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Design Thinking: Exploring the Art of Possible

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ABSTRACT

Design thinking originated in the fields of design and engineering. It is a user-centric approach. It helps organizations to create solutions that are desirable to users by following a nonlinear iterative approach to understand, explore, and materialize. This paper examines the principles and practices of design thinking.

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Introduction

Design thinking is a nonlinear iterative approach that helps design the solution while keeping the user at the center. Its roots can be traced back to the 1960s, when design was increasingly recognized as a discipline beyond aesthetics. Key figures like Herbert Simon and the Stanford University design community began to formalize the process of design as a method of inquiry.

In the 1980s, design thinking gained traction in business, particularly with companies like IDEO, which applied it to product development. IDEO popularized the concept by demonstrating how design thinking could drive innovation and improve user experiences.

By the 2000s, design thinking had expanded beyond traditional design into education, healthcare, and social innovation. It became known for its structured approach to solving complex problems through collaborative brainstorming, prototyping, and testing.

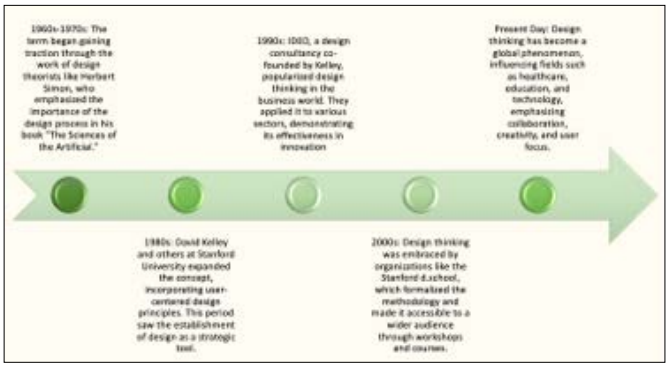

Figure 1: Design Thinking History

Today, design thinking is widely embraced across industries, enhancing user-centric design approaches.

Principles of Design Thinking

Many thought leaders developed broad principles and phases of design thinking, but the five commonly known pillars are Empathize, Define, Ideate, Prototype and Test [1].

Empathize: Understanding User Needs

Design thinking involves putting the user at the core. A product needs to be feasible and viable, but it must also be desirable. If the product is desired by the humans using it, it will most likely succeed. Organizations should aim to balance feasibility, desirability, and viability.

It is important to keep user needs at the core of the solution. Various empathizing methods are available to achieve that, like Assume a Beginner mindset, the Five Whys method, the Journey map, etc. Using multiple methods to gain meaningful insight into the user's needs is recommended.

Define: Framing the Problem

Following the empathy principle, one can analyze and understand the user's needs better, and the defined principle helps in synthesis. That involves understanding the bigger picture and defining the problem statement.

A problem statement should be user-centric, specific, and independent of the solution. A problem statement typically includes Who, What, and Why, i.e., "User [who] needs [what] because [why]." For example, a problem statement could be, 'The manager (who) needs to monitor the workload across the centers (what) because (why) he can do better resource management (user deep desire.'

Ideate: Generating Creative Solutions

This principle helps generate creative ideas for solutions using various methods, such as Brainstorming, Challenge Assumptions, Mind Maps, Prototypes, storyboards, etc.

Ideation sessions can be more fun and productive if some basic rules are followed. Allow the users to share ideas without judgment and build on each other's ideas. Ideation is the most exciting part of design thinking.

Once many ideas (focus on quantity) are gathered, the group should select them. Voting is one famous method. Other methods include the Four-category method, Six thinking hats, and Idea selection criteria.

Prototype: Building and Testing Ideas
Prototyping is a way to build a scaled-down product version to identify gaps early on. Creating the prototype early on will help gain better insights for improvement. The prototype must be built while keeping the user in mind and his journey of navigating the product.

There are two types of prototyping
- Low-Fidelity Prototyping
- High-Fidelity Prototyping

Low-fidelity prototyping, such as storyboarding, sketching, etc., is quick and cost-efficient. However, low-fidelity use-and-throw prototyping might lack validity.

