

# Introduction to Design Thinking & *Keywords*

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## ■ What is Design Thinking?

We open this text by explaining *design thinking* in what we hope to be a simple and direct language. Our goal is to use this initial description as a reference point that we can return to throughout our discussion in this book, even as we begin to complicate the idea of design thinking later.

So, what is design thinking, exactly?

In short, design thinking is an approach for creating solutions to difficult problems. It is simultaneously a way of thinking about problems (i.e., a creative mindset) as well as a process for seeking resolutions to those problems (i.e., a problem-solving methodology). People typically use design thinking in response to complex problems that have no easy or definite solution, namely “wicked problems” (see Rittel & Webber, 1973). Design thinking projects are also fundamentally human-centered: They focus on understanding and addressing people’s real concerns. Finally, the design thinking process encourages collaboration, creativity, and responsiveness. It asks diverse teams of designers to create a broad set of potential solutions and then to test those solutions with real stakeholders.

If this definition sounds ambiguous, it is because ambiguity *is* the nature of design thinking. As we note below, a benefit of the design thinking mindset is that it asks practitioners to consider the situation, problem, and audience, without assumptions about solutions. This nonlinear approach can benefit projects that do not have straightforward ways of finding or applying solutions. It is this openness to ambiguity and exploration that makes design thinking stand out in design frameworks, including many of those used in technical and professional communication (TPC) projects today. Design thinking is a unique exploratory *lens* for problem-solving that offers a flexible, heuristic approach to innovation.

## ■ A Sample Application of Design Thinking

As you will learn in this book, design thinking is a concept claimed both by academics and by industry, often with somewhat incompatible goals and incentives. We will explore the variance between definitions of design thinking

in greater detail below, but first, we want to ground this introduction further with a brief example.

Design thinking has been implemented in a wide range of social and technological innovation projects. For example, Jeanne Liedtka, Andrew King, and Kevin Bennett (2013) described ten design thinking projects, including projects that focused on creating better trade shows, improving business-to-business marketing, making customer support experiences more enjoyable, and developing a system for subsidizing meals for the elderly. For a more specific example, we can look at how the Golden Gate Regional Center (GGRC), which provides support for people with developmental disabilities, used design thinking to revise their process for assessing and onboarding clients (Sutton & Hoyt, 2016).

At the outset of the project, the GGRC investigated the experiences of clients and then mapped their own work processes in relation to clients' experiences. This mapping activity helped them identify a number of different "pain points" for clients, including the extended duration of the onboarding process and the need to repeatedly travel to the GGRC for required appointments. In response, the design thinking team collaboratively imagined several ways to address these problems. One of their more innovative ideas was to use a Winnebago motorhome as a mobile office so the entire GGRC team could travel directly to the clients' neighborhoods and complete all of the appointments at one time. They then prototyped this idea by renting a Winnebago and testing the method for one day. While this strategy processed assessments "10 weeks faster than normal," it was also too expensive to sustain and scale up (Sutton & Hoyt, 2016). So, the design thinking team took what they learned from the experience and developed new prototypes, such as GGRC open houses in local neighborhoods and mobile social workers who used tablets to serve families in their own homes.

The above example is often what design thinking processes look like. An organization or community faces a significant and intractable problem. Rather than patching small issues or relying on well-established solutions, the organization seeks to understand users' experiences and uses this knowledge to reframe the problem. Then, they collaboratively seek innovative solutions, no matter how far-fetched those solutions might initially seem. Finally, they directly prototype and test potential solutions with real users to gauge their effectiveness. There are, of course, reasonable criticisms of this process. As we can see in the example, design thinking requires a significant investment of time and resources. It can also lead to detours, such as the Winnebago prototype, which are not feasible at scale. And it is sometimes difficult to determine a stopping point in design thinking projects, or a moment when prototyping and testing end, and a selected solution is fully implemented. In sum, design thinking is not fit for every context and problem. But in the right context, design thinking can help organizations to see complex problems anew while seeking imaginative solutions that might fall outside the scope of other design frameworks. With this basic understanding of design thinking, let's take a look at how it came about.

