be more disasters, and Weinburgh points out how we can look at what we learned during the pandemic as highly valuable as more widespread emergencies crop up (Weinburgh, 2022). Thus, we must keep our minds facing to the future, always keeping our users in the center of our efforts as teachers.

Because design thinking centers on the needs of users, it is a pow-

erful user-centered approach for solving pedagogical problems like the ones experienced by instructors during the pandemic. As I began to think about the needs of my students, my users, I came back to a need for visualization within the classroom to help both build community and intellectually engage them with the materials. Jamboard seemed like a great way to combine both tool and thinking (Owen, 2007). Leaning on Tham's outlook on design and failure, I implemented Jamboard in my online classes. And while I will discuss that implementation more in the next section, I have to say that it was a great success.

Visual Thinking via Jamboard

Through the Jamboard interface, you're able to collaborate, design, and visually incorporate your ideas, allowing them to be shared and edited amongst other users. This emphasis on the visual allowed me to help exercise vital visual thinking skills for my students. Catherine McLoughlin and Krzysztof Krakowski (2001) emphasize the fundamental importance of visual thinking by pointing out that in "everyday life, visualization is essential to problem-solving and spatial reasoning as it enables people to use concrete means to grapple with abstract images" (p. 127). When looking at the TPC classroom specifically, the kind of broad visual thinking described by McLoughlin and Krakowski can truly help engage students and solidify learning in a fully online learning environment.

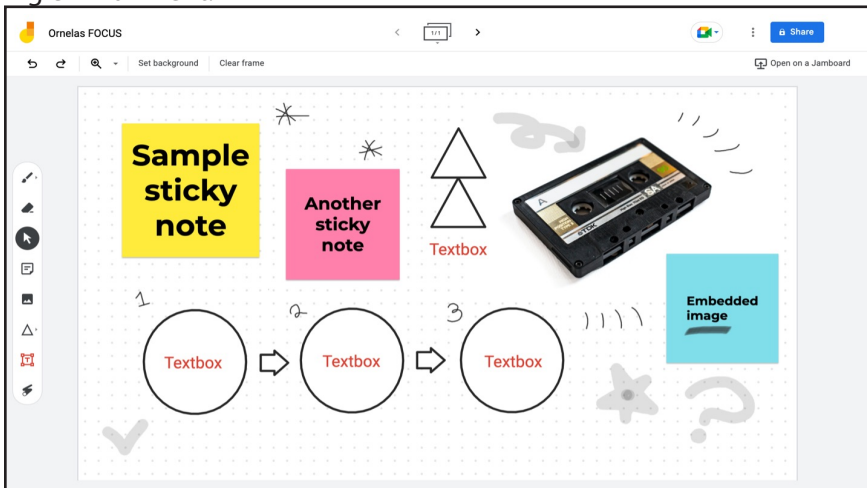


Figure 1. The Google Jamboard interface.

In my online courses, I used the visual thinking space offered by Jamboard as a way for my students to engage in collaborative thinking via the tool's heavy emphasis on visualization, allowing students

to use the Jamboard space to discuss their thoughts and the thoughts of their peers. Within Jamboard's interface, I specifically utilized sticky notes and drawn images as a way to generate interactive discussion. Shifting from the meeting style of Zoom, which utilizes very little visual thinking, to a highly visual interaction through Jamboard engaged the students in a way that I had not seen previously. This correlation of increased learning and the use of visual thinking should not have surprised me as encouraging students "to use multiple modes of representation when learning with technologies" is a topic that has been explored. (McLoughlin & Krakowski, 2001, p. 128). However, it was truly exciting to see how student comprehension increased as they were invited to exercise their design mindset by crafting a visualization of their thinking.

Using Jamboard in this way also helped me give a voice to students who likely would have been silenced by an online learning setting. While the pandemic necessitated that face-to-face classes move to an online modality without much preparation for the change, truly successful online courses must be developed and constructed from the ground up to account for the characteristics of the course modality (Islam et al., 2023). Before I had experience in teaching online, I focused a lot on how to have students work collaboratively in an in person setting, and I spent significant time developing those strategies. The rhetorical distance created by online learning, combined with the obstacle of distraction and loneliness brought by the pandemic, meant I had a lot of obstacles to overcome in my online teaching. Specifically, I did not initially know how to ensure all my students had a voice in the online class setting like I did in my traditional classes. By integrating Jamboard into my writing course, which focused mainly on rhetorical understandings of technical communication, I was able to offer a chance for those voices in my class, which were more likely to be silenced, to be heard, despite not being in person and on campus. It offered an alternative to the traditional forms of interaction that allowed their ideas to shine through for all of us to see.

Final Thoughts

Engagement in online learning was a sudden obstacle for both students and instructors who grappled with limited options in an online pandemic era classroom. Now that we find ourselves distanced from those days, we can see that using online learning tools like Jamboard is crucial as they're a part of how we get students to engage. And "when students become engaged with something new in class, they pay more attention, listen more closely, ask questions—in short they

display all the positive actions we hope that motivated learners will demonstrate” (Dunn et al., 2021, p. 25). Instructors can turn to tools like Jamboard in online TPC classrooms to offer a visual modality for students to effectively use design to communicate their ideas. Instead of looking at online classrooms as a negative, as I once did, instructors of both conventional and technical and professional communication classes can strive to incorporate visual forms of representation, which are important not just as heuristic but as legitimate aspects of reasoning and learning (McLoughlin & Krakowski, 2001, p. 128). Technologies like Jamboard offer visual experiences which foster higher-order cognition, and thus increase learning.

Before the COVID-19 pandemic, instructors may have started to use online platforms like Zoom to occasionally conduct meetings or classes. This was a hidden positive as it inadvertently prepared them mentally for the kind of “virtual education” that we were forced to take on. When the pandemic started, instructors like me were trying to find tools that had a pedagogical impact and improved student engagement. I found myself trying to teach with other tools like Google Slides, but they simply didn’t compare to a collaborative tool like Jamboard. When we use design thinking as a user-centered mindset to think about TPC pedagogy, we can more clearly see the need for a teaching tool that strengthens student engagement and thus increases usability and high-order cognition. I urge instructors, especially in TPC classes, to embrace collaborative tools, like Jamboard, as a way to leverage the power of visual thinking to teach students how to iteratively design their communications with peers. Attempting to use new tools can be nerve-racking, but if we embrace the potential benefits that come with the possibility of failure, as Tham suggests, then we can truly use a design thinking mindset to find a great tool for our student users.

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Aphorisms for Internationalizing Technical Communication Programs

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Abstract. Online media increasingly allow technical and professional communication (TPC) programs to engage in international collaborations. For such undertakings to be successful, program administrators must address different aspects affecting international online exchanges. Doing so requires effective discussions between program administrators and the stakeholders involved in the internationalization process. Aphorisms that effectively encapsulate core ideas can play a central role in these interactions. This entry presents aphorisms administrators can use when discussing the internationalization of TPC programs with key constituents.

Keywords: aphorisms, collaborations, communication, internationalization, stakeholders

Technical and professional communication (TPC) programs have long embraced emerging communication media as mechanisms for internationalizing courses (see Maylath, 1997 and Gnechhi, Maylath, Mousten, Scarpa, & Vandepitte, 2008). Such approaches provide students with educational experiences that reflect society's global nature at different points in time. TPC programs will likely continue this practice of using new technologies to internationalize classes and curricula (St.Amant, 2017). Yet this process is complex and involves effective exchanges and consistent messaging across different stakeholders.

Aphorisms, or "concise statements of a principle," can help guide

these exchanges (Aphorism, 2022). By encapsulating core concepts into concise phrases, aphorisms

- Convey a consistent message
- Keep discussions focused on core ideas
- Summarize situations quickly (see, for example, Morson, 2004 and Morell, 2006)

Administrators can use such expressions when discussing program internationalization within and beyond their institutions. This entry presents aphorisms that can help facilitate both these exchanges and this overall process.

Technology and Internationalization

New communication technologies have shaped the internationalization of TPC programs by increasing the ease with which students can interact internationally (Maylath, 1997, Moustén, Maylath, Vandepitte, & Humbley, 2010). Yet such situations also create challenges involving how individuals conceptualize, discuss, and use new technologies to internationalize TPC programs (St.Amant, 2017). Further complicating this situation are the different stakeholders with whom TPC administrators must discuss these processes and whose support is central to such undertakings (Nugent & Jose, 2015).

Aphorisms can help facilitate these interactions. By encapsulating core ideas into easy-to-understand terms, aphorisms help focus discussion on key concepts associated with internationalizing TPC programs. Aphorisms can also help different parties readily understand factors affecting internationalization activities at different levels (e.g., individual classes and overall curriculum). An effective use of aphorisms can thus help administrators effectively discuss and address uses of different media to internationalize TPC programs.

Interactions and Aphorisms

Internationalizing TPC programs via technology often encompass three aspects—or 3Cs—of interaction:

- *Contacting*: Using technologies to contact—or access—internationally dispersed individuals
 - *Conveying*: Using those technologies to share ideas and information with internationally dispersed individuals
 - *Connecting*: Engaging in the meaningful exchanges requisite to learning from internationally distributed peers
- (St.Amant & Rice, 2015)

Aphorisms can help individuals conceptualize these 3C aspects and facilitate discussions of how to best use technologies when internationalizing TPC programs (Morson, 2004; Băiaș, 2015).

To be effective, such expressions must note how communication technologies can interconnect 3C items to establish new relationships (St.Amant & Rice, 2015). The resulting message also needs to consistently convey such interconnections across different parties during ongoing discussions of internationalization processes. Accordingly, the more clearly an aphorism addresses the 3Cs' categories per such factors, the more effectively it can foster effective exchanges across stakeholder groups.

In terms of programmatic discussions, the question becomes:

What aphorisms can administrators use to guide the internationalization of TPC programs?

This article answers the above question by providing administrators with aphorisms that can facilitate the discussion central to internationalizing TPC programs. To address the 3Cs' ideas central to different situations, the aphorisms presented here consist of three parts that encompass the 3Cs' dynamics affecting a particular step in internationalizing TPC programs. This three-part structure can also serve as a checklist program administrators can use to guide activities at different points in the internationalization process.

Technology and Connection

At its most fundamental level, the first C of "connecting" encompasses if and how students can "*get on*" online media (e.g., the Internet) to access educational options (St.Amant & Rice, 2015). From a programmatic perspective, this means identifying how widespread online access is to students in certain regions in order to determine with whom students can connect in online contexts.

Once online, the next step of conveying—or sharing ideas internationally—involves evaluating if students can "*log in*" to certain spaces when online (e.g., an LMS) in order to participate in educational exchanges (St.Amant, 2017). Individuals must therefore consider if certain factors (e.g., paywalls) affect if or how students in different regions can participate in online learning environments.

Finally, online educational exchanges often include written text (e.g., discussion board postings, IM exchanges, blog postings, etc.) (Lapadat, 2002). Accordingly, connecting online must address how effectively students can use technologies to "write to," or participate in,

an online educational community (e.g., class, project group, discussion group, etc.) (Aghajani & Adloo, 2018).

Per these factors, the aphorism to guide early discussions of internationalizing programs might be *"Get on, log in, and write to."* This expression highlights 3Cs' dynamics in a way that helps keep initial discussions of internationalization focused on fundamental technical factors affecting educational experiences.

Interaction and Exploration

Discussions of program internationalization should next examine approaches for delivering online education. Specifically, program administrators should identify instructional methods that maximize the benefits of internationalized online environments (St.Amant & Rice, 2015). As a core benefit involves allowing students to interacting with international peers, pedagogical approaches should focus on fostering such interactions (St.Amant, 2017). The aphorism used to discuss this situation needs to advocate instruction that has students

- *Tap in* (i.e., contact or access) to the cultural expertise of peers from other cultures and nations and then have students
- *Contribute to* class discussions by conveying information in ways that allow all involved to actively participate in internationalizing education so students can
- *Benefit from* the unique opportunity of interacting directly with peers from different cultures and nations

The aphorism of *"Tap in, contribute to, benefit from"* keeps pedagogical discussions focused on student-to-student interactions and helps develop programs based upon student-centered engagement among international peers.

Programmatic change often brings new challenges for administrators, faculty, and other stakeholders at an institution (St.Amant 2017; Gneccchi, Maylath, Moustén, Scarpa, & Vandepitte, 2018). A central challenge to internationalizing TPC programs involves perceived distance and its effects on international exchanges. The relative ease of online exchanges can prompt participants to forget they are interacting with persons from different cultures and nations (Tu, 2005; Papacharissi, 2009; Moore, McKee, & McLoughlin, 2015). This situation can result in individuals forgetting online peers might have different norms, attitudes, and expectations for a class topic, the nature of education, or online learning in general (Thorne, 2003). If not addressed, such issues could affect the internationalization of TPC programs.

These situations often result from the tendency humans have to

communicate (e.g., write) according to the rhetorical norms of their native culture unless instructed otherwise (see Ulijn, 1996; Thorne, 2003). This factor can be exacerbated by written exchanges that often erase non-verbal cues indicating individuals might have different rhetorical expectations (Thorne, 2003; Kern, Ware, & Warschauer, 2004). As a result, individuals might project the communication norms and expectations of their native culture onto others when interacting in international online contexts (Kern, Ware, & Warschauer, 2004). This factor could affect how students create information for and perceive messages from international peers in online contexts. Such situations could lead to miscommunication, confusion, or offense and counteract the benefits of international peer-to-peer interactions.

Addressing such dynamics is essential to effective education in global contexts (St.Amant & Rice, 2015; St.Amant, 2017). Instructors should therefore make students are aware of how cultural rhetorical factors can influence the creation and perception of online messages. Doing so involves teaching students the aphorism “Don’t forget about, project onto, and try to,” or the tendency for individuals to

- *Forget about* the fact they are communicating with other cultural groups when interacting online
- *Project onto* such groups, often by default, the student’s own cultural rhetorical expectations for crafting and interpreting messages. This situation often prompts individuals to
- *Try to* create messages according to the rhetorical norms of one’s native culture and expect others to do the same when interacting online

Such factors seem simplistic, yet the lack of physical presence—combined with often restrictive nature of online interactions—could unintentionally lead to such behaviors. This cautionary aphorism reminds students of these factors so, ideally, they can avoid such behaviors when communicating with internationally distributed peers online.

Learning and Doing

Other aphorisms can help students in TPC programs address these issues and maximize the benefits of international educational contexts. At the start of the term, for example, educators in TPC programs can ask students to compose a reflective essay explaining the communication norms of their native culture (e.g., “In my culture, this is how we often conceive of audience as..., We often approach this genre as follows...”). Students can then exchange these texts with international

peers and use them to discuss cultural communication expectations.

These discussions could include suggestions for how to adapt messages from one culture for another (e.g., “Here is how you could adapt your message for members of my culture.”). Such interactions help students learn about culture and communication expectations directly from their peers. They also help students understand how cultural perceptions, value systems, and other factors (e.g., national laws) shape rhetorical practices. Such interactions should include some guidance to ensure these exchanges represent meaningful educational experiences that foster an understanding of and appreciation for other cultures. An aphorism can help guide such processes.

Per using an initial reflective essays to discuss cultural differences, the aphorism to guide these exchanges would be “Write about, interact with, and learn from.” That is, instructors would ask students to

- *Write about* the communication norms of their own culture and then use those initial texts to
- *Interact with* peers from other cultures to compare, contrast, and discuss such approaches in order to
- *Learn from* those peers about different cultural expectations and about how to communicate more effectively with members of other cultures

This aphorism can guide student interactions within and across a program in order to maximize the benefits of internationalized educational contexts.

Application and Collaboration

Internationalized TPC courses and curricula often require program administrators to foster or maintain key relationships (Nugent & José, 2015). The relationship-building process often starts by reaching out, or forging alliances with, individuals in other cultures in order to create educational spaces where internationally distributed students can interact (Moustén, Maylath, Vandepitte, & Humbley, 2010). Doing so often means collaborating with international counterparts to create such educational environments (Gnecchi, Maylath, Moustén, Scarpa, & Vandepitte, 2018). These interactions might encompass creating shared assignments that foster meaningful international interactions (e.g., exchanging reflection papers to discuss cultural communication expectations). They could also involve creating joint courses and connected curricula that foster meaningful international interactions across programs.

Effective practices relating to such situations can be a valuable resource for other administrators wishing to internationalize their TPC programs (St.Amant, 2017). Accordingly, TPC program administrators should seek to share successful practices, resources, approaches, and materials with members of the field. Doing so can foster effective program development in and (ideally) a more consistent set of skills associated with TPC programs.

An effective aphorism can help guide such activities. Specifically, TPC program administrators should focus on the approach “Reach out, work with, share among,” or

- *Reach out* to international colleagues and prospective collaborators to forge the partnerships essential to internationalizing TPC programs
- *Work with* collaborators to develop joint interactions, assignments, and curricula focused on international peer-to-peer interactions
- *Share among* different institutional and disciplinary communities successful practices for collaborating to internationalize programs

This approach can help TPC program administrators engage in the collaborations central internationalizing learning experiences.

Final Thoughts

The idea of internationalizing TPC programs can seem overwhelming, yet such programs can better prepare students for today’s globalized society. Achieving this objective requires effective interactions with stakeholders who play a central role in achieving this goal. TPC program administrators can use the aphorisms presented in this entry to engage in the interactions essential to this process. Ideally, these aphorisms can facilitate the international educational experiences that benefit students in TPC programs and foster wider discussion of such processes in the field.

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Using Design Thinking Methods as Tools for Writing Program Administration

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Abstract. This program showcase contributes a different dimension to our collective investment in envisioning how design thinking methods can enhance our work in professional writing programs, as it describes recent attempts to integrate design methods into the author's writing program administration at a large writing program at a Research 1 institution in the suburb of a major city in the Mid-Atlantic region of the United States. The author focuses on three different ways they have used design thinking methods in their WPA work over the past two years: (1) using empathy research questions to prompt storytelling from faculty about their experiences both inside and outside the classroom during and following the pandemic, then using design thinking analytical methods to synthesize data and compose Point of View statements that help them to understand needs and opportunities for faculty; (2) using design levers to prompt teachers to think like designers as they plan, implement, and analyze learning experiences for students; and (3) using appreciative inquiry methodology to examine how faculty have integrated new curriculum designs aimed at enacting program-, department-, and university-wise values into our general education professional writing courses. While these design-oriented WPA projects are in-process and, as such, the analysis is preliminary, this discussion nevertheless contributes to our collective thinking about how design thinking methods might usefully inform our professional practice teaching, researching, and administrating within technical and scientific communication programs.

Keywords: design thinking, writing program administration, empathy, problem definition

This special issue adds to the growing conversation in composition and professional writing studies about how and why to integrate design thinking methodology into writing courses (Bay et al., 2018; Leverenz, 2014; Marback, 2009; Pope-Ruark et al., 2019; Purdy, 2014; Tham, 2021; Wible, 2020) as well as how professionals are using human-centered design approaches to define problems and develop solutions in workplace writing contexts (Tham, 2022). In this article, I contribute a different dimension to our collective investment in envisioning how design thinking methods can enhance our work in professional writing programs, as I describe my recent attempts to integrate design methods into writing program administration.

I direct a large writing program at a Research 1 institution in the suburb of a major city in the Mid-Atlantic region of the United States. In my role as director of our Professional Writing Program (PWP), I manage a program that currently includes 82 professional-track teaching faculty and who delivers general education writing instruction to more than 8,200 students each year. While there have been a few attempts to help WPAs learn how to use design within their administrative work—for instance, in the day-long workshop on design thinking methods delivered by Dominic Delli-Carpini and Scott Wible at the 2018 convention of the Council of Writing Program Administrators, and in Meredith A. Johnson, W. Michele Simmons, and Patricia Sullivan's 2018 *Lean Technical Communication: Toward Sustainable Program Innovation*—this article describes and analyzes how I have begun to use human-centered design methods in WPA work.

As design scholars P.H. Jones and G.K. VanPatter observe, design practice has greatly expanded beyond designing traditional crafts and interactive products to include organizational-level and social transformation design, which necessarily brings with it increasing complexity (182). Composition scholar Richard Marback explains that design thinking methods aim to address these types of complex, “wicked problems,” which are highly contextualized, value-laden, and solvable in more than one way (W400-01). People use design thinking methods to approach and solve these types of complex, multi-dimensional problems in creative ways, such as those related to curricular advising (“How might we help students to make more informed choices about which of our 14 general education professional writing courses to take?”) and human resources (“How might we help new faculty transition to their professional lives here in our writing program?”).

Design thinkers embrace the wickedness of these problems by taking a human-centered approach. They work to deeply understand people's values by listening to stories about their experiences and to

create solutions that meet their needs and fit the contexts of their lives. More specifically, design thinkers creatively solve problems by moving iteratively through five distinct modes, which have been developed and promulgated in the following way by Stanford University's Hasso Plattner Institute of Design (the d.school):

1. **Empathy Mode:** Designers immerse themselves in learning about the people who live, work, or play in the specific context where the designer perceives a problem or design opportunity to exist. Designers conduct ethnographic-style research, including observations and interviews, to understand people's everyday experiences as well as their physical, intellectual, and emotional responses to those experiences.
2. **Define Mode:** Designers synthesize this empathy research and craft a meaningful, actionable problem statement that reflects a particular user's or stakeholder's point of view and that defines the design challenge they will work to solve.
3. **Ideate Mode:** Designers engage in concentrated, semi-structured brainstorming, generating a wide range of ideas for possible solutions and then selecting those possibilities that have the greatest potential to solve the user's problem.
4. **Prototyping Mode:** Designers create artifacts that serve as rough representations of specific aspects of the solution.
5. **Test Mode:** Designers create situations that allow users to engage with the prototype. This testing gives designers the opportunity to generate valuable information and insights about how users perceive the solution would fit (or not) in the context of their day-to-day lives.

