6.3 Design Thinking

David Kelley, founder of Stanford University's Design School and cofounder of design company IDEO, is credited as the originator of design thinking, at least within business and entrepreneurial contexts. You were briefly introduced to design thinking in Creativity, Innovation, and Invention, but we will delve into it in more depth here. IDEO grew from a merger of the creator of Apple's first mouse and the first laptop computer designer, David Kelley Design and ID Two, respectively. Almost a decade after the 1982 Apple creations, the 1991-merged company primarily focused on the traditional design of products, ranging from toothbrushes to chairs. Yet another decade later, the company found itself designing consumer experiences more so than consumer products. Kelley began using the word "thinking" to describe the design process involved in creating customer experiences rather than creating physical products. The term *design thinking* was born.

The current IDEO CEO Tim Brown defines design thinking as "a human-centered and collaborative approach to problem-solving, using a designed mindset to solve complex problems."[21] **Design thinking** is a method to focus the design and development decisions of a product on the needs of the customer, typically involving an empathy-driven process to define complex problems and create solutions that address those problems.

A common core of design thinking is its application beyond the design studio, as the methods and tools have been articulated for use by those outside of the field, particularly business managers. Design practice is now being applied beyond product and graphic areas to the design of digital interactions, services, business strategy, and social policy.

Design Thinking Process

Business schools have typically taught a rational, analytic approach to thinking. It focuses on well-defined goals and constraints, and thought precedes action in a sequential process of planning and analysis. The design thinking process approaches problem solving differently. Thinking and doing are often intertwined in an iterative exploration of the design "space," and the process uncovers goals and constraints, rather than

21 Mark Logan. "Design Thinking for Entrepreneurs." *Medium*. September 29, 2018. https://medium.com/idealect/design-thinking-for-entrepreneurs-392c8cbdcc24

identifying them up front.

One design thinking approach that is taught at places like Stanford's Design School and organizations like the LUMA Institute (a global company that teaches people how to be innovative) is **human-centered design (HCD)**. HCD, as the name suggests, focuses on people during design and development. This speaks to the Tim Brown definition of design thinking. Inspiration for ideas comes from exploration of actual people, their needs and problems.

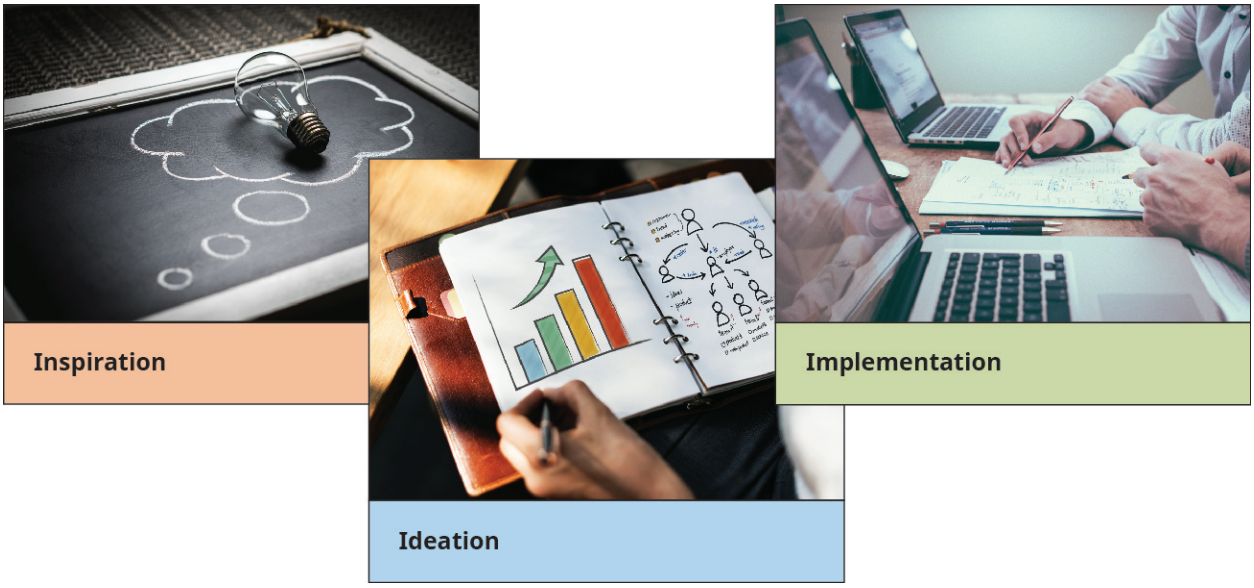

Figure 6.14 The design thinking process focuses on the spaces of inspiration, ideation, and implementation. (credit (left): modification of "thought idea innovation imagination" by "TeroVesalainen"/Pixabay, CC0; credit (center): modification of "document paper business chart" by "rawpixel"/Pixabay, CC0; credit (right): modification of "office business colleagues meeting" by "Free-Photos"/Pixabay, CC0)

Three spaces—inspiration, ideation, and implementation—compose the design thinking process (Figure 6.14). The process uses "spaces" and not "phases" because multiple spaces can happen simultaneously.

