



## **Design Thinking: The Collaborative, Creative, and Human-Centered Approach to Problem-Solving**

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### **Abstract**

Design thinking maximizes the likelihood of success with products and services by first observing people's needs, brainstorming out-of-the-box ideas, prototyping the best idea, and asking people for their input. While this process may seem slower in moving the idea from the drawing board into production, it will yield more insight and gain customer buy-in before it moves into the marketplace. Design thinking is a collaborative, creative, and human-centered approach to producing products and services that will achieve better results.

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The key to getting good results, in any field, is to have a clear idea of the results one wishes to achieve. Focusing on the result is critical to success. In the past, companies have tried to guess what kind of product or service people want and then blindly create or manufacture the product and to sell in the marketplace. This approach yields a mixture of success and failure depending on many variables, including the time of release, type of product or service, and its marketing plan. The uncertainty of success with this approach does not prove to be efficient or effective. However, there is another solution. Design thinking reverses the

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traditional strategy of creating what the company thinks people want and starts with observing people's needs, brainstorming out of the box ideas, prototyping the best idea, and asking people for their input. In some cases, the process may take longer to move into production, yet it yields more insight and gains customer buy-in before bringing the product or service into the marketplace. Design thinking is a collaborative, creative, and human-centered approach to producing products and services that will achieve better results.

Tim Brown, a leader in design thinking and current CEO of IDEO, explained that design thinking involves moving beyond "making things more attractive" to creating things that will make a greater impact. Brown asserted that this approach emphasizes participation instead of consumption. In other words, design thinking requires a collaborative approach involving participants with a wide range of specialties which even includes the consumer. In his TED talk, designer Yves Behar commented that "it's not about slapping skins, anymore, on a technology. It's really about designing from the inside out." Behar added that designing in this fashion creates a conversation which is one of the foundational principles of design thinking. Collaboration and creativity generate ideas from which prototypes are made that, when shown to the consumer, will start a conversation. Michael Schrage, in his book *Serious Play*, stressed that the value of prototypes lies in the interactions they create, specifically the conversations, arguments, consultations, and collaborations. Although Schrage indicates that the feedback may not always be positive it is important. This interaction provides valuable insight for the next iteration of the prototype. The insights are applied either through enhancements or removal of distracting elements and a new prototype is generated. The process continues until the prototype is complete and ready for production.

### **What are the Origins of Design Thinking?**

Although design thinking has gained attention and traction over the last decade or two, it is not a new concept. Buckminster Fuller, Horst Rittel, Herbert Simon, and David Kelley have all been influential in the formation of what is now known as design thinking. Buckminster Fuller, an architect, and designer believed that applying design principles to machines, architecture, engineering, and even philosophy would bring efficiency to all areas of life. Fuller broadened the base of design to include a variety of disciplines. This collaborative approach is a core characteristic of design thinking. The design is not limited to just "designers," but rather, design thinking draws insight from as many disciplines as possible. Allowing a wide range of ideas

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increases the number of available options which in turn leads to the best possible solution to a problem.

Horst Rittel, a mathematician, and designer, coined the phrase “wicked problems.” According to Rittel, a wicked problem is one that is difficult or impossible to solve. Rittel explained that the main reasons for the difficulty stem from a lack of complete knowledge, a multitude of differing opinions, a large economic burden, and the interconnection of these problems with others. Wicked problems include poverty, sustainability, and disease. Rittel discovered that although these problems cannot be fixed, design thinking can mitigate these issues. Through the collaboration of individuals from many disciplines, ideas are generated which then can be tested through rapid prototyping. Rapid prototypes are not finished goods, but rather quick and cheap models that illustrate a potential solution to a problem. Schrage indicated that prototypes “externalize thoughts and spark conversation.” Once insights are gained from the rapid prototype the designer makes the necessary changes and produces a new iteration of the prototype. The process continues until a solution to mitigate the problem is discovered.

Schrage noted that economist and Nobel laureate, Herbert Simon, made an important contribution to design thinking through his observation that using “digital media [could] radically reduce the cost of searching for a solution to a problem.” Simon introduced the word “satisficing,” which is a combination of the words satisfy and suffice, that described the process of aiming at realistic goals instead of aiming for a greater profit. Gary Oster, professor of Innovation & Entrepreneurship at Regent University, explained that according to the idea of satisficing, if quick solutions cannot be easily obtained, then one often settles for a “good enough” solution. However, Oster asserted that design thinking seeks an elegant solution as an end result. Oster stated, “elegance requires the use of creativity and design thinking to maximize the result with the minimum amount of effort and expense.” Prototyping with digital media allows companies to provide elegant solutions with limited effort and expense.

David Kelley, a Stanford professor and leading design innovator, is credited with the term “design thinking.” According to Brown, when Kelley was asked about the field of design he always added the word “thinking” to the explanation. The term “design thinking” stuck. Kelley founded the global design firm, IDEO, that is “a community of designers, entrepreneurs, engineers, teachers, researchers, and more.” IDEO has intentionally created a company that is filled with individuals from a variety of disciplines, so they can focus on building to learn, and learning as they build, through inspiration, ideation, and implementation. In addition to his work

at IDEO, Kelley led the creation of the Hasso Plattner Institute of Design at Stanford University, known as the "d.school."

### **What is Design Thinking?**

A major consideration for innovation design has been efficiency thinking. According to Michael Mankins, a global management leader, efficiency focuses on doing the same thing but with less. Mankins asserted that companies desiring efficiency will make changes to reduce labor costs while still maintaining the same output. Efficiency thinking requires hard work. By operating within budget constraints and reducing the unnecessary waste of resources, efficiency thinking provides a reliable and defined structure for innovation.