The entire design thinking process is purposefully recursive. For example, when working in the define mode, designers might determine they need to conduct more empathy research, and when testing a prototype, designers are conducting another form of empathy research as they learn more about a user's life and how the solution may or may not work well within it.

My approach to integrating design thinking methods into my WPA work is informed by my participation in the Stanford University d.school's Teaching & Learning Studio (TLS). The TLS programs focus on helping faculty to approach teaching as the practice of designing learning experiences. I participated in a week-long TLS course at Stanford in July 2017; a follow-up two-day session for TLS alumni at the University of Maryland in July 2018; and in TLS 2.0, a virtual eight-

week course in winter 2023. While my work in the first two TLS courses reshaped how I design and teach professional writing courses (Wible 2020), my participation in TLS 2.0 provided time and guidance to iteratively design, implement, and analyze the design thinking-influenced administrative practices I describe here.

In this article, I discuss three different ways I have used design thinking methods in my WPA work over the past two years, all of them focused on defining and solving wicked problems related to writing faculty's sense of engagement and agency. I first describe strategies for conducting empathy research with faculty as a means to define needs and opportunities related to professional development and connection with colleagues. I then analyze strategies for fostering a design mindset with faculty, as I explain how I use the concept of design levers in my one-on-one mentoring activities with faculty and prompt them to plan, implement, and analyze learning experiences for students. And third, I examine how we plan to use Appreciative Inquiry to deepen faculty's connection to and enactment of our program-, department-, and university-wide values related to inclusion and equitable teaching. All of these design-oriented WPA projects are in-process, so the discussion and analysis is preliminary, but nevertheless this discussion contributes to our collective thinking about how design thinking methods might usefully inform our professional practice teaching, researching, and administrating within technical and scientific communication programs.

Prompting Storytelling to Deepen Empathy With Faculty

Tom Kelley, general manager of San Francisco-based design firm IDEO, which is one of the foremost practitioners and proselytizers of design thinking, explains that empathy research is "the cornerstone" of the design thinking process (*Ten Faces* 16). Kelley defines empathy as "the ability to see and experience through another person's eyes, to recognize why people do what they do" (Kelley and Kelley 85). He contends that empathy research provides "the single biggest source of innovation at IDEO" (*Ten Faces* 17), for it helps them "to get at latent needs, the non-obvious ones that people aren't conscious of"; identifying these latent needs, he explains, allows a designer to articulate "better and sometimes surprising insights that can help distinguish your idea or approach" (*Creative* 90-91, 85). The Interaction Design Foundation similarly grounds design thinking processes on empathy research, stressing the need for design teams to develop "a holistic and empathetic understanding of the problems that people face" ("What is") such that they can build solutions "with a compassionate eye for their users"

("Empathize").

Empathy research can and should play a central role in writing program administration, for it can help WPAs learn "to see and experience" the program and its courses "through another person's eye" (Kelley and Kelley 85). While Jennifer Bay, Richard Johnson-Sheehan, and Devon Cook were writing about professional engineers and about undergraduate engineering students, one could also similarly issue the warning that WPAs too often "retreat into figuring out how to solve their problems and not the user's problems" (183). Certainly I, like many WPAs, engage in activities aimed at helping me to understand the experiences and insights of faculty in our program. At the same time, many of those attempts at gaining insight come from surveys of faculty as well as written and oral comments gathered during large- and small-group meetings, where the conversations typically focused on clarifying policies, identifying preferences for professional development sessions, learning about faculty's desired teaching modalities, and so forth. Engaging in empathy research, Bay, Johnson-Sheehan, and Cook suggest, involves moving "beyond audience analysis and traditional [user experience]" and instead "immers[ing] themselves in users' worlds" (183). Empathy research does not involve going to stakeholders, "asking them what they want, and then giving them exactly what they asked for" (Kelley and Kelley 97). The problem with such an approach, explain Tom Kelley and David Kelley, is that "[p]eople often lack the self-awareness (or the vocabulary) to express their needs" (97). Engaging in empathy research methods such as immersion, observation, and interviewing works toward the end of "understanding latent needs, even if people can't articulate them to you" (97).

My decision to engage in empathy research came when I perceived there were latent faculty needs that we had to understand more deeply. I will discuss two specific moments of focused empathy research here. The first moment of using empathy research questions came in our work in January 2022 in the pre-spring semester professional development session. First, though, I will provide some context. After the mid-semester shift to online teaching in March 2020 because of the COVID-19 pandemic, my university continued with fully virtual teaching through the entire 2020-2021 academic year. The fall 2021 semester then saw a voluntary return to campus for half of the 80 faculty in the professional writing program in which I teach. Through my own experience as well as my one-on-one conversations with teachers, the return to campus and the physical classroom did not prove to be a perfectly energizing experience for faculty. In office hour meetings with faculty during that fall 2021 semester, we heard requests for help

in dealing with challenges related to prolonged student absences when students tested positive for COVID-19 and needed to quarantine. We dialogued with faculty to define what participation looks like in the writing classroom and to create alternative online modes of participation for quarantining students. And throughout the fall 2021 semester, we helped faculty make adjustments to their classes or secure substitutes for their courses when they themselves tested positive for COVID-19, needed to quarantine, or take time to support a sick family member. Most of these conversations throughout fall 2021, however, happened in individual meetings, and they were focused on solving problems that faculty were facing in the immediate moment.

Our decision to engage in design thinking's empathy mode came through a desire to learn about faculty's experiences outside those moments where we were focused on solving immediate, pressing teaching concerns. Toward that end, we created time and space for designed an empathetic listening sessions in our January 2022 day-long, virtual professional development workshop. Specifically, we designed crafted a 75-minute session to create time and space for faculty to process their experiences and to share stories about their teaching with colleagues. Toward these ends, we created five Google Docs pages, each with a distinct writing prompt and with tables for faculty to compose responses to those prompts.

Empathy research in design thinking demands a more probing inquiry than simply crafting surveys or asking people what they would change about their current lives. Listening to how people answer such a question might help a design thinker to "fine-tun[e]" aspects of a person's existing life (Kelley 33), but it rarely helps designers "unearth" a range of "human needs and desires" (23). Good empathy research questions, then, are open-ended and prompt people to tell detailed stories about their experiences; moreover, whether through the initial questions themselves or follow-up questions during an interview, good empathy research questions also prompt people to describe not just what specifically they're doing through these experiences but also how they are thinking and feeling about their experience. We crafted these empathy research questions, then, to gain insight on faculty's experiences both inside and outside the classroom during the fall 2021 semester:

A. Tell us about a time when you experienced a strong sense of community in your PWP class—or conversely, when you felt like it was a struggle to create a strong sense of community. Describe how you experienced it and how it manifested itself in the course.

Additionally, try to explain how and why you think that sense of community developed—or didn't—in your class.

B. Tell us about a time when you felt frustrated, discouraged, or deflated—or, conversely, energized and excited—after a class session over the past two years. Describe that experience. What was happening in that class session that generated those types of feelings and emotions?

C. Help us understand how you are feeling about teaching in the Spring 2022 semester.

D. Describe a challenging moment from your teaching or other professional experience over the past two years. What was the challenge, and how did you attempt to work through it? What was the result?

E. Analogous Situations: Think about a non-PWP / non-UMD / non-teaching context when you felt safe, respected, and/or cared about over the past two years. Describe that experience. What was happening in that context that generated those types of feelings and emotions?

We provided faculty with 12 minutes to write in response to one of the prompts, and then they took another 12 minutes to read around and use the comment function to respond to the experiences shared by their colleagues. We then followed this writing and reading with 35 minutes of open conversation.

The stories that faculty members composed in response to these empathy interview prompts gave us deeper insights into their thoughts and feelings about their experiences in the fall 2021 semester and their expectations for spring 2022. In particular, the prompt "Help us understand how you are feeling about teaching in the Spring 2022 semester" generated 20 separate responses from faculty, many of them stretching for a dozen or more sentences. Across responses to all the prompts, we read detail-rich stories of faculty's experiences feeling burned out and stories of successes and struggles to build community in their courses, both virtual and in-person. We heard from faculty who described themselves as feeling energized, excited, and enthusiastic about specific discussions or activities from fall classes, while we heard other faculty express anxiety about returning to campus and the classroom with the threat of the omicron variant that had emerged by that time. We saw some faculty request more focused discussion about how to retool their teaching for the classroom, and we heard other faculty describe how they simultaneously felt both mental fatigue from and immense pride in learning new digital technologies and develop-

ing strategies to integrate them into their teaching.

We received written and oral feedback from several faculty members who said that creating time and space for composing, sharing, reading, and listening to each other's stories helped faculty to feel more supported in their work and to begin reestablishing connections with colleagues. Equally as important, hearing these stories helped me in my role as PWP Director in bringing faculty's experiences to the conversations I had with administrative leadership in our department and across campus. This empathy research helped me to bring the experiences and perspectives of faculty into conversations with administrative leadership in the department and across campus, centering their needs in policy discussions on matters related to teaching schedules, material and psychological support for faculty in a pandemic, and creating engaging learning experiences for students. Even without engaging in a full-scale design thinking project to develop these department and university policies, I came to see empathy interview questions as an important tool for professional writing WPAs to use in better understanding their faculty's perspectives on their experiences in the classroom, in the program, and at the institution.

Reflecting upon this empathy research activity, though, I perceive a missed opportunity with this data. From my perspective as a WPA, at the time the value came simply in creating a moment to listen to faculty share stories of their experiences. In a significant way, listening and understanding faculty's experiences and feelings about teaching were important, and listening without judgement and without a need to respond with policies is significant. At the same time, we did not in any focused way analyze the data as one might do in the design thinking method, and I wanted to dig deeper with empathy research and analysis to understand faculty experience.

A focused purpose for this type of human-centered design WPA work had started to emerge midway through the 2022-2023 academic year. By the time we arrived to in the spring 2023 semester, there was a sense among my administrative staff that while many professional writing faculty had expressed their desire and energy to engage more deeply engage in the program's curriculum and pedagogical experimentation, we nevertheless had seen a noticeable decline in the number of faculty who attended our traditional in-semester professional development events. We turned these observations into a design challenge: How we might we better support faculty in envisioning, articulating, and designing plans to meet their professional development desires?

To begin work on this design challenge, we returned to empathy

research interviews in the spring 2023 semester. Here my administrative team engaged in 30-minute empathy interviews with five separate groups of 2-3 faculty in our program. Using that design challenge question as our inspiration, we composed this script of empathy interview questions:

A. Opening

We're exploring how we might better support and engage PWP faculty in their professional development goals, and we're hoping to talk with you for 30 minutes about your experiences as a teacher in our program as well as your thoughts on what professional support, and professional development means to you.

B. Rapport Building

Tell me us about your teaching experiences? Before arriving at Maryland, what positions have you worked in and/or what positions besides UMD do you currently work in?

C. Evoking Stories & Exploring Emotions

1. Tell us about a moment when you experienced a challenge in your teaching (or other aspect of your professional life) or when you identified an opportunity in your teaching. What resources did you seek out or draw on to meet that challenge or to seize that opportunity?

—or—

Describe a moment of success or celebration related to your teaching? What did you attribute that success to? What enabled you to achieve that success?

2. The University of Maryland is an institution that provides lots of opportunities to engage in professional development activities, including the Teaching and Learning Transformation Center, the Office of Diversity and Inclusion, and the English Department's Center for Literary and Comparative Studies, the Academy for Innovation and Entrepreneurship, and the UMD Libraries, among many others. What kinds of professional development opportunities have you pursued or sought out?

—or—

What kinds of information, resources have you found yourself seeking? Where do you / How do you seek it out? What determines if you decide to go and if you find it useful?

3. When I say "professional support" / "professional development" / "professional engagement," what else comes to mind?

D. Thank You & Wrap-Up

Thank you for taking time to talk with us about your professional experiences teaching in PWP. Your insights will be valuable for us as we continue to explore how we might better engage and support PWP faculty in their professional development goals, and we hope you might be open to talk with us later about some of the potential solutions we develop.

What's significant here, from a design thinking perspective, is that we did not ask them directly, at the least at the outset of the interview, what specific types of programming they wanted us to create. Instead, we used these empathy interview questions to prompt faculty to share stories and present specific details from their professional experiences. Our approach here was consistent with design thinkers' belief that solution development will be more focused and effective if it comes later in the process, after the problem has been defined more precisely on a foundation of detailed insights from the users' stories about their experiences.

Following Wible's description of methods for design thinking's problem definition mode (2020; "Problem Definition" 2022), my administrative team and I then analyzed and synthesized the empathy interview data in order to make meaning and articulate specific descriptions of faculty's desires and needs related to professional development. Our first step involved textualizing the empathy data, transcribing or visualizing the data in a way that makes it analyzable. Here we engaged in a practice called Story Share & Capture (Interaction Design Foundation, "Story"). In this practice, one WPA team member reread our detailed interview notes—not simply summarizing the notes but rather reading them line-by-line—while I the rest of us jotted down key words, phrases, and quotes. Textualizing our empathy research notes this way helped us to visualize and identify relationships between the empathy research data.

We talked through our notes from the interviews in detail and followed strategies for developing a User Empathy Map, arranging keywords and phrases from the interviews according to these different categories:

- What the person *says* (that is, memorable quotes)
- What the person *does* (or says that they do)
- What the person *thinks*
- What the person *feels*

After we analyzed each individual interview this way, we identified

clusters of concerns or problems that different users encounter in a similar way, particularly in terms of how they think or feel about their experiences.

We used this analysis and synthesis of empathy research data to compose one-sentence definitions of faculty needs, or what design thinkers call Point of View (POV) statements. Each POV statement contains three key points:

- An empathetic description of the user
- A phrase explaining description of the user's need or desire
- A relevant insight about the user's experience generated through the empathy research

What's particularly important when composing POV statements is to define faculty's needs in terms of the types of experiences they desire to have. In other words, POV statements describe what a user desires to achieve or experience but doesn't present specific solutions for making that happen. a POV statement should not contain a specific solution but rather should be framed in terms of a result that any potential solution could help them to achieve. This framing opens a design team to generating a broader range of solutions during the ideation, prototyping, and testing phases of the design thinking process. Our POV statements, then, included the followed:

- a. Faculty needdesire ways to discover paths to meaningful, engaging, sustainable professional development work that both contributes to the program and helps them to feel as if they're developing their careers and working toward promotion.
- b. Faculty need ways to build meaningful peer-to-peer relationships within the program outside of the established Professional Track Faculty mentoring program, which they feel has taken on a formal character grounded in hierarchical relationships and become focused on evaluation, not mentoring.

Each of these POV statements is a composite from several interviews, but they enable us to stay focused on designing solutions that fulfill the desires of faculty emerging from their fit into the contexts of faculty's lived experiences.

That's where the story ends for now. This summerCurrently, we a're planning an Ideation session for the start of the fall 2023 semester that will involve both the administrative team members as well as a select number of faculty. We wi'll select solution ideas with significant poten-

tial to meet teachers' needs in innovative, delightful ways. Throughout the fall semester we will then design and test prototypes—most likely storyboards and role-playing—that enable us to get feedback from faculty, and we will use this feedback to develop and refine these solutions to enhance faculty's experiences with professional development, mentoring, supporting, and program engagement. We hope to pilot one or more of these solutions in the spring 2024 semester.

The value of empathy research in design thinking, Bay et al. argue, is “to reduce the ‘detachment’ between designers and users, gaining a holistic understanding of what the users are struggling to do” (183). Engaging in empathy research as a WPA, I contend, has helped me learn how to understand more deeply faculty's actions, thoughts, and emotions as they move through their day-to-day lives both inside and outside the classroom. Developing and applying these empathy research skills and adopting this empathetic mindset has, in turn, helped me and my administrative team learn how to define problems and opportunities from teachers' perspectives—and ultimately, we hope, to design and deliver solutions to support their visions for their professional lives.

Teaching Faculty to Become Designers of Learning Experiences

Beginning in the fall 2018 semester, the Professional Writing Program implemented Performance Improvement Plans (PIP), which support faculty whom program leadership identify as needing performance improvement. In most cases, faculty receiving PIPs have end-of-semester student evaluations that show concerning patterns, whether those appear in significantly low scores or students' detailed written comments; in other cases, these determinations about faculty who need to improve their performance come in the form of student complaints filed with me or the PWP Program Coordinator.

PIPs aim to provide focused training to faculty whom program leadership, namely, the PWP Director as well as the English Department Associate Chair, determine need to improve their teaching. We believe this program signals an investment in our faculty—an investment of the PWP Director's time and energy in faculty development rather than simply not renewing faculty contracts. The PIP activities involve only the faculty member and the program director, as opposed to a colleague or an assistant WPA, and they entail .The PIP program involves the creation of a written document to the faculty member outlining areas for improvement as well as a plan of activities (e.g.,

meetings, class observations, development and discussion of teaching materials) for working to improve those aspects of the faculty member's teaching. The PIP activities involve only the faculty member and the program director, as opposed to a colleague or an assistant WPA.

In several respects, the PIP has been a positive development for participating PTK faculty, as most (although not all) faculty who completed a PIP have expanded or sharpened their repertoire of teaching strategies and have developed materials documenting the work they did in the PIP, materials they can also display in their teaching portfolios. Nevertheless, the program understandably generates anxiety for the faculty whom we identify as needing a PIP. Even more concerning are two related dynamics: first, how the PIP frames the relationship between the teacher and the director, and second, how the PIP seemingly focuses the teachers' attention on end-of-semester student evaluations as the main criteria for assessing the effectiveness of their teaching and their performance improvement activities. To address these concerns, in the spring 2023 semester I leveraged a set of design thinking theories and methods to address these two concerns, with the goal of framing the relationship between the teacher and director and to focus the teacher on generating and gathering different types of qualitative data to gain insight on their teaching practice.

I grounded my work on the concept of "design levers" for teachers, as developed by the Teaching and Learning Studio (TLS) staff at Stanford's d.school. The TLS staff generated this "design levers" concept in part through thinking about a metaphorical relationship to the levers that a DJ might use to modulate different aspects of an experience within a dance club, such as lighting, rhythm, volume, songs—each lever slightly or drastically altering the experience of people at the club. In the same way, TLS's "design levers" are different aspects of teaching and learning that could be tweaked in order to create different learning experiences for students (Raz et al., 2017). The TLS staff also think about parallels to the scientific laboratory, where researchers adjust variables as part of designing and conducting experiments and gather empirical evidence to see what changes result. Within the teaching and learning design space, the TLS staff suggests that teachers conduct small-scale experiments in their classes to see how the learning environment changes for students when they make adjustments to one or more of these "design levers":

- Communication, including the language, the methods, and the frequency
- Ritual, which refers to habits or protocols that influence rela-

tionships between people

- Role, including people's positions or power relationships
- Space, namely, the location, the scale, or the images and sounds in the immediate environment
- Object, involving the introduction of new or changes to the existing type or arrangement of clothes, furniture, and devices

The idea here is that a teacher identifies a specific goal for modifying students' learning experiences, selects one or more levers as a means to affect that type of change, designs an experiment applying that lever, and then gathers empirical data to assess how it effects students' learning experiences in the course. Put more succinctly, the aim here is to prompt teachers to think like designers—designers of learning environments.

I myself drew on the design levers in my PIP meetings with three different teachers in the spring 2023 semester, with the goal of changing the dynamic of the mentoring relationship and shifting teachers' focus to other performance measures besides end-of-semester evaluations. Specifically, I used the design levers of Role and Object to modulate these two dynamics. In previous semesters, PIP mentoring meetings involved conversation about the teacher's practice as well as relevant scholarship from the field of writing studies and composition pedagogy, with faculty members taking written or typed notes when they felt the need to do so.; PIP meetings also typically included review and discussion of faculty members' teaching materials—say, for example, samples of feedback on student writing or sample lesson plans, depending on the specific nature of the desired performance improvement. For the most part, the dynamic felt like one in which I, in the mentoring role, made recommendations for the teachers to implement; this relationship seemed to take agency away from teachers.

I used the Role and Object levers to see if we could change that dynamic. Specifically, I used the object lever by creating a Google Slide with designer-like prompts for conversation during each of our meetings. (These prompts, I want to note, are similar to ones the facilitators used in the Stanford d.school's TLS 2.0 sessions.) The slides and the prompts enabled me to move into the notetaker Role while the teacher talked through the prompts to design a small-scale teaching experiment. For example, after an initial conversation about what specific aspect of students' learning experiences they'd like to focus on enhancing and why, teachers talked through these four prompts to design a specific teaching experiment aimed at achieving that goal.

- a. To help . . . to . . .
- b. I'm going to try . . .
- c. As (or after) I try it, I will take notice of . . .
- d. Ultimately, I will know if this experiment was a success if . . .

Again, while I facilitated the conversation here by explaining the prompts, I primarily stayed in the notetaking role while the faculty members used these prompts to plan a teaching experiment. These prompts ask the teachers to develop a specific learning goal for a specific group of students (a), to develop a specific pedagogical experiment (b), and to attune to specific student behaviors in order to generate data about (c) and evaluate the effectiveness of (d) that teaching experiment.