Nevertheless, inspiration usually occurs first. This entails identifying a problem or opportunity that motivates someone to search for solutions. Ideation is the process of generating ideas and solutions through various techniques such as brainstorming and sketching sessions. There are hundreds of ideation techniques available. A few examples of ideation exercises include Top Five, How Might We, Mash-up, and Co-Creation Session. In Top Five, everyone on the team writes down their top five ideas, shares them, and clusters similar ideas. In How Might We, the team looks at insight statements and reframes them as "How Might We" questions by adding that phrase at the beginning. The goal is to find opportunities for design that also allows for a variety of solutions. Mash-up involves combining existing brands or concepts to create something new. The team identifies those brands or concepts that represent a quality they desire in their solution, and they "mash up" those ideas to create a new idea. A co-creation session incorporates the desired market into the creation process by recruiting a group of people from the market to work on the design with the team. The goal is to capture the feedback the group provides by treating them as designers, not as interview subjects. Implemented solutions evolve from interactions with users and from the ongoing creation and refinement of possible solutions. Design thinking incorporates experience-based insights, judgments, and intuition from the end users' perspectives, while in a rational analytic approach, the solution process often becomes formalized into a set of rules.

Nesta is a UK-based innovation foundation that offers many design thinking tools and resources similar to IDEO. Named for the acronym NESTA, the National Endowment for Science, Technology and the Arts, the organization was established in 1998 with an endowment from the UK National Lottery and became an independent charity in 2012. Nesta's strategy focuses on health, government innovation, education, arts, and creative economy and innovation policy. Nesta offers a set of five criteria to ascertain that an occupation is creative:[22]

1. Novel process
2. Mechanization resistant
3. Nonrepetitive or nonuniform function
4. Makes a creative contribution to the value chain
5. Involves interpretation not merely a transformation in the service or artifact

As the name implies, design thinking originates from design. As design is one of the identified creative industries, there's a clear connection between creative industries and design thinking. In fact, Nesta offers inspiration and ideation exercises that are freely available for users wishing to implement design thinking practices.

Human-Centered Design Thinking Spaces

The Stanford Design School uses human-centered design thinking (HCD) as its design thinking approach. HCD emphasizes the following spaces of the design thinking process:

- Empathizing: As illustrated by the human-centered approach, it is important to have empathy for the problem you are attempting to solve. Empathy, as the chapter on Creativity, Innovation, and Invention defined, means observing and immersing yourself in the surrounding environment to engage with and understand people's experiences and motivations.
- Defining: This aspect involves describing the core problem(s) that you and your team have identified. Asking "how might we?" questions helps narrow the focus, as the ultimate aim here is to identify a problem statement that illustrates the problem you want to tackle. "Frame Your Design" is one such challenge in what IDEO calls its "toolkit" that works well here. Frame Your Design asks you to write down your problem and then refine it by following specific steps so that you end up with a design question that serves as a starting point but leaves room for creativity.[23]
- Ideating: This is where you begin to come up with ideas that address the problem "space" you have defined. There are hundreds of exercises aimed at the ideation process, ranging from brainstorming to "Five whys?" in the IDEO toolkit. The "Five whys" is a questioning method in which the researcher, in looking for information to solve a problem, asks a respondent a broad question, then asks "why" to get deeper into the respondent's thinking. IDEO puts it this way: "You'll use this method while you're conducting an interview and start with really broad questions like "Do you save much money?" or "How was your harvest this year?" Then, by asking why five times you'll get some essential answers to complicated problems. This can be a great method to use if you're trying to get at the human and emotional roots of a problem."[24]
- Prototyping: In this space, the entrepreneur creates and tests inexpensive, scaled-down versions of a

22 Christine Harris, Margaret Collins, and Dennis Cheek. *America's Creative Economy: A Study of Recent Conceptions, Definitions, and Approaches to Measurement across the USA*. National Creativity Network and Creative Alliance. August 2013. https://www.centerforcreativeeconomy.com/wp-content/uploads/2015/10/AmericasCreativeEconomyFULLReport.pdf

23 IDEO.org. *The Field Guide to Human Centered Design*. 2015. https://bestgraz.org/wp-content/uploads/2015/09/Field-Guide-to-Human-Centered-Design_IDEOorg.pdf

24 "The Five Whys." *Design Kit.* n.d. http://www.designkit.org/methods/66

product with features or benefits that serve as solutions for previously identified problems. This could be tested internally among employees, a process known as *dogfooding*, or externally with potential customers. This is an experimental phase.

- Testing: Designers apply rigorous tests of the complete product using the best solutions identified in the prototyping space.

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Design Thinking Tools

There are numerous design thinking tools aimed to aid or stimulate your design thinking activities. They stem from organizations dedicated to design thinking like IDEO and Google Ventures. While methodologies incorporate processes and techniques, tools are resources that enable such approaches. These may be activities, or templates that facilitate the approach.

- Innovation Flowchart: A sample innovation flowchart may map out the details of the process. The structured overview serves as an organizational tool in the development process.
- Question Ladder: A tool that helps you ask the "right" questions by refining your questions (Figure 6.15). Asking the "wrong" questions can yield meaningless or less-than-adequate results.

Simple ← QUESTION COMPLEXITY → Complex						
	IS	**DID**	**CAN**	**WILL**	**WOULD**	**MIGHT**
WHO	Who is	Who did	Who can	Who will	Who would	Who might
WHAT	What is	What did	What can	What will	What would	What might
WHERE	Where is	Where did	Where can	Where will	Where would	Where might
WHEN	When is	When did	When can	When will	When would	When might
HOW	How is	How did	How can	How will	How would	How might
WHY	Why is	Why did	Why can	Why will	Why would	Why might

Figure 6.15 A question ladder can help refine questions. (attribution: Copyright Rice University, OpenStax, under CC BY 4.0 license)

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