## ■ A Brief History of Design Thinking

The historical development of design thinking is generally agreed upon. Since it has been written about in length already (Cross, 2001, 2007; Kimbell, 2011), we will only cover the key figures in its development here as pertaining to TPC interests. Most often, design thinking is traced back to mid-twentieth century efforts to systemize all forms of design as a singular science. In the early 1960s, Buckminster Fuller (2019) began calling for a “design science revolution” in order to meet the emerging global human and environmental needs (p. 31). Then, in *The Sciences of the Artificial*, originally published in 1969, Herbert Simon (1996) argued that framing design as a science would create “a body of intellectually tough, analytical, partly formalizable, partly empirical, teachable doctrine about the design process” (p. 112). He also simultaneously expanded the purview of design to encompass a wide range of work: “Everyone designs who devises courses of action aimed at changing existing situations into preferred ones” (Simon, 1996, p. 111).

Then, in the 1970s, these arguments for a universal design science began to be questioned. Among the most important developments of this time was Horst Rittel and Melvin Webber’s (1973) coining of the term *wicked problems* to refer to problems that are ill-defined and that have no definitive solution. Notably, they argued that wicked problems could not be solved in a scientific manner (Rittel & Webber, 1973, p. 160). Richard Buchanan (1992) later argued that designers mainly dealt with just these sorts of wicked problems.

The 1980s continued this movement away from the rationalized approach of design science and toward theories of design that emphasized user participation and satisfactory resolutions to problems. First, Nigel Cross (1982) sought to establish design as a coherent discipline by positioning it against the sciences and the humanities. Then, Donald Schön (1983) introduced the idea of design as reflection-in-action, which connects doing and thinking as complementary activities (p. 280). Schön also argued that design theory had traditionally ignored problem-setting, which sought to establish the parameters of a problem rather than taking them as givens. Finally, the term *design thinking* was formally coined in Peter Rowe’s (1987) book with a title of the same name. In this book, he analyzed the practices of architects and developed a heuristic analysis of how they approached the design process. Notably, his text also emphasized the iterative nature of design while also outlining a process of analysis and evaluation similar to later models.

During this same period, the rise of personal computers and mobile technologies in the West led to a surge in attention to user experience (UX) and human-centered design (HCD). Designers and UX professionals created ways for researching users’ behavior and reactions to these unprecedented products, and invented models for ensuring human-centered technology. For an effective account of these models and human factor research methods, we recommend Robert Johnson’s (1998) *User-Centered Technology*. Design thinking as a lens for understanding problems and advocating for users benefited from the UX and

HCD perspectives. While not necessarily interchangeable in terms of the guiding principles among these approaches, design thinking, UX, and HCD share common goals. When applied to TPC, all of them aim to affect positive innovation. Each of the approaches, however, contains its own ideologies and emphases in value. Well-known scholar-practitioners like JoAnn Hackos, Ginny Redish, and Patricia Sullivan have made observations about the emergent characteristics in these approaches during this time:

- Writing is design; TPC can apply a user-centered mindset to create usable texts; design-centric methods may afford new understanding of the relationships between designers, systems, and users (Hackos, 1984, 1997)
- HCD protocols like user and task analyses would enhance TPC work; situational analysis can contribute to better usability design (Hackos & Redish, 1998)
- Usability studies should expand to focus on human experience (Sullivan, 1989)

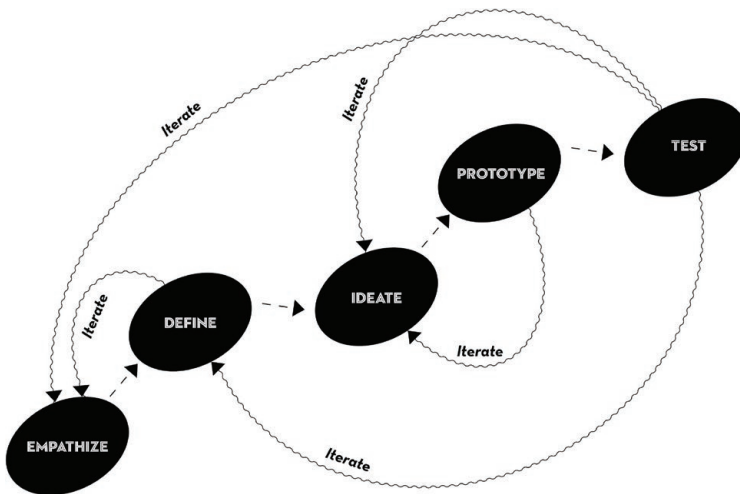
This brief list of TPC scholarship demonstrates the field's attention to design methods via UX and HCD practices. Although the term *design thinking* had not appeared in TPC scholarship then, its essential traits were traceable in these early UX and HCD discussions. Design thinking adds to these discussions the potential benefits of “empathy” as an ideology for user research and the reliance of “radical collaboration” to achieve more desirable design outcomes. This new mindset has slowly influenced UX and HCD work today, in return.