While I did stay in the notetaker role and allowed the prompts to guide faculty's design of their teaching experiments, I did introduce them to the Design Levers as tools for (b), that is, the prompt "I'm going to try . . ." For example, one teacher wanted to help students perceive links between class activities and the rhetorical strategies they needed to employ for the major writing projects, so she used the Role and Object levers to design an in-class activity in which students, using the whiteboard, would collaboratively map and draw connections across the learning they were doing in class activities, homework writing exercises, and textbook readings. Another teacher wanted to heighten students' awareness of her "presence" in their asynchronous online writing course, so she used the Communication lever to outline a statement for students in their online asynchronous writing course about their her rationale and strategies for providing feedback on student writing to establish instructor presence in the online course.

Here, then, the goal was getting faculty to see themselves as designers by working iteratively, building small-scale teaching experiments and feedback loops that help them to make decisions about next steps. In effect, these teachers were applying the design thinking methods of prototyping and testing, where they were working quickly to design new classroom activities for students and—most importantly—to generate valuable information and insights about how these prototype designs shaped students' learning experiences. Equally as important, these feedback loops help teachers learn to look for, gather, and analyze a broader range of data to gain insight on their teaching practice, as opposed to simply relying on end-of-semester student evaluations.

In follow-up meetings three weeks later, I used the Google Slides and discussion prompts once again to assume the notetaker Role, as

teachers described the empirical evidence they gathered and analyzed it to assess the effectiveness of their teaching experiments. For example, one teacher brought photosscreenshots of the white board from their her classroom, which showed student contributions to a class-wide exercise visualizing the connection between class activities and the researching and composing they needed to do for an upcoming writing project. Another instructor brought student responses to the statement she had just composed for their asynchronous online course, “When, Where, How, and Why I Provide Feedback on Your Writing.” During our meetings, I used the Google Slides space to take color-coded notes to distinguishing between the empirical evidence the teachers noted, the insights they generated from this evidence about the effects of the teaching experiments, and additional questions or teaching ideas that emerged through those insights.

As we progressed through in the semester and teachers worked iteratively through one more loop of designing, delivering, and analyzing a teaching experience, faculty also planned strategies for showcasing these experiments in their teaching portfolios. The goal here was using those portfolios to showcase evidence of how they improved their teaching performance iteratively and showcasing different forms of evidence—not simply end-of-semester student evaluation scores—for articulating their teaching effectiveness. Even more importantly, having been prompted in prompting teachers to think and act as learning experience designers, they expressed feeling a greater sense of agency in advocating for and documenting the efficacy of their teaching practice.

Posing Generative Questions to Assess Implementation of Curriculum Designs

My third approach to using design methods in WPA work has emerged as part of our program-wide effort to integrate attention to Positionality, Power, and Privilege in every one of our fourteen different types of general education professional writing courses. Our focus on issues of positionality, power, and privilege in professional writing practice and pedagogy has been informed by Natasha Jones, Kristen Moore, and Rebecca Walton’s *Technical Communication After the Social Justice Turn*. In the 2020-2021 academic year, we piloted curricular materials such as readings and discussion questions, topic selection activities and heuristics for major writing projects such as proposals and recommendation reports, and prompts for students’ ePortfolio projects. We then expanded this roll-out to all PWP courses in 2022-2023, and we held

two four-hour professional development sessions to prepare faculty for this work, including deepening their understanding of what these three concepts mean; reflecting on their own positionality, power, and privilege in the classroom and related professional contexts; and integrating at least one curriculum piece into their courses. Through this work, we have explicitly aligned our program's pedagogical mission with the university's values statement, which centers equity & and social justice as well as inclusive excellence.

As we move into the third year of this curriculum initiative, we are using appreciative inquiry as a methodology to inform our professional development programming and our informal assessment of this curriculum redesign. Appreciative inquiry is "an asset-based approach to organizational and social engagement" that aims to help the organization's members "uncover existing strengths, advantages, or opportunities in their communities, organizations, or teams" (Organizing Engagement). Appreciative inquiry complements design thinking methods because it involves the design of organizations, with the aim of working to create a culture where its members' day-to-day activities and decision-making support and advance the organization's mission and vision statements. As education scholars Jeanie Cockell and Joan McArthur-Blair explain, though, appreciative inquiry stands in contrast to designers'—and many WPAs'—tendency to start with "problem-solving" and "a focus on deficits in a system"—that is, "what is wrong about or lacking and the root causes of the problem" (14). Instead, a design thinking-oriented WPA using appreciative inquiry methods would instead begin "by examining the strengths and successes" within the organization, "focus[ing] on the root causes of success and build[ing] on these to create future successes" (14).

In our specific case, this work means creating time and space in professional development sessions for faculty to identify where they've already been teaching professional writing in ways that consider issues of positionality, power, and privilege—even if they've not been naming it as such—then examining what's working well in those instances and identifying how to build on those successes elsewhere in their curriculum. Working from Cockell and McArthur-Blair's work, then, we are "beginning with what is wanted and finding out where it already exists, however small," as a way to get "people [. . .] grounded in their successes" and, in turn, help them to "become more confident that they can do more and build their ideal futures" (15). More specifically, we are using this appreciative inquiry methodology to frame the questions that will guide our pre-semester professional development activities in the fall spring 20243 semester. Drawing from Cockell and

McArthur-Blair's work, we will be using these two questions to guide two different 90-minute sessions:

- a. What is one thing that you have done to help advance the program's mission of teaching students to see professional writing rhetorical situations through the lens of positionality, power, and privilege?
- b. What is one thing you'll do in the coming semester to continue advancing that pedagogical mission?

Within the first session, prompts will guide faculty to share curriculum materials they have developed and integrated into their courses and describe and analyze empirical data from their classes that help them to gain insight into how those curricular designs are working. In the second session, faculty will sketch plans for a new curricular piece they will integrate into their courses either in the spring 2024 semester, as well as to identify help or support they need from colleagues or the administrative team in order to carry out and stay true to this commitment.

Design Thinking 101 podcast host Dewan Stanford suggests that this type of generative inquiry "has the power to close the gap" between where teachers are in their day-to-day practice and the pedagogical mission and vision statements that guide their institution or program. In some or even many cases, he suggests, people maybe "weren't part of the original design and they just think of the vision as *that thing over there*" (emphasis added). Asking the types of generative questions at the heart of appreciative inquiry, Stanford contends, "allow them to cuddle up to that vision and say, 'Oh, this is something that I actually work in the service of and that I'm proud of.'" Using the design orientation at the heart of appreciative inquiry, then, prompts our faculty to see our pedagogical vision not as something that's written and then simply exists in our minds as an abstract idea but rather as something that we enact. This approach, we believe, will help us to strengthen teachers' sense that this vision is something that's connected to and guides their individual behavior—and that their teaching activities bring that vision to life.

Conclusion

In many respects, my discussion here is preliminary, in-process, and anecdotal. In this sense, I do not have formal, definitive conclusions to offer by way of formal research results. At the same time, I hope readers find value in learning about various strategies for implementing design thinking methods into professional writing program administration. In

my conclusion, I want to highlight five lessons that I a'm learning as I move from applying design thinking in my teaching and research to using this methodology with my WPA work in a professional writing program.

First, empathy interview questions can help WPAs to gain deeper insight on faculty members' thoughts and feelings about their experiences and desires. The stories faculty share, whether in one-on-one and small-group interviews or in larger settings, have value in and of themselves, as they enhance the likelihood that the faculty see themselves valued as people and as professionals. These stories benefit WPAs as well simply in learning more about and connecting with faculty. From a design thinking perspective, however, empathy research can also help WPAs to use data from faculty's stories about their experiences as a means to define problems or identify opportunities that could lead to significant improvements in faculty's experiences within the program and in the classroom.

Second, WPAs can find value in using design thinking methods to design with faculty themselves, engaging faculty in the design thinking process not only within the empathy research stage but also in the work of ideation, prototyping, and testing. At the time of writing this article, we have only scheduled this work and not yet enacted it, but we believe that generating and selecting and then testing prototypes of potential solution ideas with faculty will lead to solution ideas that not only will be more likely to address their needs but also will be more likely to be accepted and adopted by them. WPAs, then, should find opportunities to design with, not simply for, the faculty in their program. (As a side note, there undoubtedly are tremendous opportunities for designing with the programs' students, as well, from new assignment design to learning outcomes assessment design.)

Third, WPAs can help their faculty learn to be designers themselves, particularly in terms of designing learning experiences for students. My work with faculty in the Performance Improvement Plan program involved short yet focused engagements with faculty that prompted them to articulate a learning goal for all or a specific group of students, design a specific learning experience, and gather empirical data to gain insight on how that design effected affected student learning. While I didn't have faculty explicitly use the design thinking process here, the prompts I used to focus our conversations helped faculty to develop an empathetic perspective; to define specific learning needs from the students' point of view; and then to quickly prototype and test, gathering various forms of empirical evidence from students' engagement in that learning experiences and then iterating

and deciding where to go next in their learning experience design. Helping faculty learn to develop a design orientation to their teaching practice can help them learn to create more frequent feedback loops from students, generating insights about student experiences in the course throughout the semester, not only in end-of-semester course evaluations.

Fourth, linking a design orientation with appreciative inquiry can help WPAs find ways to implement, integrate, and enact those designs into the day-to-day teaching and learning activities of faculty and students. Based on our interactions with faculty in small-group workshops and one-on-one office hour consultations, our initial piloting and professional development work around the Positionality, Power, and Privilege curricular materials proved to be successful in terms of building faculty's confidence in integrating these materials into their courses. At the same time, we believe the generative questions that will focus our professional development activities in the spring 2023-2024 academic yearsemester will strengthen faculty's sense of connection to this pedagogical mission and vision for professional writing education. Faculty responses to these questions will help us to take stock of where we are, as a program, in terms of integrating these curriculum designs into respective courses. These responses will create opportunities for faculty to share their teaching strategies with colleagues, something that we identified as a need in the empathy and define modes on our design project focused on professional development. And these generative questions will prompt faculty to share their visions about how to continue deepening their enactment of this pedagogical mission statement in the coming year, and faculty responses to those questions will help us as a WPA team to identify strategies for creating supports faculty need to do that work.

Fifth and finally, WPAs need to learn how to tell stories about their design thinking work as a rhetorical strategy for earning buy-in from program faculty. Of particular importance here are integrating the voices of faculty wherever and whenever they engaged in the design thinking process, whether that be with empathy interviews, insights that shaped the problem definition work, or feedback during prototype and testing modes. Rather than focusing only explaining a particular policy, program, or curricular design, telling a human-centered story of how it was designed can help program faculty to better understand the empirical evidence on which a policy or program was developed, how faculty engagement shaped its design, and how its design will impact their professional experience in the program or in the classroom.

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Experience Architecture: Developing an Interdisciplinary UX Undergraduate Degree

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Abstract. This program showcase discusses the creation of an undergraduate user experience program housed in the Arts and Humanities and shared between two programs: the Department of Art, Art History and Design and the Department of Writing, Rhetoric, and Cultures in the College of Arts and Letters at Michigan State University. The design of the program was grounded in three guiding questions: 1) How do we develop a UX degree that is rooted in Humanities at an R1 land-grant university? 2) How do we develop a curriculum that is interdisciplinary and upholds the values of the Humanities? And 3) How can we remain agile and create space for curriculum revision that invites iteration in a way that does not chase industry, but produces graduates who can lead industry towards changes fostered by the work in the Humanities? In reflecting on these questions, the Experience Architecture (XA) Program was developed and deployed in the fall of 2013 and was revised in fall of 2020 to better situate the field under the umbrella of XA to filter conversations about human design thinking in and around a Humanities centered approach to problem solving. We are humans building and designing systems for other humans, not ones and zeros building for other ones and zeros—our efforts should be grounded in the ethics, morals, and values of what it means to build, design, and care for Humanities-based systems, be they digital or physical.

Keywords: program building, experience architecture, user experience, design thinking, research, design, content strategy, leadership

Introduction

So, how do you do it? How do you remind colleagues, researchers, peers across campus in STEM, parents, and prospective students that a Humanities-based approach to user experience (UX) is needed now more than ever? You can show them job ads online, all of them calling for the skills we teach in the Humanities like writing, empathy, rhetoric, human centered design, critical thinking, expression, leadership, and more. The list of jobs and their salaries help to convince parents of prospective students who are annoyed that their child is dropping out of computer science or engineering, and they are worried that their now very expensive degree won't land them a job to pay off the loan. So, the jobs list and salaries help those conversations, especially when we discuss more than the typical three jobs they could have after graduation, all with vertical trajectories for advancement, particularly when it comes to leadership. But to use industry data to convince other academics of the value of a program is always less acceptable. So, we frame it as a way to get on the inside—to get a seat at the table in order to eventually change the system. But this is always met with reservation. Thus, our efforts to develop, deploy, and revise an agile undergrad UX curriculum in the Humanities were grounded with interdisciplinarity in mind, because the program is shared between two departments and housed at the college level, its development required us to be flexible in our approach, thus enabling us to have diverse perspectives and questions ready for our students to deploy once they graduate.

For this article, by way of a “program showcase,” we offer here a set of descriptions and reflections around our efforts to develop the major, support the major, revise the major, and ensure it is sustainable for the next round of changes by future faculty. We hope that this article will offer some insight into the achievements, the struggles, and how such a program can be deployed at campuses around the world. Our hope with this article is to showcase a template for such a program and its proliferation of Experience Architecture on a global scale. In doing so, we believe it can advance the Humanities into spaces where it is not normally prioritized.

Origin of the Experience Architecture Major

The Experience Architecture (XA) major originated in several spaces and across many conversations. At Michigan State University (MSU), the program was built with the support of the Dean of the College of Arts and Letters (CAL) through the collaboration of untenured junior faculty in the Departments of Art, Art History, and Design (AAHD) and Writing, Rhetoric, and American Cultures (WRAC, what is now known as WRAaC: Writing, Rhetoric, and Cultures).

Pitching the Idea

The origins of the XA major at MSU can be traced back to the spring of 2011. At that time, the university was hiring several faculty as part of an initiative focused on Technology, Culture, and Creativity. During her on campus interview for a position as an assistant professor, Liza Potts spoke with CAL Dean Karin Wurst. The conversation centered on building a program that would prepare humanities students for technology-focused careers. Caught a bit off guard but prepared for the conversation because of her experience pitching ideas and recent conversations in industry¹, Potts outlined a program that would later provide the starting point for the working group that she led beginning in Fall 2011.

The initial idea was based on Potts' experiences working in the tech industry across the full gamut of user experience positions, including user experience architect, content strategist, usability engineer, information architect, program manager, instructional developer, and of course, technical writer (or, documentation engineer, as one start-up called it). Across these experiences, she used her humanities and social science training to learn how to best support people's communication needs by building better technologies. It was those experiences that the dean wanted to know more about and build into a degree that could send CAL's graduates into a world that was (is) increasingly relying on technology. In addition to that clear exigency, the work that Potts was doing in technical communication—how people communicate during times of disaster and how we can ensure that technology is a support, rather than a hindrance—was a central consideration for pitching the idea.

¹ When Potts was deciding whether or not to leave industry for academia in 2008, she was the director of user experience research at a design consultancy in Philadelphia, Pennsylvania. During one of several weekly 1:1s with each team member, they discussed how to scale their work in UX to make a bigger impact on the industry. A content strategist with a PhD in English, Dr. Lasagna (not her real name) urged Potts to return to academia, likening their 1:1s to empowering teacher/student advising sessions. It was then that Potts began to think about making this shift and building a program to train the next generation of user experience professionals with a strong foundation in the humanities.

Brainstorming Internally

After arriving on campus in Fall 2011, Potts was called into Dean Wurst's office and told to develop the new degree program with, then fixed-term faculty, Rebecca Tegtmeyer, a colleague in the Department of Art, Art History, and Design (AAHD). Tegtmeyer was recently new to academia and was hired at MSU in Fall of 2009, as a fixed-term hire. She had recently completed her Masters of Graphic Design at NC State University with a thesis that broadly explored the methods and processes of interaction design. It wasn't until Fall 2012 that Tegtmeyer was hired into the tenure-system at MSU as an assistant professor. Dean Wurst perhaps saw the potential in both Potts' and Tegtmeyers' areas of expertise and initiated their collaborative team. As the tenure stream member of the team, Potts was charged with leading the XA program committee and acting as the public face for the major across campus and externally with corporate partners. Bill Hart-Davidson, colleague in WRAC, acted as a mentor to Potts and Tegtmeyer, helping the team work through ideas and considerations throughout.

Most of the initial brainstorming consisted of Potts and Tegtmeyer meeting for hours to think through curriculum possibilities, research similar programs, and write up their ideas to share with the Dean and other stakeholders in their departments. While the team wanted to respond to the immediate needs in industry, they also wanted to build the positive future that their colleagues dreamt of in academia and industry (thinking back on their experiences at larger corporations, startups, and agencies). The goal was to create an undergraduate major grounded in the Humanities that would prepare a diverse group of students to lead an industry and enact positive change. By changing who gets a seat at the table when building technology, they wanted to change the industry itself and the technologies we would use in the future. The hope was that these future professionals could help move an industry obsessed with "disruption" to one that would encourage participation and champion equality.

Building Community

In thinking about how we could make the program interdisciplinary, we knew that we had to bring in partners from across campus and industry. As untenured faculty, we were at a disadvantage before we even began because of the hierarchical structure of academia. As scholars with previous lives as user experience and graphic design professionals, we knew we had the connections and vocabulary to build a program that would be understood in industry and beyond.

The Dean was justifiably adamant that we should partner with

multiple departments and colleges across campus. We discussed how this program could transcend the silos in higher education, helping students see across disciplines and envision new career possibilities. Undaunted (and more than a little naive), Potts and Tegtmeier began by meeting with colleagues in engineering, computer science, and business to pitch the program and offer up partnerships. While the initial reactions were positive, we quickly realized that most of the coursework would need to come from departments in CAL. The reasons were straightforward in that many of the STEM-based programs were bound to their own accreditation systems, without much leeway or bandwidth for creating new courses or altering existing curriculum.

For partnerships with user experience professionals in industry, we knew we had to gain a foothold in a space where defining the work is often more difficult than doing the work. At first, we began to reach out to our networks, talking about the initial ideas, concepts, and goals for the program. We were fortunate enough to connect with Keith Instone, one of the leading information architects in industry and a former teacher of Bill Hart-Davidson. As the first Experience Architect in Residence at MSU, Instone was pivotal in helping the program leaders understand how the initial curriculum would support our students after graduation. During the early years of the XA program, Potts was also engaged in a project with the leaders of Ladies that UX, an international organization for practitioners. Through her contacts there, she was able to talk about the degree program and co-sponsor a Michigan meet-up of two chapters of the organization with current students and professors at MSU, as well as publish the findings of several projects (Potts, et. al. 2017). This work led to the appointment of the second Experience Architect in Residence and former leader of the Detroit chapter of Ladies that UX, Emily Bowman. As the program progressed, we were able to expand these industry partnerships to include internships, hiring opportunities, and research opportunities.

The Initial Plan

The initial plan and paperwork were put together on an accelerated timeline, launching in 2013. Potts and Tegtmeier pitched several different courses and pathways, all of which aimed at making what Potts would refer to as “knowing enough to be dangerous” as professionals who could work across research, content, design, and development as user experience architects. In 2013, the revised and updated version of Don Norman’s *The Design of Everyday Things*, Norman noted that the group he “headed at Apple called itself the ‘User Experience Architect’s Office’” (xiv). We felt, given this title, it gave us an opportunity to rein-

vent the role of UX and the fields that fall under the larger XA umbrella.

For the initial iteration of the program, we drew on user experience concepts developed by thought leaders who valued building people-centered technologies. We placed XA at the center of this work with Peter Moorville's concept of context, content, and users (Figure 1), along with the concept of wicked problems, as articulated by Richard Buchanan (1992), UX as strategy as defined by Peter Merholz (2012), and several leaders in similar areas. We leaned on the work of information architects like Peter Moorville, Louis Ronsefeld, Jesse James Garrett, and Abby Covert; technical communicators Ginny Reddish, Karen Shriver, JoAnn Hackos, and Whitney Quesenberry; content strategists Kristina Halvorson, Melissa Rach, Karen McGrane, Erika Hall, Erin Kissane, Lisa Welchman, Sara Wachter-Boettcher, and Meghan Casey; information designer Scott McCloud; and researchers eCatherine Courage, Kathey Baxter, Kim Goodwin, Indi Young, Steve Portigal, Steve Krug, and a host of others².

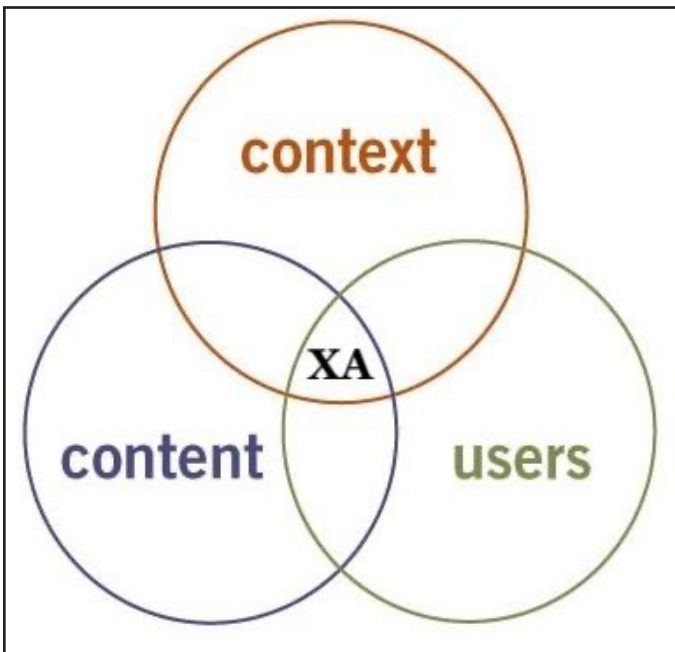


Figure 1. Mapping the three circles of information architecture (Moorville) onto our courses—edited with “XA” in the middle to show the overlap.