High-fidelity prototyping is more engaging and closer to the finished product. These are created using tools like Azure, Adobe Illustrate, etc. This can be expensive and time-consuming.

Test: Gathering Feedback and Iterating
The Test principle enables teams to refine the solutions based on user inputs. It involves presenting the prototypes to the users and observing their interaction with the prototype. Besides observation, feedback can be gathered via usability testing, interviews, and surveys.

After gathering input, teams must analyze the data to identify common themes, pain points, and suggestions for improvement. This may require synthesizing qualitative feedback into actionable problem statements.

Based on the input, teams should create improved prototypes and repeat.

Application of Design Thinking
Different industries have leveraged design thinking. Some successful case studies are Apple, Netflix, Airbnb, GE Health, UberEats, etc. Here are some examples of how Design thinking can be applied across different sectors.
- **Product Development:** Designing user-friendly products by understanding user needs and iterating based on feedback.
- **Service Design:** Enhancing customer experiences in healthcare, hospitality, and retail by mapping user journeys and identifying pain points.
- **Education:** Creating engaging learning experiences by involving students and educators in the design of curricula and educational tools
- **Business Strategy:** Developing innovative business models and strategies that align with user needs and market trends.
- **Social Innovation:** Addressing complex social issues by co-creating solutions with communities, fostering inclusivity and sustainability.
- **Technology:** Designing intuitive interfaces and user experiences for software and applications, ensuring they meet user expectations.
- **Urban Planning:** Improving public spaces and city services through community engagement and iterative design processes
- **Marketing:** Crafting compelling campaigns by understanding target audiences and creating resonant messaging.

Benefits of Design Thinking
- **Enhanced User Experience and Customer Satisfaction:** Design thinking aims to keep the user at the center of the solution. Designers use various methods to gain deeper insight into User needs, wants, and pain points. This helps them create a better product and satisfy customers.
- **Increased Innovation and Competitiveness:** Design thinking is an iterative process that helps the organization continuously improve the product based on customers' feedback. This leads to designers thinking outside the box and building innovative products/solutions.
- **Improved Collaboration and Problem-Solving Skills:** Ideation techniques encourage collaboration across teams. Diverse ideas and perspectives help create better products. The iterative nature of design thinking enhances problem-solving capabilities by helping the organization experiment, learn from failure, and improve the product.

Challenges of Design Thinking
Critics argue that the design thinking approach sometimes needs more rigor for complex problem-solving. It is primarily dependent on user feedback, which can potentially be biased. This approach might only address surface-level problems without deep diving into the root cause.

It is not a panacea; design thinking is not a one-size-fits-all solution and might only fit some types of problems or industries. Variability in how design thinking is applied across teams can lead to inconsistent results. For example, in the Health and Human Services industry, a Quality Assurance (QA) solution is implemented using QA expert feedback, and if it is not allied to how caseworkers will be processing and reviewing the application, then the agency might end up developing contradictory review practices at the caseworker level and at the QA level [2,3].

The following table shows some of these challenges. Being aware of these while using design thinking might help organizations overcome any negative effects and better integrate design thinking into their practices.

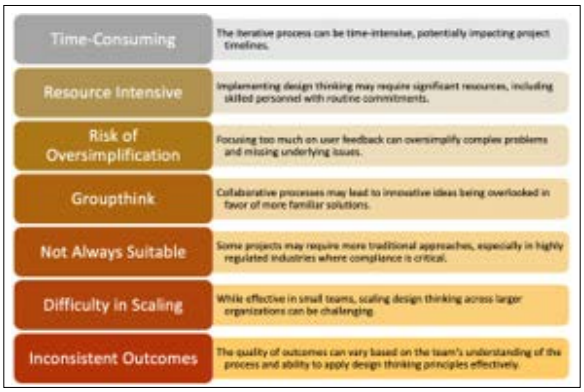

Figure 2: Design Thinking Challenges

Conclusion
In conclusion, design thinking helps invoke the user's wants and needs and creates a user-centric solution by empathizing, defining, ideating prototyping, and testing. However, this is challenging, awareness of the potential drawbacks can help organizations address challenges and better integrate design thinking into their practices.

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