The 1990s and early 2000s saw the establishment of the most common formulations of design thinking. The design consulting firm IDEO—which worked on Apple's first computer mouse—was founded in 1991 and quickly popularized its version of the design thinking process. Several other companies subsequently customized and publicized their own design thinking processes, including IBM Enterprise Design and the British Design Council. Probably the best known advocate for design thinking education, the Hasso Plattner Institute of Design at Stanford (more commonly known as the d.school), was founded in 2005 by key members of IDEO. IDEO employees and d.school faculty were simultaneously publishing numerous popular press books to further publicize design thinking approaches in both business and life, including Tom Kelley and Jonathan Littman's (2001) *The Art of Innovation*, Tim Brown's (2009) *Change by Design*, and Tina Seelig's (2015) *Insight Out: Get Ideas Out of Your Head and into the World*. The next section will describe the design thinking process as popularized in these texts in more detail.

## ■ The Design Thinking Process

The various design consultants and schools, as described above, each have their own model of the design thinking process. IDEO (2015) currently describes it as three recursive activities of inspiration, ideation, and implementation. IBM (2018)

describes it as a “continuous loop of observing, reflecting, and making” (p. 4). And the British Design Council (2019) depicts it as a “double diamond” across four stages: discover, define, develop, and deliver. But the widely known model is the d.school’s five phases of the design thinking process: empathize, define, ideate, prototype, test (see Figure 1). In general, these design thinking phases are nonlinear and recursive, so they can respond to the specific contexts of the local problem space (d.school, 2010, p. 5). The goal of the empathize phase is to understand the experiences and perspectives of people in the context of the design challenge. Designers typically interview stakeholders, observe analogous activities, and develop *empathy*<sup>1</sup> maps. Designers then use this research during the definition phase to support accurate problem-setting. As Schön (1983) noted, real-world problems do not come to designers clearly defined; instead, designers construct a problem definition from uncertain and sometimes contradictory information. The ideation phase seeks to create a range of potential solutions to the design problem. Ideation often has the goal of divergent thinking, or the practice of going wide to develop creative and innovative solutions. Ideation typically involves multidisciplinary teams creating ideas through active and visual design exercises, such as affinity clustering and journey mapping. Then, during the rapid prototyping phase, designers create visual and/or material representations of several potential solutions that they can test with real users. The testing phase is then used to collect feedback on potential solutions in order to support iteration on existing prototypes.



*Figure 1. The five iterative components of design thinking: empathize, define, ideate, prototype, and test. Image created by Tham, adapted from the Interaction Design Foundation’s model (n.d.), an online educational resource for user experience (UX) researchers and designers.*

1. Bold italicized keywords in this introduction are terms included in this book. Refer to the table of contents for page numbers.

For technical communicators, this framework provides a guided yet flexible means to good design. But it is not a prescribed workflow. Rather, the framework seeks to illustrate the mindsets of design thinking and to orient technical communicators to the work of design and problem-solving. More importantly, design thinking mirrors and promotes the values that TPC, as a field, advocates for—as seen in our constant attention to user-centeredness, accessibility, creativity, ethical design, evidence-based solutions, participatory methods, etc. We’ll explore these intersections between design thinking and technical communication in more depth later, but now we’ll look at criticisms of design thinking.