² Liza Potts takes full responsibility for this list and any inadvertent miscategorizations of this list of awesome folks who have shaped her thinking about ux. Apologies to anyone that we left out, for our brains can only hold so much awesome.

As we built out the curriculum, we aimed to create courses that would touch on the design process and include concepts from across our fields. We were (and continue to be) very cognizant that this degree was not a technical degree; the program needed to not just teach practices and tools, but it must focus on the whys of technology development and the impact of these technologies on our lives, societies, and cultures. Therefore, we needed to develop a way of balancing theory, method, and practice across the curriculum. This idea emerged from brainstorming sessions between Instone and Potts, as Potts was thinking through how to make this happen in each class. A Venn diagram similar to Figure 1 was developed, including all three aspects and highlighting how each was applied in a particular course. Thus, some courses would focus more so on theory, with bits of practice and method, and other courses might focus on method, with heavy doses of practice and a bit of theory guiding the discussion.

Our initial idea was to include courses that were focused on the iterative design cycle while making space for courses that would allow students to learn about cultures and communities. We would lean on courses in our departments to support the curriculum, such as courses on web design, technical writing, information design, digital rhetoric, graphic design, content strategy, communication, and design thinking. As our work on the curriculum progressed, Scott Schopieray, Associate Dean for Technology and Innovation in the college, helped us brainstorm ways in which technology could support our curriculum, both as a topic of discussion and as ways in which we could develop courses in humanities computing.

In the Spring of 2014 we were approved to hire two tenure-system faculty members in each department (AAHD and WRAC). This extended the program's areas of expertise and broadened the scope of what could be within the core curriculum. With the hiring of assistant professor in WRAC, Ben Lauren, we had a keen expert in project management, rounding out our XA specific courses. Zachary Kaiser was the assistant professor hired in AAHD, he brought a theoretical and critical approach to digital design.

The program itself was then discussed in a 2015 User Experience Professional Association (UXPA) article, where our colleagues Ben Lauren and Scott Schopieray joined us in describing the program in detail for industry professionals. The article outlined the learning objectives of the core curriculum which is explained in the following section.

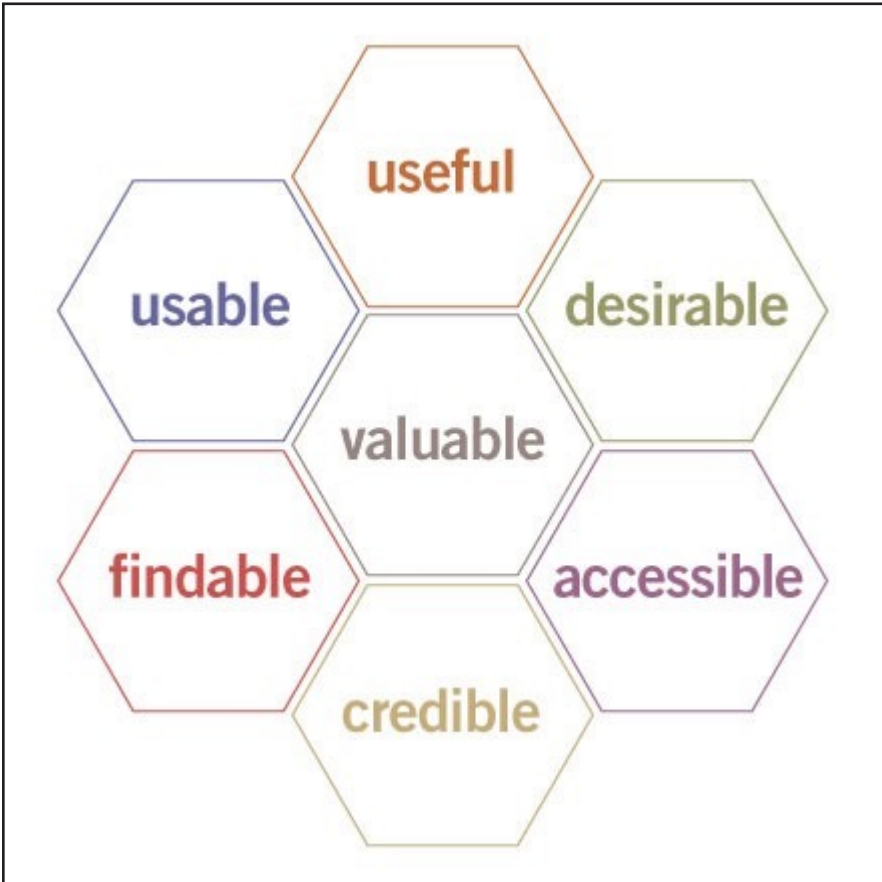


Figure 2. The User Experience Honeycomb (Moorville 2004).

Program Organization and Planning

College of Arts and Letters

The Experience Architecture program is a degree program designed as an inherently, necessarily interdisciplinary major, within the College of Arts and Letters (CAL) at MSU. CAL is the college that supports arts and humanities undergraduate and graduate education and provides opportunities for students to deepen their awareness of their place in a global world, to cultivate digital fluencies and ethical thinking, and to engage in professional development in order to make a successful transition to meaningful work prior to graduation. The XA program is the only degree program housed in the college and this position enables it to be an interdisciplinary major in the Humanities focused

on user experience. The initial curricular goals emphasized studies in rhetoric and design while drawing on courses from across the university in computer science and information technology. With the goal of teaching students to be architects of digital experiences, we see the XA major as a way to positively influence the ways in which we have traditionally built products and services by focusing on human experience first instead of prioritizing technology. With CAL's mission to build strength in design and digital humanities at the undergraduate level, it was crucial the program within the college be supported by areas of study and practice from across the college, bridging expertise in user research, information architecture, project management, and prototyping. As mentioned previously, the coursework is primarily across two departments: Art, Art History, and Design (AAHD) and Writing, Rhetoric, and Cultures (WRaC).

AAHD Department Profile

The Department of Art, Art History, and Design (AAHD) is made up of five major disciplinary undergraduate programs: Apparel and Textile Design (ATD); Art History & Visual Culture (HA); Graphic Design (GD); Studio Art (STA); and Art Education (STA). Additionally, the department offers undergraduate minors and maintains an MFA graduate program. Coursework across these programs engage students in individual expression, collaborative problem-solving, and experimental processes through making both digital and analog artifacts across the disciplines of art, art history, and design. The mission of AAHD is to integrate the history and practice of art and design in the MSU community, contributing to a greater understanding of the human condition.

WRAC Department Profile

The Department of Writing Rhetoric, and American Cultures (WRAC) houses the First-Year Writing Program for all students across MSU, in addition to facilitating undergraduate programs in Professional and Public Writing (P2W). WRAC now offers an undergraduate Minor in Writing and maintains a graduate program in rhetoric and writing. Coursework across these programs gives students exposure to aspects of career and civic writing skills, including community research, audience analysis, drafting and revision, editing and typesetting, project management, publication, digital rhetoric, and multimodal composition. The mission of WRAC is to prepare students within the culturally, technologically, and economically dynamic environments of the 21st century and to shape research and extend scholarly conversations in rhetoric and writing studies.

Together, these two departments form the core faculty for the XA program, curriculum oversight, and its leadership. United, this partnership showcases how interdisciplinarity plays a crucial role when it comes to guiding and enacting cooperation between departments and fields.

Curriculum and Departments

Goals for the Initial XA Curriculum and the XA Core Courses

The initial XA curriculum offered courses that balance theory with practice combining hands-on learning of the research, theory, and practice of creating compelling experiences. Originally established as a collaboration between The College Arts & Letters and The College of Engineering, the coursework offerings allowed students to select courses in visual design, web and mobile application development, content management, and computer science, to deepen their skillset. The first XA majors took 56-63 credit hours of required coursework; and additional credit hours to total 120 credits.

As a degree program rooted in the Humanities, new courses were developed to uphold this as the standard and meet the mission of the program to be a cutting-edge, interdisciplinary field of study and practice, with an emphasis on experiences in digital environments that prioritize the people that use them. New courses established an “XA Core” that included courses in: User Research, Information Architecture, Project Management, and Prototyping. All of our courses are created with the help of our industry partners and our course content is reviewed and updated each time we teach these classes to ensure that they meet industry standards and address recent innovations.

User Research: Understanding how to conduct user research with a strong focus on ethics and participation is part of our core instruction. We teach user research practices, deploying both qualitative and quantitative methods, with a particular emphasis on empathy and ethnographic practices. This course is influenced by the work of Clay Spinuzzi, Tharon Howard, Steve Portigal, Kim Goodwin, Indi Young, Tomar Sharon, Erika Hall, JoAnn Hackos, and Ginny Redish.

This course is a chance to teach our students various methods, such as interviewing, observation, contextual inquiry, space assessment, and usability testing. We also discuss how to sell research both internally to the team and externally to partners and clients. Students take on projects that allow them to conduct site visits, run testing sessions, and deliver findings to external and internal clients.

Information Architecture: This course provides students with the theory behind the practices we deploy as user experience professionals and focuses on the theoretical underpinnings of user experience with an emphasis on information systems, information design, and usability. The curriculum in this course is influenced by the work of Patricia Sullivan, Michael Salvo, Whitney Quesenbery, Peter Morville, Louis Rosenfeld, Peter Merholz, Brenda Laurel, BJ Fogg, Jesse James Garrett, Don Norman, and Alan Cooper.

Our students learn about the history of user experience and theories coming from the many fields that have shaped the research and practices of it. Students are able to take a deep dive into several areas of user experience, focusing on theories from anthropology, computer science, human computer interaction, human factors, philosophy, and technical communication.

Project Management: The XA project management class addresses the intricacies of communicating effectively in the workplace as an essential skill of project managers.

The course emphasizes strategic communication and empathy through hands-on project work that creates opportunities to learn about individual and team-based project management and gives students a basis for thinking through issues that influence the workplace—from emerging working environments and the effects of globalization on team dynamics to helping architect valuable employee experiences in the workplace.

The project management class also invites industry professionals to participate as part of the student experience. Finally, students learn that iterating communication strategies is an important part of facilitating projects in inclusive, empathetic ways and can help make user experience a more central part of what companies do.

Prototyping: The XA prototyping course offers an exploration of the process models used in the designing of interactive experiences. A focus on the organization of information, user and system interactions, and interface design prepares students for building effective prototypes appropriate for communicating interactive concepts. Students analyze and practice a range of prototyping tools and methods commonly used in industry, such as storyboarding, lo-fi sketches and wireframes, and hi-fi interactive prototypes.

The course emphasizes the various ways in which a prototype design functions in the project process—to demonstrate a concept to stakeholders, to perform a user test, and to illustrate system behaviors

to developers. Finally, students learn that prototyping is necessary in identifying major usability errors early on in the process, enabling iterative testing and feedback in a quick and cost-effective way.

Drawing from other programs across the university, students can supplement their degree by taking courses in content strategy, visual rhetoric, design thinking, logic, rhetoric and culture, programming, technical communication, and web design.

Interdisciplinary Courses (coursework with the College and beyond)

Coursework in Computer Science: Incoming XA students will have a strong understanding of how to use computers, implement file structures, navigate the internet and mobile devices, and be curious about how computers work. It is not assumed or required that students have prior programming experience. The goal of including computing courses in the curriculum is to provide students with basic skills about software development such that they could work with software developers in the workplace and research settings. The initial XA curriculum offered coursework through the College of Engineering, Department of Computer Sciences and Engineering (CSE). Required courses in the Fundamentals of IT, Programming I, and Programming II were part of the initial requirements in the XA degree. These courses were selected due to the minimal math requirements/prerequisites necessary for this level of programming coursework, yet the courses didn't fulfill the needs of our students. Soon after the degree was launched, plans to develop our own introduction course in Computing Science and Engineering (at the college level) would be the necessary next step in the development of the program. In this course, a focus on the fundamentals of software development for Experience Architecture majors, including principles, concepts, and reasons for employing different types of languages (examples include markup, markdown, scripting, object-oriented, and hardware-based) and working with development teams was emphasized.

In parallel to these CSE courses, students were required to take a 1 credit Humanities and Computing Project (I and II) courses offered through the College of Arts and Letters. This course was to be taken at the same time (co-requisite) as when students were enrolled in the CSE Programming I and Programming II courses, to guide students in connecting their computer science knowledge back to the program and at a greater level, the Humanities.

Coursework in Graphic Design: Graphic Design is the art of visual communication. Coursework in graphic design ranges in medium, content, and collaborations. In each course students explore ideas through various forms across disparate environments. The courses simultaneously call upon timeless and emerging design principles to present informative, representative, and persuasive messages to both passive and engaged audiences. Through a curriculum that prepares students to define and solve problems across all media, students are prepared to grow and adapt as visual communicators at the cutting edge of technology.

The Experience Architecture initial curriculum offered a range of courses in graphic design in which the students could select a series of courses that would function as a track and/or emphasis in design. Courses in Design Thinking, Concepts of Graphic Design were required for XA students, these courses establish methods of critical thinking, processes to understand people and the systems through which they interact, and the theories, concepts, and tools central to the development of communication systems. The Interactive Web Design, Typography, and Motion courses were available as electives for XA students. These are studio- and project-based courses that guide students through more intensive projects. These projects help to articulate their role as future UX professionals within the larger scope of design and identify their specific skill sets in a project process.

Coursework in Professional Writing: Professional Writing courses empower students to be creative thinkers and community leaders and are for those interested in gaining advanced skills in writing for and with people online and in print. In the program, students engage in career-related and civic/public writing skills, including community research, audience analysis, drafting and revision, editing and typesetting, project management, publication, digital rhetoric, and multimodal composition.

The study and practice of rhetoric is a major component of our XA program. Focused on how best to address audiences and work with participants, our courses on rhetoric and writing seek to provide an education where XA students learn to be better user experience researchers and practitioners. These courses include an emphasis on culture, visual rhetoric, content strategy, and technical writing, as well as help guide our curriculum in information architecture and information design. Students in the initial XA program were required to take Rhetoric, Persuasion & Culture, Introduction to Web Authoring and Advanced Web Authoring. Selective course options were Information

and Interaction Design, Technical Writing, and Digital Rhetoric.

Coursework in Philosophy: As mentioned previously, the curriculum focuses on the needs, issues, problems, and challenges of everyday people. We start with people not technology, and as a result, work to understand cultural values from the bottom-up. For this reason, the initial curriculum includes a course offered in the Department of Philosophy, a course in Logic and Reasoning. In this course students learn the logical structure of arguments, how to identify good and bad reasoning, and how to critique and craft your own arguments.

Extracurricular Experiences to support industry partnerships

Maintaining and sustaining our industry partnerships is an important component of our program. Two extracurricular initiatives were created to support and maintain these professional relationships with the program, faculty, and students. A position called an Experience Architect in Residence (or XA in residence [XAiR] for short) was established and funded for the first four years of the program.

Keith Instone, was the first “XA in residence” from 2015 to 2017. Keith was co-founder of Tech Toledo, LLC and was an Information Architecture lead at IBM for the previous ten years. At the time of his residency with the XA program, Keith was an adjunct professor at Bowling Green and a freelance UX professional. Keith’s work includes advising us on program development and course content. He held workshops with our students and connected them with industry conferences. Keith also talked to other practitioners about our program and our students. He met regularly with faculty to advise on course curriculum development, ensuring the objectives were in-line with the expectations in industry. It is important to note that in 2005, Keith put out a call to academics and practitioners to work together, and so he was the perfect individual to serve as our first XAiR.

Emily Bowman served as the second Experience Architect in Residence from 2017–2018. Her UX work focused in the area of automotive UX research. She was a Senior UX Designer at General Motors and then became their UX Experience Design Strategy Lead. Prior to this role, she was the Design Group Manager at Empirical UX Research and Design. Emily was also an active leader of the Ladies that UX Detroit. In her role as the XAiR, Emily supported the program through strengthening connections with industry organizations and professionals. She offered a professional perspective on user experiences design and mentored students in preparing themselves for future careers in UX.

Another experience that builds on the students’ connections to in-

dustry partners is the *Day of Professionalization*. When it was originally conceived, this day took place in the spring at the end of the semester. Invited professional guests would speak on panels and/or review the work of students. In fall of 2019, the day became an event that occurred in each semester in order for all students to have the experience no matter if they were graduating in fall or spring. Over the years, speakers have come from all over to share their knowledge and experience on a range of topics that inform our students and our program. For example, in spring 2021 Jessica Bellamy presented on social justice as design, in fall 2021 Lisa Welchmen discussed digital governance, in spring 2022 Melissa Eggleston did a workshop on trauma informed design, in fall 2022 Renée Reid worked with students to understand inclusive design, and in spring 2023 Kaleena Sales discussed challenging Eurocentric design and decolonizing problem solving.

These collaborations with industry are a central part of the XA experience. As Ben Lauren et. al. note, not everyone has to partner with industry professionals, but it is important that “we continue to learn from each other in ways that synthesize experiences across contexts, values, and beliefs” (2023). This echoes the efforts of Rebecca Walton, Kristen Moore, and Natasha Jones (2019), where they note we should work to build and maintain coalitions over extended periods of time. Bringing in industry professionals informs our program in a way that helps our students plan for their spaces to enact change.

XA Faculty

Our program’s faculty is composed of internationally known researchers in the fields of rhetoric and writing, internet studies, and design working with partners in Africa, Asia, Australia, Europe, North America, and Zealandia. Our faculty is composed of We have teacher-scholars from the Department of Writing, Rhetoric, and Cultures (WRAC) and the Department of Art, Art History, and Design (AAHD), as well as academic specialists within the College of Arts & Letters (CAL). Several of our faculty are leaders in their respective academic communities, leading organizations (SIGDOC, ATTW, AIGA, CAA) and mentoring junior scholars and students (AIGA, Women in Technical Communication).

Consistently locating funding for their work, our XA faculty have made a significant impact on the research direction of their respective fields and digital humanities writ large. Our work has been funded by the National Endowment for the Humanities (including their program on the digital humanities), Institute of Museum and Library Services, and internal MSU funding including the College of Arts & Letters Undergraduate Research Initiative. Over the past several years, XA

faculty have published several books, peer-reviewed publications, and presented their research. Many of our faculty and academic specialists are also conference leaders and board members of professional and academic organizations such as— HASTAC (Humanities, Arts, Science, and Technology Alliance and Collaboratory) one of the world's first and oldest academic interdisciplinary networks, AIGA (the professional association for design) the oldest and largest professional membership organization for design, CAA (College Art Association) the preeminent international leadership organization in the visual arts.

Our faculty is also well-connected to industry partners who are connecting with us on issues of curriculum and student opportunities such as internships and permanent employment. These partners include leading experts in content strategy and user experience, user experience design, former employees and employers from our time in industry, current and past clients, and sponsors of our internships. Ten years on and our alumni are working with job titles such as UX Designer, UX Researcher, Web Audit Coordinator, Senior Accessibility Specialist, Product Designer, Experience Architect, Web Developer, Senior Software Engineer, UI Designer, Digital and Technology Analyst, Accessibility Program Manager, Senior Product Designer, Chief Executive Officer, Legal Quality Operations Manager, Accessibility Engineer, Senior Digital Product Designer, Digital Experience Manager, Professor, and more.

Curriculum Redesign

In the fall of 2018, an assessment began to see how the program was living up to its initial design. The XA adviser at the time noted significant difficulty when it came to getting students into certain courses, especially those that never materialized, such as the AL courses. XA students also noted the anxiety and difficulty associated with the intro to computer science courses (CSE). After some research, we discovered these CSE intro courses were informally being used to weed out students they felt unable to complete their own curriculum. The initial attempt to get students some background in computer programming and a better understanding of coding languages was ideal, but the execution of a program outside of our curricular control was not in line with our goals.

After realizing the CSE courses were less than ideal for our students, noting that certain AL courses were not created, and with a high rate of our students transferring into the program and seeking a better time-to-degree lifecycle, we entered the spring 2019 semester with the goal of revising the curriculum. We connected with The Hub at MSU,

an innovation space that explores curriculum, unit strategic plans, and a pedagogical research space, to begin conversations around what the program could be. All XA faculty gathered, brainstormed, and collected data via several design thinking activities. While the guided activities were helpful, we soon realized that many of us already had experience doing these activities on our own, so we decided to do this ourselves.

After reserving a space off campus, we planned an entire day to redesign and rebuild the curriculum as it had initially been envisioned, but with some modifications coupled with the understanding that the industry was changing. This gave us a chance to develop a more iterative curriculum that could be informed by feedback, thus making it proactive, not reactive. By doing this, we understood we were not chasing industry, rather, our goal was to produce leaders who would put people over profit and change industry in positive ways.

For the retreat, we built an agenda that had a specific goal: revise the XA curriculum so that it meets the mission of the program. The goals were then broken down into subsequent outcomes - in revising the curriculum, students will be able to: connect courses with professional work they will do when they graduate; navigate a more accessible curriculum; create change agents in industry.

