

Design Thinking: Concrete Solutions for Human Problems

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With modern roots in the early 1900s, the field of instructional technology and design is relatively young (Reiser, 2018). Despite its youth, the field is no stranger to evolution, offering a vast array of models and philosophies built on a handful of learning theories. One such philosophy is design thinking. Developed in the early 1940s and 1950s by John E. Arnold within the Stanford Joint Program in Design (JPD), this approach gained popularity in the mid-2000s in conjunction with the growth of innovation management (Auernhammer & Roth, 2021). A flexible, human-centered approach, its aim is to support its practitioners in building concrete solutions to human problems. Understanding its characteristics, benefits, limitations, and areas of application prepares instructional designers to empathetically tackle complicated human problems.

Design Thinking Characteristics

Three foundational activities compose design thinking: need-finding, brainstorming, and prototyping. These activities are carried out to “facilitate creativity and innovation, overcome cognitive biases, and influence an organization’s culture” (Auernhammer & Roth, 2021, p. 624).

The overarching elements of design thinking are to “inspire, ideate, and implement,” which support the five critical stages: “empathize, define, ideate, prototype, and test” (Lal, 2021, p. 25). Those who embrace DT engage in “reframing of the problem statement, empathizing with the end users, embracing the chaos during ideation, tinkering with prototyping and, finally, testing the proposed solution” (Lal, 2021, p. 25 – 26). The process is iterative, and these steps are applied “conscientiously and repeatedly” (Auernhammer & Roth, 2021). Arnold called for radical application of his model, postulating that, “If all members of an organization were

encouraged to think as daringly as possible, without fear of immediate evaluation or possible ridicule...I can't see but how the company would benefit" (Auernhammer & Roth, 2021, p. 631).

Brainstorming and Prototyping

Brainstorming, or ideation, within design thinking encourages the generation of many, varied, wild ideas. All are encouraged to engage without fear of judgment iteratively in a supportive environment. Prototyping follows swiftly, with the goal to "get three-dimensional as quickly as possible" (Auernhammer & Roth, 2021). Functional prototypes forms allow testing to proceed, generating critical feedback (Lal, 2021).

Criticisms of Design Thinking

Those that take issue with design thinking target concerns around "theoretical grounding and construct clarity" (Auernhammer & Roth, 2021, p. 623). While some argue that DT has sprung up independent of grounding theories, Auernhammer and Roth (2021) demonstrate that it is based in "psychological theories of creativity, visual thinking, and human values" (p. 637). The value of DT is intrinsically connected to those components at which criticism are lobbed – its structure is malleable and encourages flexibility in the face of constant change.

- Criticisms of design thinking: **theoretical grounding** and **construct clarity** (p.623, Abstract) NEGATIVE (Auernhammer and Roth)
- PUSHBACK: **Argument that DT emerged independent from theories** (p. 637) – "Scholars stated that DT had emerged independently from theories (Dell'Era et al., 2020; Johansson-Sköldberg et al., 2013; Micheli et al., 2019). However, this study showed that DT is **grounded in psychological theories of creativity, visual thinking, and human values**"
- Future research: "**An imperative question is how innovation managers create and sustain a design culture and capabilities in organizations.** Various companies, including SAP, Steelcase, IBM, Proctor & Gamble, Samsung, Intuit, and Google, embraced and contextualized this **humancentered design philosophy and creative design culture** (Gruber et al., 2015; Leavy, 2010; Micheli et al., 2019). Empirical research should investigate the practices of creating and sustaining a design culture in educational systems and organizations, enabling people to creatively contribute with tangible and valuable solutions to tame the continuously emerging societal and environmental challenges." (p. 639)

Lal p. 207 – is there a negative of DT?

Benefits of Design Thinking

One of the overt benefits of this approach to design is its capacity to empower. As Lal (2021) asserts, design thinking “can be practiced at varying levels by people with varied skills and capabilities” (p. 10) Design thinking welcomes all to come together to think critically and contribute.

Design thinking is compatible with a rapidly evolving world in that it encourages rapid problem-solving. Designers are encouraged to think big and embrace wild ideas, facilitating identification and management of flaws; the idea being to “fail fast so see success” (Lal, 2021, p. 16).

The critical role empathy plays sets design thinking apart. Lal (2021) rightly acknowledges that “we need to learn to see participants as people first, and that can only happen when we see ourselves in that space” (p. 21).

Liberatory Design: Integrating Empathy and Complexity with Design Thinking

A novel approach that combines design thinking with both deep empathy and complex design theory is liberatory design. Co-created in 2016 with its first prototypes presented in 2017, it aims to tackle complex challenges with equity and flexibility (Robalewski, 2021; National Equity Project, n.d.). Liberatory pedagogy supports students in posing questions with “more comprehensive approaches towards inquiry of problems” (Mogankrishnann et al., 2018, p. 5).

Design Thinking in Practice

Complex systems benefit from the flexibility and willingness to embrace complicated structures, that design thinking provides. Ignite, social innovation program developed by the

Center for Global Women's Health Technologies at Duke University, embraces liberatory, human-centered design tenets in its mission to engineer Sustainable Development Goals (SDGs). Ignite engineers build solutions by creating physical prototypes, implementing that prototype to address a community challenge, and learning from their peers "in a virtuous cycle of learners who become leaders who generate more learners" (Mueller et al., 2020, p. 3).

Engineers are not the only ones tackling sustainability with the toolkit of design thinking. Business school students striving to address "wicked" problems – complex social issues with multiple conflicting stakeholders and unpredictable outcomes – might benefit from applying this empathetic, creative problem-solving framework.

The empathy at the heart of design thinking drove the success of companies like Airbnb, Pinterest, and Intuit, as they identified human needs by attending to the decisions people are making and then asking "why" to uncover a need (Lal, 2021)

Lal p. 91 – example of SlideShare on Google

Lal p. 129 – ethnography interview example, education during the pandemic

Lal p. 161 "In India, it is being taught in design schools, In fact, a recent recommendation in the CBSE K – 12 curriculum mentioned DT's inclusion in the K – 12 curriculum" (p . 161)

p. 178 of Lal: "Stanford School...has taken an initiative to bring DT to local school curriculums. It is focused on developing an understanding of DT among K – 12 students, so they are equipped with the knowledge of processes and tools to conduct their research initiatives. This interaction enabled Stanford School to work closely with teachers, and through this collaboration, they aimed at development of the curriculum with design"

p. 207: “The DT process shares many values with humanitarian design practice; it is concentrated on human-centred problem-solving, sharing and storytelling and anthropological approaches relevant to social and culturally significant components

p. 207 – is there a negative of DT?

Understanding Complex Design Theory

Complex design theory embraces complicated systems with multiple interacting entities, each of which can have profound effects on fellow subcomponents.

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