## ■ Critiques of Design Thinking

As the formalized design thinking process has become widely used over the past two decades, many people have begun to question its efficacy. For example, Lisa Melonçon stated in an interview, “I’ve never seen design thinking work. . . . it looks great as a theoretical model, but I just haven’t been able to ever see it actually work to its fullest potential” (qtd. in Pope-Ruark, 2019). Melonçon’s primary argument here was that the formalized design thinking process was time-consuming and resource-intensive and that most projects used shortcuts which undermined the intended results of the process. Some industry practitioners have echoed this perception, calling design thinking a “failed experiment” (Nussbaum, 2011) or even saying that it “is a boondoggle” and “delusional” (Vinsel, 2018). In response to these criticisms, there have been numerous attempts to make the design thinking process more responsive and effective. For example, Kees Dorst (2011) sought to improve design thinking by focusing explicitly on abductive reasoning (or drawing probable conclusions from incomplete observations) and problem framing. And Lucy Kimbell (2012) argued for decentering the designer and for acknowledging the local, situated nature of design thinking. These revisions sought to keep the conceptual core of design thinking while also developing more effective approaches to deal with the shortcomings of standardized design thinking projects.

Moreover, the lack of structure in the design thinking process can make it difficult to evaluate from a practical standpoint. Suppositionally, design thinking promotes continual improvement—iterative cycles of design—which means designers work recursively to perfect a solution. Realistically, as experts have pointed out, it is not possible to ideate and test forever. Or, as Don Norman quipped, “It’s time we started design doing. . . . it may be hard to come up with good ideas but it’s even harder to actually do something with it, to produce a product” (Royal-Lawson & Axbom, 2016). Indeed, a solution needs to be implemented at some point, a reality that has been reflected in design thinking models that add a sixth phase focused specifically on implementation (Gibbons, 2016). Design thinking practitioners are challenged with this functional need in the commercial

world. The necessity of implementation makes design thinking less of a rulebook (how to manage a project) than a lens for understanding users and the problems they face. Even within our own academic disciplinary practices, where the conventional mindset for addressing problems is to *invent solutions* with specific expectations for results (Jones et al., 2016), design thinking is difficult to deploy as a utopic schema for innovation. Like any other ways of seeing the world, *design thinking is a lens* for finding ways to address complex problems, and this lens has its benefits and limitations to various contexts. The teaching and application of design thinking, thus, require contextualization to best leverage its value.

Another strand of criticism emphasized more fundamental flaws in design thinking by describing it as a colonial approach. For example, Anoushka Khandwala (2019) argued that “to frame design thinking as a progressive narrative of global salvation ignores alternative ways of knowing” (n.p.). While numerous examples exist to support this claim, the most famous case is that of PlayPumps, which were covered by Amy Costello in two PBS *Frontline* stories. Essentially, PlayPumps replaced traditional hand pumps in several African nations with a merry-go-round style tool/toy that was intended to use children’s play to pump water. When visiting the sites of several PlayPumps just a few years after they were installed, Costello found that they were not being used regularly and that many had already broken. Even more notably, local residents told Costello that they weren’t consulted about the installation of the PlayPumps and that the devices were difficult for individual women to use (Costello, 2010, 10:45). In response to these kinds of flawed projects, there have been numerous calls to revise design thinking. For example, the liberatory design framework explicitly asks designers to reflect on how local histories of oppression impact their design projects (Anaissie et al., 2021). Amollo Ambole (2020) argued for decentering Western design paradigms in favor of the localized knowledge of African communities. Likewise, Chris Elawa (2016a, 2016b) advocated for replacing the Design For Africa paradigm with a Design In Africa approach that contributed to local communities’ own design knowledge and capabilities. Finally, in conceptualizing a new Decolonial Design Thinking, Aishwarya Vardhana (2020) asked designers to center new questions in the design process:

. . . how do we build technology that is revolutionary? Who is building the technology, where is it physically being built, and in what spirit? If imagination is rooted in experience, and technological innovation springs from imagination, from whose subjectivity are the technologies of today born? (n.p.)

Together, these kinds of approaches can help to revise the existing design thinking framework to support the goals of social justice and equity while also helping design projects respond better to the localized needs and knowledge of user communities.



## ■ Design Thinking in Technical Communication

Now that we've discussed the practice broadly, we'd like to turn to situating design thinking specifically within TPC scholarship and pedagogy.