To host our discussion and the multitude of documents and data we had collected since the program's inception in 2013, we created a website to act as our own hub for data collection. In Figure 3, you can see the landing page and the agenda, with each section guided by a faculty member.

redesign xa	9-9:30 RECAP (Casey)
agenda	9:30-10:30 REVIEW + work to revise MISSION STATEMENT (Rebecca)
goals	10:30-11:30 GOALS (Dawn)
courses	What do the students need to know/experience by the time they graduate?
9-9:30 - casey	
9:30-10:30 - rebecca	11:30-1:30 LEARNING OBJECTIVES (lunch)
10:30-11:30 - dawn	Breakout into groups
11:30-1:30 - learning objectives (lunch)	Review Hub Materials
1:30-3 - zach	How will the students meet these goals through their education?
3-5 - realign courses	1:30-3 ALIGNMENT OF OBJECTIVES W/ COURSES (Zach)
final takeaways	How do learning objectives align with the current courses, where are the overlaps and where are the gaps?
	3-5 REALIGN COURSES (Everyone)
	Come away with a revised curriculum
	Removing, adding and inventing courses per the objectives.
	Identify Core, Selectives, Electives, Extra-curricular Experiences (Internships)

Figure 3: The landing page for the website we created to help guide us through the day's discussions and activities. On the left is

the navigation with links to subsequent pages.

The agenda gave us a reminder of the work we had been doing since XA's creation in 2013, as well as the work ahead of us for the day.

Recap

We framed our recap within three factors: social, technological, environmental, and economic. In Table 1, you can see we framed these factors in two ways: where XA currently resided at the time and where we wanted to see XA in the future. The key takeaways were that as we worked with students and stayed connected with industry, we felt XA could do more to enact the change it was designed to do.

Factors	Where is XA now?	The Future of XA
Social	Consumer behavior + society and culture (flattened) Focus on the individual user vs. social/cultural collectives Consumption as participation Users, consumers, clients	Quality of life Accessibility anchored More connection, less privacy Communities that don't exist yet Multicultural perspectives Global contexts Understanding systems of elementary education, how children learn to function in the future Help people Advocates Consider movement back to craft, complete rejection of technology consumerism Facilitate communication between disparate people
Techno-logical	AI as artistry Apps! Apps! Tools Tools Production driven/client driven Increasing access to content through paywalls, pirating Legal and ethical considerations	Understand that trends influence trends Tools and hardware sort of ubiquitous and seamless, less "latent things" stress Connected broadly across spaces (Hub, Hive, Hatch, Lib) History of technology understand now and the future Principles over tools Principles (and tools) Effects of automation on making things Challenge the use of current technological tools Remote making

Factors	Where is XA now?	The Future of XA
Environmental	Digital only Nonprofit and gov't sector invisible Utopian beliefs in high tech/Silicon Valley UXPA and LinkedIn as culture	City structures changing in response to transportation evolution How do people behave/interact in changing environments/changing city structures Invisible technology tools Not just virtual Protect, engage, help others, do both (through/with/around) interfaces Michigan Trail Maps
Economic	Get job on current UX/UI market - present Education primarily driven by the university/semester model Increasing specialization with "less" generalist Uncritical approach to market forces	Making money and change UBI/Universal Health Care = people choosing things they love over money/stability Subverting power structures Job/title may not exist yet Education will be available in multiple ways that are valued (certification)

Table 1: A table of factors with the current state of XA and where we wanted XA to be in the future.

The recap also consisted of an overall reminder of the origins of XA, a presentation on the data collected from The Hub on student concerns, many of which surrounded their difficulty in navigating a program with courses that did not exist and CSE courses that were overly difficult.

Data from The Hub's survey pointed to several elements we needed to explore at the retreat:

Benefits of XA <ul style="list-style-type: none"> • Collaboration • Community • Mentorship 	Challenges of XA <ul style="list-style-type: none"> • Navigating the Program • Breadth of Skills • Potential for Collaboration Between XA and Other MSU Programs • XA Capstone
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Table 2: the benefits and challenges of XA.

With these elements in mind, we moved on to the next stage of exploring what the mission statement of the program was and if we were holding true to it. At the end of the recap was a reminder of our agenda and final deliverables:

Deliverables

- 1) Revision of core
- 2) Suggested pathways & electives
- 3) Faculty list (core, affiliate, requested hires)
 - a) Who faculty are, what they do
 - b) Our needs

This laid the foundation for our efforts and a reminder that we needed to end the meeting with clear and concrete artifacts that could guide the conversation from theory and into practice.

Mission Statement

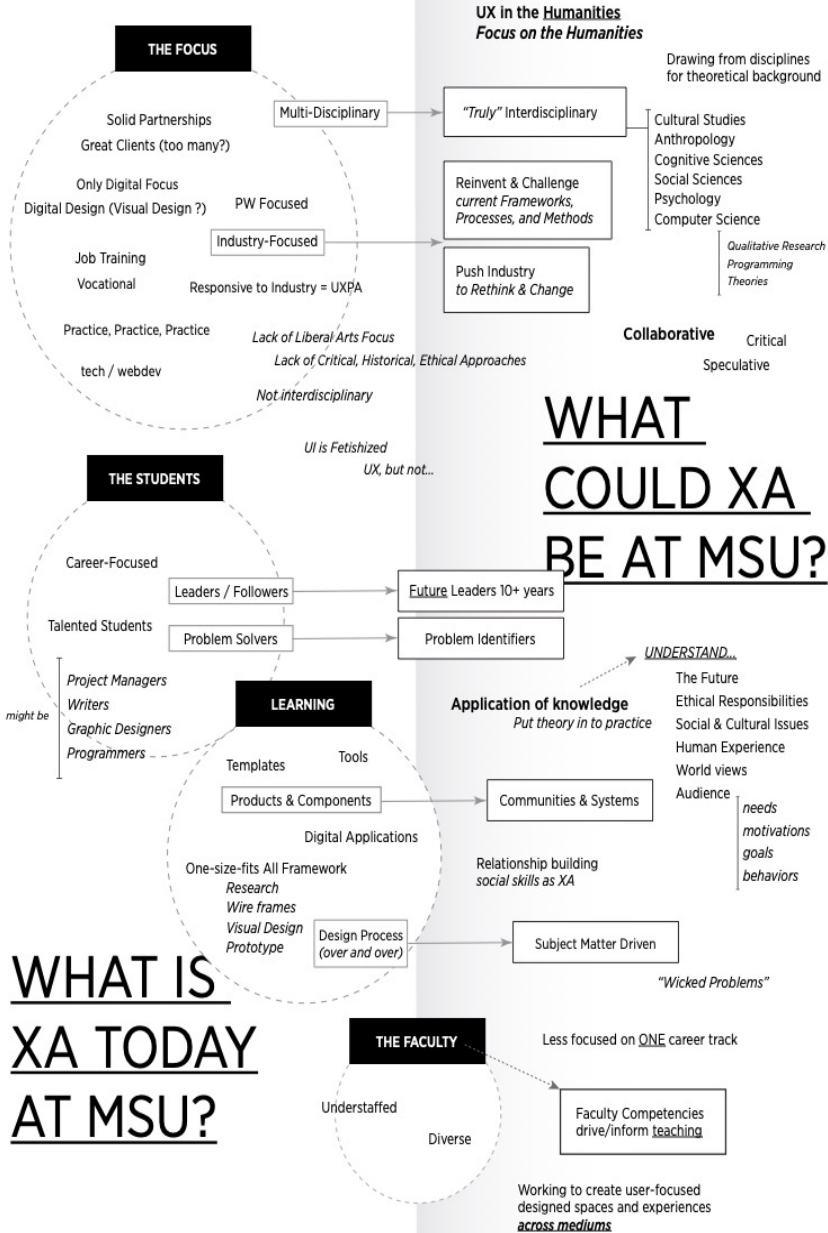
At the redesign we noted the XA mission statement had not changed since its initial creation of the program in 2013. In that time, a lot had changed. Our program was becoming more diverse, our faculty was growing (but not fast enough!), our connections to industry were expanding, and we were seeing the impact that our first few cohorts were having on industry. Essentially, we were beginning to see if everything that had been planned was working.

Having a better understanding of the mission of the program, we then worked to revise the mission statement.

2013 Original XA Mission Statement

- The B.A. in Experience Architecture is a program for students who want to specialize in experience architecture as an area of expertise. Majors develop a theoretical understanding and advanced skills in experience architecture with an emphasis on user experience in digital environments. The major prepares students for careers in user experience, interaction design, design research, usability, information architecture, project management, interface development, and web development. It may prepare students for graduate work in design, rhetoric, writing, and information studies.

After revisiting the data from The Hub and generating our own definitions based on our experiences teaching classes, experiences with industry, and a general understanding about the impact our students were having, which led to our final understanding of the impact our students could have on industry, we revised the main statement better reflect our core ideals that moved from a more concrete set of outcomes to a roadmap for how we imagined the efforts of our students being deployed post MSU.



2019 Revised XA Mission Statement

- Experience Architecture (XA) is a cross-disciplinary User Experience (UX) degree that makes its essential focus staging improved and just experiences in the world. It is a values driven program engaging UX as a vehicle for future change agents. We believe that people deserve to engage with usable, accessible, and sustainable spaces. We position XA students to engage these spaces and contribute to designing a world in which they would want to participate.

In Figure 4, you can see the data collected from the activities we conducted at The Hub to better understand XA's role at MSU and in the world.

Figure 4 (facing page): A visual representation by Rebecca Tegtmeier of what XA could be compared to what it was at the time of the redesign meeting in spring 2019.

Goals

A faculty member then guided us through a landscape analysis of other programs exploring some of the same ideas of XA, but mostly grounded in design only, or lacking the Humanities lens.

We created learning buckets and asked ourselves: "What do the students need to know/experience by the time they graduate?" We created specific buckets that we then populated with descriptions and examples of what we imagined each bucket could contain.

Buckets

1. Tools & Languages
2. Artifacts (What are the things they need to make or are making?)
3. Soft Skills (or "Power Skills")
4. Theories & Concepts
5. Research Methods
6. Principles (Guidelines?) (Awareness of...)
7. Values
8. Other

These buckets had a variety of data we collected as a group.

Buckets	Descriptions
Tools & Languages	Industry tools; understanding the limitations of tools (an overreliance on tech); Adobe Suite; software as Lego blocks; Experience Design as a physical space; etc.
Artifacts (What are the things they need to make or are making?)	Portfolios (their ability to discuss processes); writing project narratives (case studies); designing presentations; learning plans; project plans; workplace documents; websites; iPhone/Android applications; etc.
Soft Skills (or “Power Skills”)	Oral communication/presentations; reflective reports; classroom engagement; collaboration; problem solving; inquiry/research/critical thinking; self-learner; ideation; breaking and learning; leadership; etc.
Theories & Concepts	Biases of technology; culture biases (worldviews); systems thinking, social cognition; pattern recognition; critique of capitalism; environmental concerns; social justice; spatial navigation; service design; activity theory; computational thinking; participatory design; etc.
Methods	Ethnographic; qualitative; narrative; scenario-based design; mapping; modeling; morphological thinking; storytelling; data analysis; critique methods; iteration; memory systems and archives; speculative design; etc.
Principles (Guidelines?) (Awareness of...)	Visual communication, typography; accessibility; motion design; interaction design; cross-disciplinary work; media literacy; critical analysis of tech; ethics; racialization of tech; technical communication; etc.
Values	Thoughtfulness; courage; empathy; social justice; community engagement; empowerment; advocacy; growth mindset; determination; global citizenship; sustainability; understanding how actions in digital spaces inform/impact physical behaviors; etc.
Other	Automation of the profession; impact of tools; political-economy of automation; etc.

Table 3: Buckets and Descriptions of each bucket.

These buckets provided insight into how we had been approaching these aspects of the major and how we can better support those that support the new mission statement.

Learning Objectives

Given XA’s interdisciplinarity, we felt that when it came to the revised learning objectives, we want faculty from both spaces to connect and talk with one another. We had already collected data on each core XA course via a grid document that collected the course name, the language that the registrar used to describe it, the course objectives listed in the registrar, the course outcomes from different iterations, and the

major assignments used to help students meet those outcomes. Below is a sample and summary of what we did for XA 242, the intro course.

Class

- XA 242 Introduction to Experience Architecture

RO Description

- Basic principles of user-centered design as applied to user experience. Usability, information architecture, interaction design, and service design practices, tools, conventions, and professional community.

RO Course Objectives

- To introduce the theory and practice of user-centered design as it applies to researching, architecting, and designing products, services, processes, and experiences relating to user experience. To learn about the history, practices, and professionalization of user experience architects, including genres, contexts, and locations. To develop an understanding of the lifecycle of user experience projects, including planning, researching, designing, adapting, and measuring user experience.

Course Outcomes

- These varied from instructor to instructor, but they focused on a few main topics:
 - Articulate a detailed representation of the field by describing the role of an experience architect in an organization.
 - Evaluate the tools and resources available to experience architects.
 - Begin to learn how to manage XA projects.
 - Understand the theories and practices associated with architecting flexible, dynamic structures that deliver information to users when and where they need it.
 - Learn how to evaluate the user needs of a product, service, or policy to recommend methods of building positive experiences.
 - To become acquainted with the concepts of “experience” and be aware of the many environments (both physical and digital) in which these experiences occur.
 - To make connections across the various components within a system and understand that experiences happen in the smallest and broadest moments.
 - To practice effective methods of offering actionable, constructive feedback to peers and provide just-in-time, useful critique.

Major Assignments

- These varied from instructor to instructor, but they focused on a few main topics:
 - Exploring the Field of XA
 - Building a Communication Portfolio
 - Analyzing XA Tools
 - Understanding People
 - Understanding Industry
 - Client Project

After consulting the large document populated by faculty with these data points for every class, we began to find overlaps with course outcomes and an overall theme within the core courses. We then worked to align objectives with courses, how they fit into the new curriculum, and what it could look like. In doing this, we observed we needed to revise two main areas: prototyping and project management. We realized that prototyping was happening in the bulk of our courses—it was happening in the intro course, the web authoring courses, in GD and STA courses, and thus having a course whose sole purpose was to explore prototyping was deemed redundant. We also found that the project management course was more or less teaching students certain software systems rather than what it is to be a leader, a manager, or someone who listens and supports colleagues and peers. We decided to remove the project management course and replace it with a leadership course that explored human connection and understanding. This shift echoed our feelings that if our students were going to enact real change in the world, they were going to have to do it from leadership positions - that in order to remove and redesign systems, our graduates needed to be in a position to do that very thing.

After removing those two courses, we sought balance between courses focused in XA, rhetoric, and design. We felt this balance could give students a better lens to see the work to enact such a change, while also taking advantage of XA faculty knowledge and experience, as well as some hopeful hires. We created Table 4 to better understand our course offerings and where we were operating over capacity. Note that the AL designations are there because we eventually shifted those to be XA.

	Spring 2018		Fall 2018		Spring 2019		Total
	Students	Limit	Students	Limit	Students	Limit	Stu./ Lmt.
AL 242.1	20	18	28	18	22	18	70/54
AL 333.1			22	18			41/36
AL 333.2			19	18			
AL 366.1	21	20					21/20
AL 375			19	18			19/18

	Spring 2018		Fall 2018		Spring 2019		Total
	Students	Limit	Students	Limit	Students	Limit	Stu./ Lmt.
AL 444.1	20	20			21	20	60/60
AL 444.2					19	20	
AL 466	11	10			26	20	37/30
STA/ GD 260	48	50	20	20	52	50	120/120
STA/ GD 303	21	20	20	20	21	20	62/60
WRA 210.1	21	20	22	20	22	20	130/120
WRA 210.2	23	20	20	20	22	20	
WRA 410.1	20	20	20	20	23	20	80/80
WRA 410.2					17	20	
WRA 491.1			18	15	13	15	31/30
						Total	671/628

Table 4: A breakdown of XA courses by courses, enrollment, and student enrollment limits.

Finding a better balance was crucial to help guide students through the curriculum, better connect with our new core goals and outcomes, and offset the over-capacity experiences our students and faculty were encountering. This aided in our approach to ensuring that the realignment would stay on task with our mission.

Realign Courses

Initial courses that were never created by the college were AL 150 Humanities and Computing Projects I and AL 251 Humanities and Computing Projects II. The CSE courses that had been required, CSE 201 Fundamental of Information Technology, CSE 231 Introduction to Programming I, and CSE 232 Introduction to Programming II, were removed from the curriculum entirely and replaced with XA 310 Computational Thinking for the Humanities.

As you can see in Table 5, the redesigned curriculum evenly spread courses between XA, WRA, and GD. We added the AL 250 course to

aid in our students' ability to prepare for internship applications via resumes and cover letters. We then replaced the Intro to Philosophy course with the Philosophy of Technology class to better connect diverse theories of technology and its impact on economies, populations, and cultures.

Final alignment:

Core Classes		
XA - 4 classes	WRA - 4 classes	GD - 4 classes
XA 242 - Intro to XA XA 310 - Computational Thinking XA 333 - Researching XA XA 466 - XA Capstone	WRA 210 - Intro to Web Authoring WRA 401 - Rhetoric, Leadership, Innovation WRA 410 - Advanced Web Authoring WRA 415 - Digital Rhetoric	GD 160 - Digital Graphic Design: Tools and Methods GD 260 - Concepts of Graphic Design GD 303 - Experimental Design Practices GD 468 - Interaction Design
AL 250 - Career Strategies for Arts and Letters Students	PHL 355 - Philosophy of Technology	
Electives		
XA 375 - Information Architecture XA 482 - XA Internship	WRA 320 - Technical Writing WRA 420 - Content Strategy	GD 467 - Motion Design STA - 380 - Electronic Art STA - 384 - Experiments in Digital Video STA 385 - Interactive Environments and Digital Fabrication

Table 5: Final alignment of XA courses after redesign.

Student + Alumni Success

Client-based projects have been at the heart of the program since it was created. This plays a crucial role in the introduction class and the methods class, both of which require students to work in teams to work with a client, conduct research, develop mockups, and present findings with real feedback.

We have been fortunate to have partnered with some amazing units on and off campus. We have worked with the MSU Library to help redesign their landing page, their Sparty Cafe, and their Rovi Gaming Library. We have worked with the MSU Bughouse to help them develop better wayfinding as patrons move through their space to examine their exhibits. We have worked with the MSU Museum to support their

Science on the Sphere (SOS), a physical exhibit that explores interaction within the context of the museum environment. We worked with the MSU Theatre Department to help them create a better checkout system for purchasing tickets and organizing their waiting lines for performances. We have also worked with a local organization, Tech-smith, to test new and updated versions of their software.

All of these projects and clients have given students case studies to put on their portfolios to showcase their process. As a result, we have alumni who work for a variety of organizations. They have worked for Google, Facebook, Ford, Rivian, General Motors, General Mills. Our alumni are senior accessibility leads at banks, at software companies, and mobility organizations. They have gone on to create their own fashion lines and non-profit organizations.

The success of our students and their entry points into these organizations gives us hope that the new curriculum is helping them enact change. We have seen a shift in our student population as well. As of spring 2023, an internal data collection from our office of Planning and Budgets shows that we have hit over 180 majors in XA. The population data notes: 17% of students identify as African American/Black, 14% as Asian, 5% as Hispanic/Latinx, and 5% as international. Over 32% identify as first generation and over 31% have received a Pell Grant. Our efforts to diversify our curriculum and create more inclusive spaces have worked, but there is still room for improvement.

Design Thinking

Since the redesign, we have met several times to revise and update course goals and outcomes to ensure they connect with the revised program outcomes. In the Appendix, you can find the revised XA Program Outcomes that emerged from our new mission statement from the redesign. In the fall of 2022, we used Design Thinking activities to help us realign course learning outcomes and goals for all XA core courses to ensure that the experience across those classes were consistent. We felt it was important to have a standard syllabus with precise goals, outcomes, recommended texts, and deliverables for new faculty teaching the course. We have many graduate students who are doing this work, as well as practitioners who have taught our classes, and we believe this template will ensure a common experience for all XA students. Below is a sample of what we did to XA 242:

XA 242: Introduction to Experience Architecture (3 credits)

Basic principles of user-centered design as applied to user experience. Usability, information architecture, interaction design, and service design practices, tools, conventions, and professional community.

Deliverables:

- Projects or artifacts to be placed on professional portfolios.
- Five year plan - how students will navigate the program and life post MSU.

Goals: During this course, students will work together to:

- illustrate a detailed representation of the field by describing the role of an Experience Architect in an organization and their work within multiple communities.
- interpret and become acquainted with the concepts of “experience” for people, communities, cultures, and be aware of the many environments (both physical and digital) in which these experiences occur.
- compare and connect the various components within a system and understand that experiences happen in the smallest and broadest moments, regardless of medium.
- explore methods of ethically aligning experiences to user and community needs.
- relate the complexities of the field by describing the various roles and skills of an Experience Architect in the current landscape and prepare for possible futures.

Outcomes: By the end of this course students will be able to

- Identify and explore experiences that focus on usability, accessibility, and sustainability when it comes to designing, building, testing, and deploying products, processes, or services.
- demonstrate level-appropriate skills in research, prototyping, and user testing.
- identify and evaluate appropriate principles and technological tools used in industry.
- demonstrate the ethical theories and practices associated with Experience Architecture and reference the multidisciplinary influences that have shaped the field.
- describe the importance of diversity, equity, community, and justice in their design, research, and management processes.
- generate artifacts to be added to their professional portfolio to aid in their preparation for industry.