Conversely, design thinking offers a strategy to work differently. Instead of focusing on making money and taking a reductionist stance, design thinking attempts to solve customer problems. Design thinking is a human-centered approach. It focuses on what the consumer wants or needs. Brown explained that this approach requires empathy which is a "thorough understanding, through direct observation, of what people want and need in their lives." Empathy is a key component that distinguishes design thinking from other types of thinking. For Brown, "the mission of design thinking is to translate observations into insights and insights into products and services that will improve lives." Not unlike efficiency thinking, design thinking uses both deductive and inductive reasoning in determining a solution. However, design thinking also uses abductive reasoning which begins with observation and then seeks to find the simplest, most likely and best explanation.

Once an observation has been made, design thinking begins with a brainstorming session with a variety of participants. Building a team that represents different specialties provides a broader base to draw ideas from. Often psychologists, medical personnel, economists, engineers, communicators, architects, graphic designers, and others are involved in the brainstorming process.

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Design thinking is comprised of both divergent and convergent thinking. (See Figure 1).

Brown explained that divergent thinking multiplies options to create choices. These choices are most often created through brainstorming activities. According to Michael Michalko, in his book *Thinkertoys*, brainstorming encourages individuals in a group to express a variety of ideas while deferring judgment until later. Brown encourages individuals to avoid simply thinking about a solution and instead to be “visual” which allows the

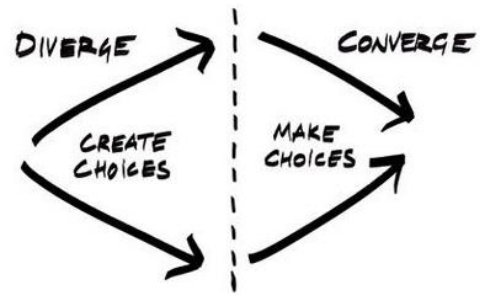


Figure 1: Divergent & Convergent Thinking

opportunity to see a problem from a new perspective. Michalko indicated that once ideas are revealed, they are combined, improved, and changed into other ideas providing a larger pool of ideas to draw from. Once all the ideas have been conveyed, convergent thinking begins. It is at this point that the best ideas are narrowed down, and a choice is made for a potential solution.

When a potential solution is agreed upon, the idea then moves into the prototype phase. A quick and cheap model is created that provides a visual representation of the solution. The prototype is then shown to a variety of consumers and others inside the company. The goal of prototyping is to begin a conversation about the idea and gain insight from the feedback that is given. The feedback is then used to create a second iteration of the prototype. The prototype is then put in front of consumers to see how the changes are received. The feedback is then used to create another iteration of the prototype. This process will continue until the testing is complete and the prototype is ready to move into production. The investment of time and resources into prototyping will prove worthwhile when the product or service moves into the marketplace.

### How Has Design Thinking Made A Significant Impact?

Brown offers examples of how design thinking has made an impact across the globe. In one instance, Brown recounted how Aravind was created in the 1970s to explore different ways to provide medical care to those in developing countries. Aravind encountered difficulties in travel and getting the needed resources to the people. However, through the collaboration of several doctors and companies, they hypothesized that using a small-scale technology could provide lenses locally without the need to import them. This, in turn, would lower the cost and make them available to more people. They were able to set up a unit in the basement of a

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hospital and create plastic lenses. The solution was a great success. This lab is now the lead exporter of lenses in the developing world.

The greatest takeaway concerning design thinking is that it is not limited to a single industry. Design thinking is a problem-solving process for products and services everywhere. In hospitals, design thinking has been used to create a better patient experience in the emergency room. Design thinking is used in the primary school system to promote creative thinking, teamwork, and student involvement. The process can be used to create customer-friendly bills or user-friendly displays for using public transportation. The principles of design thinking can be used in any industry, for products or services, in person or virtually. Design thinking involves observing people's needs, brainstorming out of the box ideas, prototyping the best idea, and asking people for their input. The end result of this process will be a more effective and impacting design that will meet the needs and wants of the consumer.

## **Conclusion**

Design thinking takes a human-centered approach to innovation. Observing the wants and needs of the consumer allows innovation to be customized to meet the needs and have a greater impact on individuals. Collaboration is essential to the success of design thinking. No longer is innovation isolated to designers only. Design thinking requires everyone to act as a part of the design team. Each member of the team has a voice and adds value to the process. The more ideas that are present, the more options available to determine the best solution for the problem.

Prototypes are a key component of design thinking. Quick and cheap prototypes are the spark for conversations and allow thoughts to be externalized. Prototypes never become the final product on the first try. Prototypes must be created and then adjusted and adapted for each iteration until finally there are no longer any issues to be fixed or adjustments that need to be made.

After considering the foundation and process of design thinking, there are definite strengths that indicate design thinking be considered for all forms of innovation. Design thinking is a collaborative, creative, and human-centered approach to producing products and services that will achieve better results.

**About the Author**

Anne K. Bates is a leadership and career coach. Her passion is to help people see their potential and achieve all their goals and aspirations. By focusing on the end result and working backward, Anne guides individuals, teams, and organizations through the process of achieving their goals and getting the results they desire. Anne is a final-year doctoral student in the Regent University Doctor of Strategic Leadership Program. Please contact the author at [annebat@mail.regent.edu](mailto:annebat@mail.regent.edu).

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