The field's interest in design thinking grows most directly out of the "design turn" in writing studies, popularized by Charles Kostelnick's (1989) alignment of design and writing at the peak of the field's process paradigm. Accordingly, the focus for design in TPC has been given to perceptual psychology (e.g., Moore & Fitz, 1993), visual rhetoric (Kostelnick, 1996; Tovey, 1996), user experience (Johnson, 1998; Sullivan, 1989) and usability studies (Breuch et al., 2001), multimodality (Wysocki, 2001), multiliteracies (Selber, 2004), information architecture (Salvo, 2004), and accessibility (Hitt, 2018; Melonçon, 2013), among others.

Amid this pluralistic approach to design in writing studies, the concept of design thinking recently entered TPC's discourse and literature. Stacked against existing frameworks, design thinking, as a ruthlessly user-centered, iterative invention process, emerges as a readily actionable scheme for TPC practices and instruction. Existing TPC scholarship has

- likened design thinking to the open-ended research in user experience design (Pflugfelder, 2017),
- situated design thinking as a rhetorical methodology (Greenwood et al., 2019),
- recommended positive deviance inquiries (or the study of rare but highly successful behaviors) as a tool for ideation, prototyping, and testing (Durá et al., 2019),
- explored the use of Dorst's problem framing approach for TPC work (Weedon, 2019),
- examined the connections between design thinking and place (Overmyer & Carlson, 2019),
- connected design thinking to content strategy (Zhou, 2020),
- demonstrated how a design thinking pedagogy could support TPC course outcomes (Bay et al., 2018; Lane, 2020; Pellegrini, 2021; Tham, 2021a, 2021b), and
- illustrated how a design thinking process could support the collaborative development of curricular design (Thominet, 2022).

Rebecca Pope-Ruark, Joe Moses, and Jason Tham (2019) have also developed a useful annotated bibliography of design thinking resources.

Beyond the connections to existing scholarship, there are several further reasons for TPC students to engage with design thinking. Despite the criticisms of it, design thinking remains a common strategy in a wide variety of industries and professions, including healthcare (Altman et al., 2018), information technology (Denning, 2013), and corporate writing (Moses & Tham, 2019). In this way, a



foundation in design thinking practices can contribute to students' available tools to respond to existing industry trends.

Furthermore, there is good evidence that design thinking is often misapplied in practice, with the formalized d.school process applied as a rulebook rather than as a flexible, heuristic approach or lens (Greenwood et al., 2019). We hope that this book provides clarity to various components of the design thinking mindset so readers can understand it as a possible approach to solving problems in their own contexts. We believe that familiarity with design thinking could help students enter the workplace as experts ready to contribute to production and design.

Finally, as TPC continues to work to improve the inclusivity of our scholarship, pedagogy, and practice, we can draw on our existing expertise in user experience design and participatory design to contribute to efforts in reshaping design thinking practice as a localized, community-led process.

## ■ The Goal of the *Keywords* Collection

Given the discussions above, including the numerous formulations of the design thinking process as well as the ongoing work to revise and improve the process, it is clear that we have not established a firm understanding of design thinking even when it shows tremendous potential for shaping the work of technical communication. At the core of this concern is the absence of shared definitions, meanings, and processes that would warrant consistency in the pursuit of design thinking. With a majority of TPC students now entering an expanding profession where design thinking is routinely exercised, the time is right for an authoritative resource at the intersection of design thinking and technical communication to address these issues.

As scholar-teachers grapple with design thinking, and as students work to understand its principles and mechanisms, we need a lexical resource for grounding and clarification of design thinking in technical communication. Specifically, we need an inventory and analysis of the central terms in design thinking through the lens of technical communication to study how a given term circulates and affects our particular knowledge community. This collection is born of such exigency, and it begins that journey by inviting scholarly perspectives to which particular keywords in design thinking are conceptualized, applied, and studied in the context of technical communication.

This collection follows on the heels of cultural theorist Raymond Williams. In his landmark work *Keywords: A Vocabulary of Culture and Society* (1976), Williams demonstrated the value of a critical glossary in introducing established as well as emerging terms to readers of a particular field. Williams' pioneering collection has become a model to many disciplines, including language and literacy (Carter, 1995), creative writing (Bishop & Starkey, 2006), news and journalism (Zelizer & Allan, 2010), sound studies (Novak & Sakakeeny, 2015), travel writing (Forsdick

et al., 2019), and our very own—composition/writing studies (Heilker & Vandenberg, 1996; 2015) and technical communication practices (Gallon, 2016).