Recommended texts:

- *The User Experience Team of One: A Research and Design Survival Guide* - Leah Buley
- *Do Black UX Designers Get the Recognition they Deserve?* - Jacquelyn Iyamah
- *The Design of Everyday Things* - Don Norman
- *Design Justice: Community-Led Practices to Build the Worlds We Need* - Sasha Costanza-Chock

In Chapter 6: Design Thinking in Don Norman's book *The Design of Everyday Things*, he notes: "Good designers never start by trying to solve the problem given to them: they start by trying to understand what the real issues are" (218). As MSU is an R1 institution, the move to understanding the real issues begins with research. There are a multitude of problems with which we interact every day. In his 1992 paper, "Wicked Problems in Design Thinking," Richard Buchanan framed larger issues that could be explored via design thinking, like poverty, basic needs, food insecurity, climate change, and more. This laid a solid foundation for all of our courses to get students to think beyond just prototypes and web applications—we wanted them to think about social justice, diversity, equity, inclusion, and more. Design thinking has given our curriculum the chance to expand beyond the design solutions students initially expect they can solve after graduating to larger design solutions within societal frameworks and large-scale institutions.

Conclusion

In the article, "Killer Robots and the Humanities: Building an Interdisciplinary UX Program. *User Experience Magazine*," Potts et. al. note the goal of creating the XA program: "With the goal of teaching students to be architects of digital experiences, we see the XA major as a way to positively influence the ways in which we have traditionally built products and services by focusing on human experience first instead of technology." While the XA program may have originally focused on digital spaces, over time, as the need within industry rose, and as our research expanded, we realized that products and services included digital spaces, physical spaces, and systems.

A landscape analysis of industry reveals a better understanding of the importance of the Humanities when it comes to the development and design of systems and spaces. As UX professionals advance in their own organizations and conduct more research, many have found the shortcomings of their own undergrad and grad programs. They are hiring learning experience designers to build internal education modules to help teach their own employees not just about their own ideals and values, but how those align with the rest of humanity; you know, their primary users. We are also seeing more requests for UX researchers and UX designers, project managers with backgrounds in leadership and rhetoric and writing and with experience working across disciplines and fields. Again, we note this not to use industry to persuade other academics on the value of our program, rather, we are using these points as a reminder of the impact the Humanities are having on

industry. As we see more machine learning and AI that are informed by unjust and exclusive systems, the Humanities need to act to ensure that inclusive and just spaces are being designed and built for humans. Experience Architecture, as a Humanities program that researches such spaces and graduates alumni who are equipped to enact the change needed, is helping by advancing such action. This is the role of XA and the Humanities as a whole. We believe that XA can lead the way in interdisciplinary work and bring people together to make the world a better place.

Jesse James Garrett states, "Experience Design is the design of anything independent or across media with human experience as the explicit outcome and human engagement as the explicit goal" (qtd. in Cummings, 2009). As digital and physical spaces begin to merge across time and space (interactive car systems, AR museums, and so on), the more our work transcends mediums is revealed. The fulcrum of Experience Architecture is interdisciplinary because the world is interdisciplinary. It reminds us of our roles as humanists to seek out connections beyond our field with the hope of bridging the gaps in humanity. In doing so, we hope that our students will think beyond just an experience and focus on the role that human engagement plays not just in everyone's immediate everyday life, but in the lives of everyone at any time. We believe this way of thinking can aid in enacting three core principles of our program of creating usable, accessible, and sustainable spaces and systems.

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Appendix

0.0 CURRENT BA IN EXPERIENCE ARCHITECTURE CURRICULUM

Experience Architecture (XA) Core Required Coursework

XA 242 – Introduction to Experience Architecture

Basic principles of user-centered design as applied to user experience. Usability, information architecture, interaction design, and service design practices, tools, conventions, and professional community.

XA 310 – Computational Thinking for the Humanities

Develop critical and ethical engagement with computational thinking. Uses problem-solving processes including pattern recognition, data representation, and algorithms. Explore relationships between computation and user experience, rhetoric, and design.

XA 333 – Researching Experience Architecture

Researching for product, services, and processes as applied to user experience. Contextual inquiry, field studies, card sorting, participatory design, interviewing, focus groups, and usability testing.

XA 466 – Experience Architecture Capstone

Integrate knowledge and skills acquired from previous courses. Conceptualization, planning, implementation, and assessment of a project, service, system or an idea in a collaborative setting.

WRAC, Professional and Public Writing (P2W) Required Coursework in the XA Curriculum

WRA 210 – Introduction to Web Authoring

Analyzing, evaluating, and authoring Web sites. Principles of design rhetoric. Practices of Web accessibility.

WRA 401 - Rhetoric, Leadership, and Innovation

Exploration of rhetorical theories applied to managing and leading communication in civic and professional organizations. Emphasis on team dynamics and on managing and leading teams and projects. Discussion of entrepreneurial thinking in professional and public writing.

WRA 410 – Advanced Web Authoring

Developing and maintaining large-scale, interactive Web sites. Visual design, usability, audio and video integration, ongoing site management, and web accessibility.

WRA 415 - Digital Rhetoric

Rhetorical, social, political, economic, and ethical dimensions of digital communication, including identity, community,

genre, and events. Rhetorical dynamics of communication across digital spaces such as apps, websites, software, and other experiences.

AAHD, Graphic Design (GD) Required Coursework in the XA Curriculum

GD 160 - Digital Graphic Design: Tools and Methods

Introduction of digital tools and methods specific to contemporary graphic design.

GD 260 - Concepts of Graphic Design

Overview of form and communication analysis and manipulation. Investigation of theory, concept and visual tools central to developing visual communication systems.

GD 303 - Experimental Design Practices

Studio-based survey of experimental and futures-oriented design practices that are interdisciplinary in nature, intersect with emergent practices in the visual arts, and address broader issues of power, normativity, and social justice.

GD 468 - Interaction Design

Digital interactivity as a tool for visual communication, design and distribution of ideas. Conceptual, formal and typographical explorations relating to screen-based activities such as interface design, user-interaction and basic animation.

Additional Coursework within the College

AL 250 - Career Strategies for Arts and Letters Students

Identify, explore, and prepare for suitable career options. Topics include self-assessment, career development strategies, and job search skills.

PHL 355 - Philosophy of Technology

Examination of the desirability of technology, its social forms, and its alternatives. Conventional productivist, ecological progressive, and radical humanist outlooks.

Elective Coursework:

XA, Experience Architecture (XA)

XA 375 – Information Architecture

Theory and practice for architecting information, including understanding and developing taxonomies, folkonomies, site structures, tagging systems, and guided navigation for user experience.

XA 482 - Experience Architecture Internship

Field experience in a professional environment that supports, user experience, interaction design, design research, usability, information architecture, project management, interface de-

velopment, and/or web development. Work under the supervision of a professional.

AAHD, Graphic Design (GD)

GD 467 – Motion Design

Time-based design utilizing sound and motion for visual communication and personal expression relating to the field of graphic design. Conceptual and formal explorations relating to the moving image such as motion graphics, stop-motion animation, and kinetic typography.

AAHD, Studio Art (STA)

Electronic Art and Intermedia (EAI) concentration explore new forms of artistic output brought about by science and technology. EAI builds on the history of Intermedia, which is a philosophy that historically explored the intersection among art disciplines. Expanding on the fusion of art genres, EAI applies this model within the academy more broadly to encourage new forms of research and creative activity by combining research epistemologies and praxis from many disciplines both within and outside of the arts.

STA 380 - Electronic Art

Using the computer as a tool for making art. Creation of innovative electronic art and new media projects that introduce students to conceptual as well as technical skill sets.

STA 384 - Experiments in Digital Video

Introduction to core skills and concepts used in digital video production, with an emphasis on art-making, conceptual thinking, and experimentation.

STA 385 - Interactive Environments and Digital Fabrication

Systems-based approach to design and fabrication of functional experimental art devices, combining principles of mechanical, electronic, software design, robotics, sensors, actuators, and other control devices. Exposure to new paradigms of creative practice and will develop intricate, interdisciplinary group projects.

WRAC, Elective Coursework:

WRA 260 - Writing, Rhetoric, Cultures, and Community

Introduction to rhetorical practices, processes, and strategies. Study of intersections of rhetorical theories and cultural engagement, with emphasis on analyzing and composing for different professional and public settings. Exploration of different knowledge-making processes and influences on writing.

Reading- and discussion-intensive course.

WRA 320 – Technical Writing (W)

Principles and practices of communicating technical information for different audiences and purposes, and across multiple media. Methods of audience-based research, information design, project management, and technical style (verbal and visual).

WRA 420 – Content Strategy

Applied theory and best practices for content strategy. Understanding the content management lifecycle, aligning content strategy to business goals, assessing communication needs for audiences and participants. Issues in project leadership, management, intellectual property, and organizational communication for creating flexible, dynamic content and content structures.

0.1 ORIGINAL PROGRAM LEARNING OBJECTIVES (FALL 2013)

(Knowledge) Students will understand...

- Principles of user-centered design
- Best practices in information architecture (brainstorming, storyboarding, contextualizing, mapping, diagramming, wireframing, programming, prototyping, testing, analyzing, etc.).
- Heuristics for assessing the usability of interactive experiences
- Methods of researching human experience
- Methods of developing multiple solutions that connect systems, people and networks

(Skills/Abilities) Students will be able to...

- Possess advanced communication skills
- Demonstrate an ability to think critically, analytically, productively and creatively
- Engage in integrated reasoning when confronted with conflicting information or problems
- Conduct an analytical and holistic assessment of an individual situation
- Identify and deliver innovative technological solutions, after an environment assessment
- Be skilled when working with various technologies
- Working across and integrate a variety of technologies
- Demonstrate strong collaboration and leadership skills in project management team situations, and with internal and external stakeholders

(Dispositions, attitudes, beliefs) Students will...

- Embrace the necessity to engage in lifelong skill development given the rapid changes to career-relevant technologies
- Build technologies from a perspective of this work as a humanities-centered endeavor

0.2 EXPERIENCE ARCHITECTURE LEARNING OUTCOMES

1. Students will emphasize the importance of diversity, equity, community, and justice in their design and research processes.
2. Students will evaluate how their own experiences and positionality influence their design and research processes.
3. Students will reflect on experiences in order to monitor continued learning and growth.
4. Students will integrate knowledge of culture and partner communities into their design and research practices.
5. Students will apply user-experience research techniques such as card-sorting, usability-testing, expert reviews, etc. into their design and research processes.
6. Students will analyze how technologies influence human action and decision-making.
7. Students will explain the practices and knowledge associated with working in fields associated with XA (including user-experience, user research, artificial intelligence, computer science, content strategy, accessibility, etc.).
8. Students will create projects through iterative and recursive processes that include inquiry, research, feedback, reflection, and revision.
9. Students will generate projects across a variety of media, such as websites, mobile apps, and text-based reports.
10. Students will evaluate the steps and processes involved in executing multi-step and iterative projects.
11. Students will utilize a variety of modes, including writing, speech, sound, graphic design, programming languages, etc. in their design and research processes.

We Took an IDEO Course Together: Design Thinking as Professional Development in Florida International University's Writing Program

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Abstract. In the summer of 2019, six faculty in the writing program at Florida International University took a free, five-week online course on design thinking offered by IDEO.org and +Acumen. By the end of the course, we saw a potential for the ideate, test, fail-fast design thinking mindset to have useful pedagogical and administrative implications. However, we also seriously questioned the elitist underpinnings of many design thinking projects where designers enter new communities to “solve their problems.” Therefore, we sought to use a humbler approach to design thinking that created academic systems alongside users while keeping those systems open for revision. In this article, we trace our experiences in and reactions to the course. Then we turn to how the experience of the course has informed our subsequent research, teaching, and administrative work. Finally, we close with a brief reflection on our work as an incremental approach to design thinking and the value we found in sustained, reflective collaboration.

Keywords: Design Thinking, Professional Development, Collaboration, Curriculum Development, Generative Failure, Hispanic-Serving Institution

Introduction

In Summer 2019—what feels now like a very long time ago—six writing program faculty¹ at Florida International University immersed themselves in a free, five-week online course on design thinking² offered by IDEO.org and +Acumen.

Design thinking is a means for solving complex problems. It has been framed as both a creative mindset and a problem-solving methodology (Tham & Thominet, 2022). Essentially, design thinking asks designers to learn about real problems faced by people, frame design goals according to those people's needs, imagine creative responses to those problems, prototype potential responses, test the prototypes with real people, and employ an iterative process to move toward a final implemented response.

The Hasso Plattner Institute of Design at Stanford University, commonly known as the d.school, developed the most widely known model of design thinking in the early 2000s. David Kelley, a faculty member at the d.school, also co-founded IDEO, a management consulting and design firm that has popularized design thinking. The course we took was developed by IDEO.org, a nonprofit organization created by IDEO to focus on human-centered design for social good. The course was co-developed by Acumen and hosted on the +Acumen platform (which has since been rebranded as Acumen Academy). Acumen is a nonprofit organization that provides capital investment to social entrepreneurs. While the exact definition is contested, social entrepreneurship is generally used to describe for-profit businesses that seek to have a positive impact on their community or the world more broadly (Martin & Osberg, 2007). Acumen funds businesses that seek to provide necessary goods and services to underserved populations, such as businesses that provide water or sanitation services to rural communities in India. Acumen has also developed +Acumen as a learning platform for free online courses that support those seeking to become social entrepreneurs.

The course we took asked participants to work in groups and to collaboratively employ the three phases of IDEO.org's design thinking model—Inspiration, Ideation, and Implementation—to pursue a social entrepreneurial design challenge from a list of options. Our group chose the option "How might we enable more young people

¹ Unfortunately, one of the faculty members who participated in the course was not able to contribute to the authorship of this article.

² Technically, the course focused on Human-Centered Design (HCD), but given the significant overlap between HCD and design thinking (IDEO, n.d.), and in order to maintain consistency with this special issue's theme, we will henceforth use the term design thinking.

to become social entrepreneurs?" and we collaboratively researched, ideated, and prototyped a potential new writing course. While we decided not to implement the new course, we collectively appreciated this shared learning experience and saw potential programmatic implications for the ideate, test, and fail-fast mindsets of design thinking. However, we also seriously questioned the elitist underpinnings of many design thinking projects where designers enter new communities to "solve their problems." Therefore, we sought to implement a humbler approach to design thinking that creates systems alongside users while keeping those systems open for revision.

By describing how our experiences in this online course impacted our subsequent teaching, research, and administrative work, our article seeks to contribute to the literature on design thinking as professional development in academia. We could only locate one article discussing a similar topic in a technical-communication-adjacent field: Michael Greer and Heidi Skurat Harris (2018) integrated design practices into the content of a graduate certificate for online writing instruction. For example, teachers created user personas to drive course and assignment design. The topic has been discussed more extensively within the field of Education. Christopher Blundell (2022) identified 22 publications that discussed design thinking in teacher professional development courses as either a topic of interest or a process for creating solutions to common challenges. For example, Danah Anne Henriksen, Carmen Richardson, and Rohit Mehta (2017) argued that design thinking approaches are well-suited to the complex problems of practice that teachers regularly encounter. Moreover, Priscilla Norton and Dawn Hathaway (2015) recommend a teacher training curriculum that centers instruction in design to help teachers drive innovation and transformation. IDEO (2012) even developed a toolkit to help educators apply design thinking practices. Our article extends this discussion to consider the potential benefits and limitations of professional development in design thinking for faculty in technical communication and adjacent fields.

In the next section of this article, we will discuss our local context and our experiences in taking the IDEO.org course. Then we will turn to how the concepts we explored in the course have informed our subsequent research, teaching, and administrative work. Finally, we briefly explore the value of humble applications of design thinking in academic work and of sustained collaborative learning and reflection for faculty.

A History of Our Experiences with the IDEO.org Course

In this section, we offer contextual information about our institution and program, including how this context frames our orientation to design thinking. Then we describe the content of the course in more detail.

Programmatic Context

Florida International University (FIU) is a large, urban, very high research activity (R1), Hispanic-Serving Institution (HSI) with a diverse student population: 65% Latine, 12% Black, 10% White, and 3% Asian (Robertson, 2022, pp. 687-688). Twenty percent of FIU's 56,000 students are first-generation, 57% are Pell Grant recipients, and 94% commute to campus (Florida International University, n.d.; Florida International University student life, n.d.). Douglas Robertson (2022), a former undergraduate dean at FIU, noted the demographic disparities between full-time faculty and students, highlighting them as noteworthy given the need for students to see themselves reflected in the faculty to engender a sense of belonging (p. 687). As five white, tenure- and teaching-track faculty members, we recognize how our privileged positions do not reflect those of the majority of our students. Additionally, not all authors here self-identify as experts in design thinking. Instead, our research areas include translingual approaches to writing, community-engaged writing, and user experience in professional and technical writing. Together, these factors drive our interest in a humble approach to design thinking. We do not see our practices as creating "solutions" to "problems." Instead, we seek to design tentative academic systems and structures alongside users (including faculty, students, staff, and other institutional stakeholders) and then to continually revise those systems in conversation with users given our institutional context. The academic systems we discuss in our trajectories below are not permanent or final but prototypes that have been and will continue to be revised and changed over time as we listen to and learn from fellow students, faculty, and administrators.

Experiences in the IDEO.org Course

The course we took was titled, "Design Kit: The Course for Human-Centered Design." The organizers recommended that participants work in groups since many activities encouraged in-person collaboration. So, in March 2019, Luke recruited other faculty members to take the course, and six ended up participating. The course included five weeks of readings and assignments that walked participants through a design thinking project. Our team met for the first time on May 10, 2019, and our final meeting was June 24, 2019.

The first week of the course was an introduction to design thinking. The reading began with an overview of the design thinking process that emphasized cycles of divergence and convergence. Then it explained designerly mindsets, including learning from failure, focusing on making, building empathy with users, and valuing iteration (IDEO.org, 2015, pp. 17-25).³ The reading also included an article reprint where Tim Brown and Jocelyn Wyatt (2010) argued that design thinking could support creative problem solving across organizations. This article introduced key concepts such as collaborating in diverse, interdisciplinary teams to encourage divergent thinking, a process for imagining a wide variety of creative responses to a given context (Acar & Runco, 2019). The reading concluded with a case study of a design thinking project that created a subscription-based, in-home toilet service in Kumasi, Ghana (IDEO.org, 2015, pp. 159-161).

The readings for the subsequent weeks followed a similar structure of direct instruction followed by case studies of applied design thinking projects. The readings in weeks 2-5 focused on individual phases or modes in the design thinking process. Week two looked at the inspiration phase and included short readings on various research methods, including interviews, analogous inspiration, and personal diaries. Week three discussed problem definition through a process of identifying key insights from research and developing How Might We (HMW) questions. Week four covered ideating, prototyping, testing, and iterating. The process included sticky note ideation and affinity diagramming, leading to prototyping via three-dimensional models, paper mock-ups, and role-playing. Week four's reading also detailed testing in realistic contexts and maintaining tester neutrality. The final week focused on implementation and measuring social impact.

As mentioned in the introduction, we pursued a collaborative project throughout the course that focused on supporting social entrepreneurship among FIU students. During the second week, we sought inspiration through various means, including site visits to incubation spaces and interviews with experts on entrepreneurship. However, the most impactful activity involved interviewing students in a first-year writing course one of our team members was then teaching. Three faculty from our team were invited to the class, where they conducted focus groups with students about social entrepreneurship.

During our subsequent team meeting, our discussion focused on the students' confusion and skepticism about social entrepreneurship,

³The readings in our course are not published in a publicly accessible location. However, a significant portion of the content is included in IDEO.org's *Field Guide to Human Centered Design*. Wherever possible, we reference the Field Guide since it is accessible online.

which many did not see as relevant to their professional goals. Several students also indicated that entrepreneurship requires access to capital and social networks they did not possess and, in turn, a propensity for risk-taking they could not afford. Based on these insights, we developed the following HMW questions:

- How might we connect students with partners who can provide capital investment and subject matter expertise?
- How might we encourage non-business majors to see social entrepreneurship as an appealing and viable career path?
- How might we integrate projects with entrepreneurial partners into our program's courses?

During the following week, we rapidly brainstormed potential responses to these design challenges, such as starting an incubator and developing an interdisciplinary social entrepreneurship program at our university. However, the IDEO.org course recommended that we pursue highly feasible options first, so we built prototypes of courses in the Writing and Rhetoric BA. We initially created posters for four potential classes, designing each poster with a template to keep the style and structure consistent. Then we gathered feedback from academic advisors on which course they thought would most appeal to students. Finally, we used that feedback to develop an initial pitch for a course titled, "Writing as Design Thinking."

Officially, the IDEO.org course concluded with each of us submitting brief coursework portfolios. As a result, we each obtained a digital "Statement of Accomplishment" certificate. However, due to student and advisor feedback, we did not seek to add the proposed Writing as Design Thinking course to our undergraduate curriculum.

During our final meeting for the IDEO.org course, we considered our overall takeaways from the experience. It was clear that we had all enjoyed working together and recontextualizing pedagogical methodology through a new lens. While the team had previously engaged in departmental workshops and professional development sessions together, the IDEO.org course provided an extended opportunity to learn together through an outside perspective (i.e., an opportunity free of familiar university language and practices). However, we also spent time reflecting on the elitist underpinnings of design thinking, which has historically been conceptualized and practiced by people from relatively privileged and non-diverse backgrounds (Ambole, 2020; Keshavarz, 2023; Mehta & Henriksen, 2022; Singh Rathore, 2022). Even the reading materials provided by +Acumen and IDEO.org centered self-congratulatory narratives of Western designers (allegedly) transforming lives and communities in the Global South.

In other words, while we appreciated values such as practicing empathy and embracing ambiguity, we realized from taking the course just how extensively local context matters. We thus agree with April Greenwood, Benjamin Lauren, Jessica Knott, and Dánielle Nicole DeVoss (2019) that design thinking, “on its own, cannot account for the dynamics of a group, organization, or institution” (p. 415) and that when people collaborate across lines of ideology, culture, identity, and power, “language and vocabulary matter” (p. 406). Depending on how it is practiced, even design thinking is susceptible to a colonialist mindset that can decenter marginalized voices and elide, rather than engage, difference. It is crucial to us, then, that anyone—especially anyone from a relatively privileged background—seeking to practice design thinking be cognizant of their potential to make biased assumptions and impose ideas on others. Therefore, design thinkers should commit themselves to ongoing practices of intellectual humility and self-questioning. To put this another way, just as design thinking is iterative, so must be our recognition of our capacity for error. Insofar as pursuing design thinking at a Hispanic-Serving Institution with predominantly working-class students was concerned, this humble approach to design meant acknowledging the need for greater thoughtfulness about issues such as students’ socioeconomic anxiety and their often-stigmatized perceptions of failure.

Subsequent Trajectories

After taking the IDEO.org course, our team planned to use design thinking to inform our work as program and curriculum developers. However, there was no feasible opportunity for us to pursue this work together, primarily because by Covid Summer 2020, we were all doing our best just to meet our regular professional and personal obligations. Nevertheless, in the four years since, we have developed new courses, conducted research studies, directed a Mellon Foundation-funded program, and founded an undergraduate research journal. And we found, time and again, various concepts from the design thinking course informing our approaches to these projects, including generative approaches toward failure, intentional problem framing, divergent thinking, and a focus on prototyping, testing, and iteration.

In the subsections below, we offer narratives of how we used design thinking to inform our work. While each trajectory is written from the point of view of one of our authors, we want to emphasize that these projects continually informed each other, and multiple team members participated in multiple trajectories. Furthermore, these trajectories included collaborations with numerous other faculty in the

writing program and the broader university, which allowed for even further diffusion of design thinking approaches across our institution.

Generative Failure in Faculty Development – Paul Feigenbaum

In an academic age defined by neoliberal accountability measures (Schell, 2016; Scott & Welch, 2016), it can be challenging for faculty to take pedagogical risks and pursue innovative practices in their courses (Feigenbaum 2021b). Implementing such innovations will likely prove messy, and these innovations could be poorly received by students, at least initially, with potential ramifications for teachers' course evaluations. Yet, failure is fundamental to processes of innovation. Indeed, as one of our early course readings stressed:

Failure is an incredibly powerful tool for learning. Designing experiments, prototypes, and interactions and testing them is at the heart of human-centered design. So is an understanding that not all of them are going to work. As we seek to solve big problems, we're bound to fail. But if we adopt the right mindset, we'll inevitably learn something from that failure. (IDEO.org, 2015, p. 21)

During the time our team took the IDEO.org course, I was thinking a lot about both the importance of, and the corresponding challenges with, helping faculty become more comfortable with failure. I had recently started directing Project THINC (Teaching Humanities in the New Context), a three-year project funded by the Andrew W. Mellon Foundation to promote curricular innovation and teaching-focused scholarship for faculty across the humanities at FIU.

My orientation to program development drew on insights from our shared course experience in various ways. Perhaps of primary importance, I hoped Project THINC would help faculty participants model generative approaches to failure for their students and intervene against the stigmatized orientation to failure many students themselves bring to college (Feigenbaum 2021a). Toward this end, Project THINC was well-afforded to offer low-stakes opportunities for faculty to take creative risks in their approaches to curriculum design. First, faculty applied to and received stipends for participating in this program, which validated their overall effectiveness as teachers. And as the director of an interdisciplinary faculty development program based in the university's teaching and learning center, I presented myself as a facilitator and coach rather than an authority figure tied to faculty members' home departments. Basically, Project THINC was all carrots and no sticks.

Operating from this premise, I encouraged Project THINC faculty to adopt an experimentalist approach to pedagogy within a community where they could share ideas, practices, and experiences, absent the specter of administrative surveillance. I also scaffolded this approach from a strengths-based framework in which faculty, first individually and then collectively, considered what effective practices they were already implementing in their courses. The closest analog of this practice to the IDEO.org course would be positive deviance, which was introduced to us in the first reading. Positive deviance involves designers observing individuals or families who, amid broader socioeconomic, public health, or other challenges, are thriving relative to their neighbors (Durá, Perez, & Chaparro, 2019). However, I was concerned that positive deviance could frame the rest of the community in deficit-based terms. Therefore, I was more directly inspired by design justice, which offers a holistically strengths-based approach to understanding what already works well in a community (Costanza-Chock, 2020). For example, I began workshops by asking participants to reflect on their existing courses—looking at factors such as atmosphere, assignments, activities, and methods of assessment—and considering the following questions:

- What are the most effective aspects of the course?
- When are students most excited to participate?
- When do they produce what you consider their best work?
- What factors seem to contribute to these positive outcomes?

I then asked faculty to share answers with the larger group, a process via which cohort members discovered many pedagogical connections across their disciplines. We complemented this storytelling by exploring the high-impact practices, or HIPs, that the American Association of Colleges & Universities connects to enhanced student engagement and persistence in college (Kuh, 2008). These include writing-intensive courses, learning communities, internships, and capstone experiences. From exploring these stories and HIPs, we identified experiences and practices that appeared repeatedly.

Another feature of Project THINC that was conducive to innovation was its interdisciplinary cohorts. Project THINC cohorts included faculty from across the humanities disciplines at FIU. This diversity of backgrounds is an affordance for the early stages of ideation, where, among design thinkers, the goal is to produce many ideas rather than to settle on one particular idea (Sano-Franchini, 2022). Thus, after building our repository of effective practices, faculty formed interdis-

ciplinary teams of three and sketched out prototypes of courses that incorporated each of their specialties. For one cohort, common themes that emerged from these prototypes included:

- A heavy emphasis on collaboration
- The creation of public-facing texts
- Community engagement (field trips, guest speakers, partnerships with nonprofits)
- Artifacts that require non-traditional, experiential, or open-ended forms of assessment

By seeing these themes repeatedly, faculty could consider how they might experiment with adopting similar practices for their individual course redesigns.

Project THINC also offered a midsemester process, where my administrative assistant visited classes to obtain anonymous feedback from students on how each course was going. Subsequently, the administrative assistant and I prepared a report summarizing key ideas and suggestions from students, and then the two of us met with instructors to discuss the reports and brainstorm possible adaptations for the second half of the semester. This was another low-stakes assessment process, an opportunity to provide feedback on course prototypes that did not involve departmental supervision. For instance, it was up to each faculty member to decide whether to include this report in their annual department evaluations. As with the IDEO team's social entrepreneurship course prototype, less important than the specific outcomes of the curriculum redesign process or the specific feedback provided by students—though, in most cases, students seemed engaged with the courses—was the opportunity for communal inspiration, ideation, and implementation. In this way, I believe that design thinking can help program developers foster pedagogical networks that magnify the impacts of a generative approach to failure for both teachers and students.

Researching Teachers as Designers – Luke Thominet

From my earliest pedagogical training, I was encouraged to think through Grant Wiggins and Jay McTighe's (2005) system of backward design, which asks faculty to connect every assignment to one or more clearly defined course goals. Notably, backward design is justified, in part, by likening teaching to user-centered design in other fields (Wiggins & McTighe, 2005, p. 13). From this start, I continually saw opportunities to inform my research and teaching through design frameworks.

For example, I previously used an analogous inspiration approach, where designers seek new ideas by exploring parallel contexts or situations (IDEO.org, 2015, pp. 53-54) to redesign a technical writing service course (Thominet, 2020), and I facilitated collaborative ideation workshops to build a participatory definition for our programmatic student learning outcomes (Thominet, 2022).

However, most composition and technical communication literature has framed design thinking as an intervention to change students' practices rather than our own. For example, James Purdy (2014) compared design thinking to the writing process as it is taught in many composition courses. Similarly, Scott Wible (2020) explored how design thinking could support students through messy problem exploration. And Laquana Cooke, Lisa Dusenberry, and Joy Robinson (2020) described how design thinking might help students learn to work iteratively on unfamiliar or ill-structured tasks. While each of these articles made valuable contributions to the field, there also seemed to be room to reflexively investigate our own practices through the lens of design thinking.

So, when Paul's Project THINC initiative made a call for a teaching-focused scholarship group in 2021, I started designing a study. Like several of my co-authors, I was inspired by the recent literature in composition and technical communication that has sought more equitable ways to evaluate students in writing courses, including Asao Inoue's (2019) work on labor-based grading contracts and various authors' turn toward ungrading (Blum, 2020; Feigenbaum, 2021b). In this literature, there was sometimes also an implied or explicit iterative, design orientation (Laflen & Sims, 2021; Tinoco, Gage, Bliss, Baruca, Barron, & Meyer, 2020). These discussions made me curious about the design practices that faculty already used when creating their grading systems.

Several concepts from the IDEO.org course inspired my research design. First, I refined the study in conversation with the faculty in Project THINC, reflecting the design thinking emphasis on interdisciplinary teams (Brown & Wyatt, 2010, p. 34). In particular, a member of the visual design program interrogated my applications of design and design thinking and helped me clarify my argument. Through these conversations, I also revised my interview questions to explore connections between frameworks from design literature and research participants' existing processes for creating grading systems. In doing so, the project emphasized the need to trust in interviewees' expertise. As our design thinking course materials argued: "Experts are everywhere—and you don't need a degree to be one. Treat your interviewee as an

expert. You're interviewing them about their life, and in that, they are the expert. Be curious and always give them the respect they deserve" (IDEO.org, personal communication, May 10, 2019). Of course, this need to respect participants' expertise was compounded in my study, where the research participants had advanced degrees, pedagogical training, and an average of nearly 15 years of teaching experience. This orientation toward interviewees' expertise reinforced my decision to adopt the more constrained goals of reflecting on instructors' existing design processes and exploring possible avenues for customizable local practice rather than offering a universal system for "fixing" grading systems.

Ultimately, my study found that faculty used a range of design-based practices to create their grading systems. For example, they designed their systems around intentional goals, such as fostering intrinsic motivation or improving student understanding of learning outcomes. And faculty described actively observing student activity and using this information to iterate on the design of their grading systems over time. However, they also described risk-averse approaches of adapting existing solutions rather than engaging with student needs as creative user-centered designers. Therefore, I recommended several design practices that could help faculty explore the design space, including journaling to support reflexive considerations of how their positionality affected their design processes and products, and prototyping activities where they could test potential grading systems before implementing them. The full results of this study are forthcoming in *Pedagogy* (Thominet, in press).

Encouraging Student Growth Through Empathy and Recursive Iteration – Vytautas Malesh

In Spring 2022, I developed a course named, "Writing for the Web." It was offered first as a "special topics" course and then as a regularly scheduled elective. The ideals and practices of the IDEO.org course informed the curriculum of Writing for the Web and its methods and practices.

While designing Writing for the Web, I realized I was failure-averse and unwilling to risk what I perceived as tried-and-true pedagogical methodologies. The IDEO.org course encouraged me to try new concepts in evaluation, most notably a labor-based grading model which removed preconceived notions of quality from the grading equation.

Similarly, I felt less pressure to get things exactly right the first time. I mimicked the practice of learning from the community as described in the IDEO materials and placed additional emphasis on student

feedback (IDEO.org, 2015, p. 127). Regular check-ins with students and an iterative mindset meant that failure was fundamentally impossible since I met every poorly received assignment brief not with defensiveness or crisis-thinking but with an opportunity and growth mindset. If students struggled with any particular assignment, we discussed why that was so, edited and clarified the assignment brief, and moved on. Because points and grades were not based on perfection ideology, student work did not suffer.

This course was part of our professional and technical writing curriculum, but it departed significantly from other offerings, which often revolved around workplace genres such as memos, letters, and resumes. This course would allow students freedom in content, delivery, media, and many other aspects of composition. As such, evaluation would require generosity to help students define and reach their goals. Therefore, my Writing for the Web course employed labor-based grading, which Asao Inoue (2019) describes as a practice that encourages diversity and inclusion. For my purposes, it also created a space where students were free to try, fail, and try again. Students would submit their initial drafts, receive comments, and resubmit their work if desired (for further refinement) or if needed (to meet baseline competencies).

The course has been successful due to the empathy-and-iteration model inherited from design thinking. Additionally, the course has provided a means by which we can help students understand design thinking modalities free from the pressure of more conventional A-F graded course work.

In fact, the entire course process was open, clear, and comfortable. It led to overall high-quality student work and to the design of other courses more aligned with this successful new offering. Because students were free to explore digital communication on their own terms—because I, the course designer, felt free to explore a new-to-me grading methodology and course structure—they produced honest, impactful, high-quality projects.

Supporting Student Writers and Editors – Michael Sohan

After the IDEO.org course, Vytautas and I laid out a basic syllabus for a new course named, “Professional Editing.” We quickly focused on one technical editing textbook and possible resulting student projects to fast-track this course through the university and state’s curriculum committees. The resulting course was dry and product-oriented. The core projects taught decontextualized genres based on standard definitions of professional editing. For example, in one project, students

were tasked with fact-checking an extensively erroneous article, tracking all changes, and providing a 3-5 source annotated bibliography.

After receiving approval for the course in the spring of 2020, I returned to the proposal to develop it for implementation. Reading back over the textbook-inspired assignment sequence, I found the course reduced professional editing practice, at least on the surface, to material outcomes, bereft of imagination or meaningful agency. Through this observation, I was reminded of our IDEO cohort's experiences with problem framing. Essentially, design thinking argues that problems and solutions are defined together during the design process rather than before it (Weedon, 2019). For my class, this meant defining professional editing through the potential experiences of my students. These students might start their editing careers through freelance work, writing as supplementary components of other (sometimes unstable) employment, or volunteer work, so I sought ways to humanize my approach to teaching this course. I assessed the course activities against the IDEO method of creating HMW statements to generate avenues to strengthen student engagement and learning. This process illuminated the previously mentioned problem framing for designing this course, and my focus turned from "What textbook can students use to practice editing?" to "What tasks could students perform that use their bilingual/cultural knowledge to promote their skills in their communities?"

As I redesigned the course, I supplemented the technical editing textbook's product-based assignments with readings about real-world editing skills of interpersonal communications, such as Carol Fisher Saller's *The Subversive Copyeditor* (2016). I also scheduled interviews with practicing editors from various fields. As the fall semester of the first Covid year approached, my hope that we would meet face-to-face with these experts was dashed. We quickly transitioned into remote teaching, and the separation from students led to more online discussion board conversations than I had anticipated. However, we were able to interview these experts through Zoom, which had the benefit of supporting students who felt free to ask questions in the chat function.

The first discussion post of the course asked, "What do editors do?" The responses were almost entirely in three categories, which I later jokingly suspected arose from watching Clark Kent's and Peter Parker's newspaper editors in the movies: they assign writers to cover subjects/events, read books/articles to see if they are any good, and check punctuation. While not incorrect, these initial assumptions were challenged throughout the course. Students conducted a life design

interview and engaged in networking in a supportive environment, two critical activities for prototyping one's career described by Bill Burnett and Dave Evans (2016). Students also learned how careers in editing are essentially careers in interpersonal engagement; explored the field's stresses, situational details, and demands; and considered methods for using networking, social media, and professional clubs and societies to develop skills and improve work prospects.

Through informal polls, reflections, and course evaluations, students reported that the human-centered work at the heart of editing was among the most valuable components of the course. They valued doing "real editing," not just in spelling and punctuation, but in editor-to-author communication, time management, and reflection on their own feelings of doubt and credibility as editors. Concurrent with the implementation of this course, design discussions also included the need for students to prototype editing through real interpersonal communications with writers and coworkers. In other words, the course offered a new trajectory in the need to test students' abilities to implement these skills in iterative, practical contexts. This incremental idea would eventually lead to a collaboration with the *FIU Undergraduate Research Journal (FIU URJ)* students and faculty editing team, which is discussed in the next section.

Co-founding an Undergraduate Research Journal – Vanessa Kraemer Sohan

During the IDEO course, our team tried to answer the generative HMW question, "How might we help students connect with partners who can provide capital investment and subject matter expertise?" In our conversations, students voiced their hesitancy to take significant risks, and our work in the course reinforced our on-the-ground experience teaching at FIU: Students need spaces and places to more safely explore less-familiar and seemingly more "risky" or ill-defined careers, such as professional writing or editing. One such space within the program was via the interviewing and prototyping occurring in the Professional Editing course discussed by Michael. Nevertheless, I knew that our undergraduate Writing & Rhetoric majors also needed spaces and support outside of our ENC courses to develop the incremental ideas they were exploring in our courses into full-fledged undergraduate research publications. I also viewed supporting undergraduate research as risky, in part because I knew from my limited experience publishing with a former student that such work required the investment of time, energy, and expertise beyond what I could sustain as an individual given the lack of resources or recognition for undergraduate

research by the institution. For this reason, after the course, I began to reframe our initial HMW from the IDEO course to consider “How might we develop the institutional resources, peer support, and community necessary for collaborative undergraduate research work?”

I began to seriously consider this question in Fall 2022, when I was assigned via our Center to Advance Women, Equity, and Diversity, as a mentor to a colleague, Dr. Xuan Jiang, faculty administrator in the Center for Excellence in Writing. From the start, she and I shared a belief that FIU students needed to publish their rich, varied, and complex experiences and research for public audiences. Our mentorship quickly became a partnership, and we began to invest serious time, energy, and resources into prototyping what became the inaugural *FIU Undergraduate Research Journal* (n.d.). By breaking down undergraduate research experience and creating models for support, we could design a more humble approach to undergraduate research: developing an empathetic, participatory, and collaborative undergraduate research publication experience alongside student writers and editors.

As co-editors, Dr. Jiang and I engaged in the principles of design thinking throughout the development of the journal infrastructure to develop tentative structures and enable continuous revision of those structures in collaboration with student users (student writers, designers, and editors). In our initial conversations, we came together around what I now recognize as the “stage of empathy” with our users, undergraduate researchers, while also learning about one another’s experiences as mentors of undergraduate researchers (Wible, 2022, p. 115). In our discussions, we shared our desire to generate a human-centered design for undergraduate research. Because we were starting from the ground up, we sought to learn from the experiences of other undergraduate journals while also listening to and working with students to tailor our journal’s mission to FIU’s unique context. Our goal was to engage students in participatory design by involving student editors in the complete process of establishing and running the journal (p. 115). Moreover, we sought to identify collaborative and financial partnerships across the university, which engaged the social entrepreneurship models discussed by +Acumen. For our first issue, we pooled together resources: teaching assistants were paid through grants procured from numerous academic units; websites were built by students with library and research office support; print copies were funded by co-sponsoring units, including the Writing Center and Liberal Studies Program; and the final journal issue was designed by students with the help of the Digital Writing Studio. By participating in the pilot project, students gained academic and professional experience as editors, writers, and

reviewers, which will benefit them as graduate students and in future careers.

From the start, student writers and editors benefited from a high-touch environment that encouraged them to develop creative confidence and learn from failure: All student submissions were accepted and coached throughout the year-long publication process. Student writers worked alongside faculty mentors to submit an abstract and then develop a full manuscript in consultation with a team of student editors led by a faculty advisory board member. They benefited from a supportive but rigorous double-blind peer review by interdisciplinary FIU faculty. Student editors helped writers process and apply faculty reviewers' feedback and then collaborated on copy-editing manuscripts in partnership with Michael's professional editing students. Students ran a cover art contest; designed the print and digital FIU issues; and promoted and maintained the website, digital commons, and social media presence in collaboration with institutional partners. Students' experiences providing administrative support and gaining project management skills enabled them to develop expertise in leadership, writing, editing, and design. With the successful publication of the first issue (*Florida International University Undergraduate Research Journal*, 2023), our team has begun work on the journal's second issue with the dual goals of building sustainable revenue and moving to a more self-sustaining (and even more student-driven) model.

In retrospect, I realize that we reworked that initial HMW question to better fit our students and their undergraduate research needs: "Given the institutional context of FIU and the positionality of FIU students, how might we help student writers and editors connect with partners who can provide subject matter expertise?" This reframing gets at the heart of the project of the *FIU URJ*: to provide undergraduates and alums (and their faculty mentors) with a supportive experience in publication, peer review, editing, and digital creation. The answer to that HMW question resulted in interdisciplinary collaboration between faculty, administrators, and students and the production of a high-quality digital and print undergraduate research journal. Throughout, student writers and editors have been empowered to maintain agency and ownership over their writing and the entire editorial and design process, enabling them to develop technological, creative, and culturally agile mindsets. As we embark on our second issue, we continue the work of iteration: ideating, modeling, testing, and revising the systems in place to improve the working of the journal alongside our students (Rose and Reimer, 2022, p. 45).