Each of these volumes has explored principal ideas in a specific knowledge field. Over time, they also reveal the *ideals* and *realities* in a field based on its evolving lexicon. Paul Heilker and Peter Vandenberg's *Keywords in Writing Studies* (2015), a sequel to their *Keywords in Composition Studies* (1996), has traced the shifting theoretical, educational, professional, and institutional developments across a span of two decades. Ray Gallon's *The Language of Technical Communication* (2016) has sought to accomplish a similar goal: to predict the future of the field by defining what it is doing at the present. Essentially, keywords projects can provide for their respective disciplines an important point of intersection where the now meets the next. For scholars and practitioners alike, this intersection can serve as a departure to critical inquiry and prospective application.

*Keywords in Design Thinking* is a collaborative effort to clarify the language and concepts used to discuss design-centric practices in technical communication. This edited collection is designed for

- TPC students using or studying design thinking processes,
- researchers interested in using design thinking methodologies in their work,
- instructors working to augment their pedagogies with design thinking methodologies and activities, and
- program administrators and faculty wishing to draw programmatic connections between design thinking and TPC curricula.

The goal of this collection is to set the stage for design thinking within technical communication at a time when design thinking is itself deemed a contested term by many. It does so by establishing definitions stable enough to allow readers to determine the value of design thinking and apply and examine its usefulness in the design of technical communication. The contributors to this collection include faculty at research and comprehensive colleges, graduate students, and industry practitioners. This intentional configuration of contributors aims to increase the diversity of perspectives and offer varying routes to understanding design thinking.

## ■ The Design of the Collection

The most difficult task in curating this collection was the selection of keywords for inclusion. The initial call for this project was shared on numerous social media outlets and had garnered favorable responses from many interested contributors. Upon consultation with The WAC Clearinghouse Foundations and Innovations in Technical and Professional Communication series editors, 30 keywords (including *design thinking* in this introduction) were accepted for this collection based on their relevance and significance to the knowledge-building work this collection aims to achieve.

While it is almost an insurmountable task to justify the final selection, the 30 keywords in this collection have been carefully examined for their prevalence in the practice of design thinking and how they might inform technical communication. The primary objective of this collection is to present a set of keywords that would help readers not only to understand core design thinking methods but also the ways they may incorporate it in their own practices. Many of the selected keywords—like *creativity*, *innovation*, and *wicked problems*—have recurred in current scholarship. To bridge design thinking and commonplace technical communication concepts, technical keywords like *affordances*, *modularity*, *social design*, and *usability* were also deliberately included.

The final set of keywords includes the main phases of the design process, namely *empathy*, *problem definition*, *ideation*, *rapid prototyping*, *testing*, and *iteration*. To help readers see how they may apply design thinking in their respective contexts, the rest of the keywords include signature methods (e.g., *contextual inquiry*, *edge cases*, and *participatory design*), and concepts that help explicate the principles of design thinking (e.g., *collaboration*, *entrepreneurship*, and *inclusion*).

## ■ Structure of the Chapters

Each keyword entry includes a definition and a synthesis of relevant research with examples to flesh out the keyword. To help readers navigate this collection, each entry contains the following sections:

1. Definition and background: Descriptions and useful contexts for the keyword
2. Design application: One or more exemplary applications of the keyword
3. Pedagogical integration: How the keyword may manifest in the TPC classroom
4. References and recommended readings: Resources to learn more about the keyword

As with the stylistic treatment demonstrated in this introduction, all cross-referenced keywords are bolded and called out in the individual entries.

## ■ Open-Access Publication

Lastly, this collection is also born of a pressing desire to make knowledge accessible to public audiences. Modeled after innovative works like Guy McHenry's *Key Concepts in Surveillance Studies* (2017) and Cheryl Ball and Drew Loewe's *Bad Ideas About Writing* (2017), this collection is designed to be an open-access resource. Readers may reuse portions or all of this collection with basic attribution to the original texts and authors.

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