Conclusion

The IDEO.org course's final unit presented projects as potentially achieving incremental, evolutionary, or revolutionary outcomes (IDEO.org, 2015, pp. 141-143). The readings strongly implied that revolutionary outcomes were ideal for design thinking projects. However, through writing this piece, we realized that the projects described in our trajectories came out of a more incremental approach that helped us listen to students and fellow faculty members while building collaborative networks that can be sustained over time. Our efforts may not reflect the disruptive ideals of design thinking, but we suggest that working within higher education institutions often requires incremental and evolutionary work. A revolutionary approach may not work for all students and faculty, partly due to their (and our own) anxieties about the material and institutional risks of failure.

So, we advocate for a humbler application of design thinking in academia. For Luke, this has meant listening deeply to faculty, recognizing their expertise, and helping them reframe, reflect, and revise existing processes rather than seeking to revolutionize them. For Vytautas, this has meant embracing a more fearless approach to course design that frames failure as a necessary part of an iterative process. For Michael, this has meant trusting process over product, human-centered soft skills over data-driven outcomes, and faculty cooperation in the successful implementation of quality, student-centered education. For Vanessa, this has meant reaffirming her belief in the resources students bring to the classroom and the value of design thinking in building institutional collaborations that will help students make the most of those resources. For Paul, this has meant developing generative networks of mutual pedagogical inquiry where teachers can ideate about, experiment with, and gather feedback from their courses together. Our outcomes were necessarily varied because of our differing expertise and goals for our projects. But collectively, we saw a humbler approach to design thinking in academic institutions as an opportunity to decenter the designer and turn toward interdependence and incremental change that responds more fully to local, student, faculty, and institutional realities.

However, we have seen one potentially revolutionary outcome in our work together. The academy often discourages long-term or recursive collaboration, but this opportunity to co-author an article about our collaborative learning experience has enabled us to do this kind of rare, albeit important, co-construction of knowledge. Through our extended experience of working together, from the IDEO.org course, through our various trajectories, and in co-authoring this article, we

have reaffirmed the need for collaborations such as ours not to be left behind, but to be built upon, transformed, and sustained over time.

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Book Review Editor

Russell Kirkscey, *Penn State Harrisburg*



The Changing Face of VR: Pushing the Boundaries of Experience Across Multiple Industries

Jordan Frith and Michael Saker, Editors

Wilmington, Delaware

Vernon Press

2022, 195 pp.

Reviewed by Akshata Balghare

Embry-Riddle Aeronautical University-Prescott

The *Changing Face of VR: Pushing the Boundaries of Experience Across Multiple Industries* discusses how virtual reality (VR) has been used to improve users' experience with watching performances, news stories, nature, and other genres, and has been written by "practitioners and academics from different disciplines" (p. 8). The book analyzes and theorizes what VR is already doing and pushes readers to think, "what can and will VR do [in the future]?" (p. 8). The 11 chapters of this book distinctly show readers the immense technological growth in VR applications since its incipient stages in the mid-2010s and create hope for VR to become mainstream one day. The book was "written before Meta's massive investment in VR" (p. 2) and before Apple's June 2023 announcement of their Apple Vision Pro. Apple announced that with the Vision Pro you "can spread your work out across an array of large, digital monitors that are invisible to everyone else in the room" and "watch movies and play games on a 100-foot-wide virtual screen, or have FaceTime chats with friends" (Gershgorn, 2023). Such technology only demonstrates the potential

for VR to go mainstream and pushes for the need to research VR applications further. This edited collection keeps readers interested in the technology and its far-reaching implications.

In 2018, technical and professional communication and rhetoric (TPCR) scholars Jason Tham and colleagues demonstrated how VR could be used in pedagogical practices to teach students course content and how student embodiment—their bodily presence—in the VR world can teach them more than what textbooks can. Tham et al. conclude that “technical communication students will find themselves working with VR technologies as these tools proliferate in the workplace” (p. 192), and Jordan Frith and Michael Saker’s collection can guide TC students pursuing careers that focus on the user experience of VR technologies. “This book is one of the first to capture the scope of just how differently VR is being used today” (p. 3) and is a timely resource for TC students to orient themselves to such technologies if they want to work in the field of user experience. While the book is interdisciplinary and doesn’t use the terminology “user experience,” it motivates readers to think about how users’ agencies or their presence in the VR world can be enhanced, which ultimately improves user experience. Thus, readings from this book would fit well in a class focused on user experience studies. The book would work well for upper-level undergraduate students and graduate students studying TC as they would have a better understanding of what user agency means and how important it is to consider this agency when designing user-centered products.

The book is divided into four sections that categorize VR applications into the genres of storytelling, nature, performance, and exhibitions. While each chapter explains how VR has been used in a particular genre, the authors also point out the challenges of implementing VR and some issues that users face with a lack of agency with the VR application. These problems can motivate TC scholars and students to think about how to advocate for better experiences for users with VR. Further, in Chapter 6, Mary Le Rouge mentions that VR is used by doctors to simulate medical surgeries, showing that VR is not just used for users’ pleasure but also to improve human well-being. Technical communicators can use their humanistic perspective to advocate for the need and improvement of such advanced technologies that benefit users’ well-being. Finally, TC curriculum that focuses on building the foundation of user advocacy in students can benefit from incorporating readings from this book, especially since Apple demonstrated the future potential of VR. Below, I describe how the book’s content can be valuable to TC curriculum.

Chapter 1 by Jordan Frith introduces readers to the history of VR and brings them to the stage where VR lies in the post-pandemic era and helps them ease into the rest of the book. Chapter 2 by Christopher Maraffi describes how VR can be used as an empathy-generating machine. For example, the chapter explains how VR has been used to teach people social justice by giving them a 360-perspective virtual tour of stories of racial injustice. This chapter can show technical communicators that while users enjoy and learn from such experiences, they feel limited at certain times as they cannot interact fully with the elements in VR.

Further, in Chapter 3, Rafael Leal focuses on generating embodied experiences for users. Leal examines the screenwriting process in film production for VR environments and argues that screenwriters must consciously think about spectators' bodies (p. 35). Chapter 4 by Hannah Greber discusses how VR has been used in journalism to allow viewers to experience news stories by living them. Greber points out the high costs of using VR and the technical challenges of implementing it in journalism. Here, technical communicators can advocate for such technology by thinking about what type of news should really use expensive VR technology so it can be used as an empathy-generating machine leading to changes for the betterment of the world. In Chapter 5, authors Delwyn Jude Remedios, Deepak John Matthew, and Max Schleser, illustrate how users can watch three stories or narratives in parallel, move from one narrative to another and, in a way, perform the role of editors of the three narratives. This section shows technical communicators that VR can create different types of impacts on users within one genre of storytelling. More conversation on the topic of user agency and impact in VR is clearly needed in TC curriculum, and this section neatly establishes the topic for readers. Additionally, this topic would also work in a TC class that discusses how entertainment/digital media affects the way audiences feel.

In Chapter 6, Mary Le Rouge shifts readers' attention to the genre of nature/environment by advocating the need for VR technologies that can simulate climate conditions, which can demonstrate to researchers and lay audiences how human interaction with the environment can affect climate change. Chapter 7 by Kailan Sindelar describes how VR has been used to give users an immersive experience of nature to help them relieve stress and anxiety and educate them about nature, in addition to how this technology needs to improve design-wise. These two chapters would work well in a TC class that discusses environmental rhetoric and environmental risk communication, motivating students to study the impact of such technology further. Next, in

Chapter 8, Leighton Evans and Michal Rzeszewski introduce the genre of performances by investigating how users have experienced live performances in VR, particularly during the pandemic. In Chapter 9, Alicia Corts shows how users feel about their agency in immersive theatre productions and discusses how users' bodies "become a unique theatrical tool in VR" (p. 128). With growing interest in VR use in entertainment, gaming, and arts, this section can help TC students familiarize themselves with technologies in demand being used to experience pleasure.

Finally, in the last section of exhibitions, authors Julia Salles, Jessie Marchessault, and Bart Simon, in Chapter 10, highlight the challenges curators face in VR exhibits. Using data from interviews, they discuss how attendees at such exhibits feel about individual versus collective viewing and how the role of mediators can affect the user experience of attendees when they are engaged in VR activities. Chapter 10 by Eryn Parker and Michael Saker also draws on interview results and discusses how VR exhibits can give a different experience to users than what a traditional art museum would provide. This last section shows the thoughtfulness behind ensuring that users get the kind of experience they need and that it differs from how they would have experienced it in traditional settings. Such consideration is required when training TC students in user advocacy, and these two chapters can help in this endeavor.

The Changing Face of VR: Pushing the Boundaries of Experience Across Multiple Industries is a valuable resource for the TC curriculum because of the growing trend in VR and is particularly useful for students interested in user experience research associated with such technologies.

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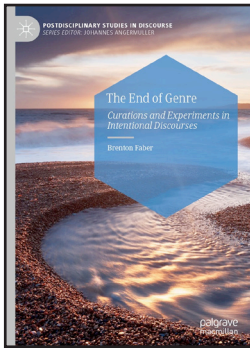
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Book Review Editor

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The End of Genre: Curations and Experiments in Intentional Discourses

Brenton Faber, Author

Cham, Switzerland

Palgrave MacMillan

2022, 244 pp.

Reviewed by Nicole St. Germaine

Angelo State University

T*he End of Genre: Curations and Experiments in Intentional Discourse* challenges the notion that the humanities cannot, or should not, consider intentionality when interpreting discourse. In this text, Brenton Faber attempts “to address the relative inability of textual studies (and the humanities more broadly) to engage with and constructively participate in crucial problems of the twenty-first century” (p. 3). Because technical communication is a dynamic field in which the rules of genre are often superseded by the needs of the user, academics and program administrators will find much that is useful in this text for their teaching and for aligning their programs with industry trends. For example, this volume would be helpful for technical communication instructors to inform their teaching in introductory-level technical communication courses, many of which are genre-driven. Undergraduate students should understand that genres are not rigid systems, and *The End of Genre* will be useful for instructors seeking to introduce the concept of genre and the ways in which genres can be circumvented or adapted

to their students. Graduate instructors would do well to adopt this text for an instructional methods course for graduate students who will go on to teach, or for a graduate-level foundations in technical communication course.

As a linguist and an emergency medical technician (EMT), Faber is uniquely positioned to explore the differences between the ways in which the humanities and the STEM fields view and utilize intention. In Chapter Two, he details many of the differences in how intention is used in rhetorical and textual studies, linguistics and discourse studies, and the technological fields, making a well-reasoned case against ignoring the role of intention in the interpretation of discourse. In many real-world situations, such as "courtrooms, policy forums, and news accounts," (p. 52) intention shapes the outcome in ways that have serious consequences. From these scenarios, it is not a big leap to envision how intention makes a profound impact in technical writing.

Faber would like to see a "more intentional humanities" in which the humanities are "more practical, engaged, and applied" (p. 61). This version of humanities would be more readily applicable to complex problems that affect society because it would have a greater range of tools to do so. The author does acknowledge that this applied, intentional humanities would not be appropriate for all academic fields. For example, in literary studies, the intentions of many authors cannot be known and therefore the text lies open to interpretation (p. 61). Instead, Faber is more concerned with "the potential for a type of humanities that is better aligned with and relevant to the projects of contemporary science" (p.62). This new way of thinking about humanities has the potential to open the door to a richer collaboration between humanities and the STEM fields, and could work to legitimize the humanities in a science-centered job market. These possibilities are tantalizing for technical communication administrators in an era in which the humanities have been devalued by society and in which many programs have lost students.

In Chapter Three of *The End of Genre*, Faber traces the troubled history intentionality has had in rhetoric. Intention has not always been viewed as extraneous to the humanities. Before the mid-twentieth century, he argues, intention was seen as an essential element of rhetoric. Scholars such as Steven Knapp and Walter Benn Michaels asserted that "what a text means and what its author intends it to mean are identical" (qtd. p. 71). In 1946, the role of intention was marginalized as a consequence of a highly influential essay, "The Intentional Fallacy," by W. K. Winsatt and Monroe Beardsley (p. 75). In this essay, the authors argued that "the design or intention of the author is neither available

nor desirable as a standard for judging the success of a work of literary art, and it seems to us that this is a principle which goes deep into some differences in the history of critical attitudes: (qtd, p. 75).

According to Faber, “the intentional fallacy” has since become a standard which rhetoricians employ to “dismiss serious investigation into textual and authorial intention as unknowable and uninteresting” (p. 3). After Winsatt and Beardsley’s essay was published, “truth, (or empiricism) was exchanged for meaning, a slippery term that eventually and problematically became measured as significance” (p. 70). The devaluation of intentionality marginalized the voices of authors and the “average reader” and elevated the voices of the academics and the critics, which was a boon to literary studies but a loss to humanities and rhetoric as a whole (p. 71). Other critical works followed which argued that texts must be interpreted apart from their author’s intentions in other fields. This line of thinking subsequently affected fields as disparate as linguistics, psychology, and philosophy (p. 78). Eventually, the dismissal of intention in academic circles led to the rise of genre theory in which “rhetoricians endorsed aggregations of form and action that used kairotic moments to influence persuasion while simultaneously obscuring intention” (p. 74).

More pressing for academics in the composition fields, the intentional fallacy has changed the ways in which we teach writing and the ways in which students learn to write academic essays. Instead of writing essays that can consider the topic in the light of the author’s intention, students learn to write formulaic essays in which they have no firm ground for making claims about the text, and therefore they learn to hedge to avoid having their argument deconstructed by the “critic,” or instructor in a process that Jasper Neel called “anti-writing” (p. 82). Students learn to “mimic an academic purpose and become an expert in articulating a false intention” (qtd. In Faber, p. 83). This is truly an uncomfortable thought for those of us engaged in the teaching of writing.

Faber utilizes the chapters following the discussion of the intentional fallacy to consider situations in which intention is an integral part of understanding the discourse. Chapter Four discusses nanotechnology and the dangers of eliding intention when introducing a new technology to society; Chapter Five considers the role of intentionality in medicine and how good intentions sometimes lead to poor outcomes, and Chapter Six covers the role in intention in data science.

In the final chapter before the postscript, Faber arrives at his solution for reintroducing intention into humanities: curation. Genres, according to Faber, “work best in relatively stable, conventional situ-

ations" (p. 200). These genres provide guidance when the exigence is known and the way forward is clear. The problems arise when the situation is atypical, or when there is a pressing need to violate the rules of the genre. Here Faber offers a comparison of genre to the protocols that EMTs follow: there are protocols for dealing with patients who are relatively stable and refuse hospitalization, but when the patient is in crisis and refuses to go to the hospital, there may be no clear answer provided by the protocols, and professional judgement and novel solutions come into play (p. 200). Curations provide a solution when genre is no longer useful. Curations are "strategic, temporary, and situation-specific aggregations of discourse, structure, and intention" (p. 204). While genres have been created before the exigence of the situation, curations are constructed temporarily in response to a specific context and situation. The resulting communication, or decision, may be unique to the situation rather than pre-defined (p. 205).

The concept of curations aligns with the ways in which technical communicators work. While pre-defined genres exist, such as the genre of instructions, we often create unique solutions tailored to the specific context. For example, the advent of the personal computer led to the creation of help files, which were a novel way to provide instruction for specific circumstances as needs arise. This innovative way of thinking about intention and exigence provides technical communication instructors and program administrators with a more flexible and realistic way of helping students create documents that truly fit the audience and the context for which the deliverable is written.

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User Experience as Innovative Academic Practice

Kate Crane and Kelli Cargile Cook, Editors

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Reviewed by Imari Cheyne Tetu

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Both programmatic assessment and curriculum development are key to technical and professional communication (TPC) administrators. Kate Crane and Kelli Cargile Cook's *User Experience as Innovative Academic Practice* is an edited collection on the value of applying user experience methodologies and methods to curriculum design and programmatic assessment. The authors connect UX to TPC's history of user advocacy and share insights about user experience in/as education: UX should function within programs as a means of better understanding student needs and program applications (Crane); UX is a method of transformative co-production, not just trouble-shooting or problem-solving (Masters-Wheeler & Fil-lenwarth); and UX-driven advocacy aids in recruiting new students, supporting current students, and supporting faculty (Howard). Students are valuable assessors of a program (Bay et al.); and bringing students into the design process as users builds interest, engagement, and success (Pihlaja). Rather than a single data collection to be interpreted by researchers, UX should involve community and

cultural lenses that speak to rather than about communities (Gonzales & Walwema). Further, and perhaps more pragmatically, not having student input may lead to more labor for instructors and missed insights from students (Clark & Austin).

The chapters of this collection include specific case studies from a broad range of institutional contexts and design stages. While specific data from UX methods is often contextual and localized, the principles are broadly applicable (Cargile Cook).

This edited collection models a user-centered approach by offering four possible journey maps to explore the chapters. “Focus on Student-Users” discusses situating user experience, understanding users, (re) designing with users. “Focus on Goals” explores the design of activities/ lessons, courses, curriculum, and extra-curriculars. “Focus on Methods” is sorted by understanding, looking, and making, based on methods used. Finally, “Focus on Design State” is ordered based on project design stage.

Crane’s introductory chapter, “Out of Industry, Into the Classroom,” provides a framework for understanding why user experience is relevant to pedagogy and program design. Program and curriculum designers, per Crane’s argument, should model the work they ask students to do post-graduation. TPC professionals have a rich history of involving users in the design process, and the development of user experience methodologies is a natural outgrowth of that focus. Crane uses a syllabus usability study to show how UX is key to designing complex course materials from a student-centered perspective.

Cargile Cook and Crane further situate user experience as a means of developing data-driven research that actively involves the users. Teachers have always been iterative designers, often through the practice of reflection-in-action. Iterative knowledge-making is important, but lore lacks methodological rigor. This collection moves students to the center of instructional design and assessment.

Sarah Martin explains user profiles as a means for developing awareness of student needs. Following a 16-week introductory undergraduate TPC course, this chapter provides two concepts for TPC instructors to apply in their own teaching: developing and iterating student-user profiles and understanding how student-user profiles can inform curricular design.

Laura Gonzales and Josephine Walwema document how using a familiar concept (transliterations) can introduce students new to UX to its relevance and purpose. Transliteration provides an entry point into UX that centers user research and ethical technology design. Through various feedback loops, researchers and students collaborated on

iterative course development throughout the semester.

Tharon W. Howard explores journey mapping through two case studies: a graduate seminar's client-based UX project, and faculty's use of journey maps in curriculum design. The first case study was a seven-stage project with three project teams. Howard acknowledges that few TPC program administrators could assemble the resources needed to conduct in-depth journey mapping research and offers the second case study on student needs around time to degree completion as a model for light journey mapping.

Beau Pihlaja discusses involving undergraduate students in design decisions about the syllabus and course learning management system. Pihlaja notes that many instructors are not taught pedagogy so much as subject expertise, and that adjustments to courses occur often as a way to head off negative evaluations. Instead, involving students through a UX approach early in an instructor's career can improve instruction and benefit students. This process could be accomplished in every course and every iteration of a course, which acknowledges that student cultures and needs are ever-changing.

Lindsay Clark and Traci Austin describe how UX can inform successful design with students as co-creators in a low-budget oral communication lab. Clark and Austin describe how their assumptions about user needs and priorities were challenged throughout the design and implementation process. Methods include cognitive walkthrough, observation journal, and surveys. Evidence-based inquiries led to getting students more involved with feedback and input on the design of the lab.

Luke Thominet discusses design thinking for student learning outcomes. UX methods applied to Program Student Learning Outcomes (PSLO) development makes an iterative, robust, user-centered process. Design thinking acknowledges that programs occur in messy spaces with complex interests and diverse stakeholders and works to make those things strengths rather than limitations.

Kelli Cargile Cook shares early methods and data from a four-year longitudinal study in a new professional communication program. Course-level assessments, exams, and capstone projects are common ways to assess programs. Student involvement in curricular assessment typically occurs only at exit points (from a class or from a program). Students in this study assessed degree plan, internship opportunities, and job opportunities through five UX methods: surveys, focus groups, user profiles, personas, and journey mapping. Their research will inform program stakeholders, such as faculty and administrators, and enhance student knowledge of the program.

Lee-Ann Kastman Breuch, Ann Hill Duin, and Emily Gresbrink share the development of a mentoring program. The authors used a UX perspective to examine a mentor-mentee relationship between technical communication advisory board members and technical communication students. The mentor program seeks to bring together academic and industry understandings of tech comm outside of traditional internship experiences. This case study was based in community of practice theory and included questionnaire, survey, and interview methods.

Mark Zachry outlines the issue of double binds in UX research using course assessment data from a senior capstone. Double binds go beyond constraints and competing interests; they are experienced personally as conflicting aspects of our identities (e.g., institutional employee and student advocate). This chapter is not meant to solve double binds but to open discussion about their existence and the roles they play in our activities as designers.

Jennifer Bay, Margaret Becker, Ashlie Clark, Emily Mast, Brendan Robb, and Korbyn Torres differentiate between usability (assessment of an end product) and user experience (interaction between users and a holistic, changeable, interconnected environment) and argue for a UX approach to programmatic assessment. The chapter is cowritten by Professional and Technical Writing undergraduates who served as experts on being in the program while learning UX principles and practices through programmatic assessment.

Christine Masters-Wheeler and Gracemarie Mike Fillenwarth situate program-as-product and students-as-users through two case studies. Thinking of students only as learners in classrooms limits their true role. Instead, thinking of them as users can help advisors, faculty, and admin improve the student-user experience. The authors surveyed current students and alumni with questions focused on identity, value, usability, adoptability, and desirability.

This edited collection delivers both the theoretical value of user experience as a framework for understanding programmatic development and a close look at applied methods of UX through multiple case studies. The content of these chapters can be taken as a model for future curricular development and refinement for all TPC programs.

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