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The Priority Needs of Developing Design Thinker Capabilities of the Schools

Affiliated with the Church of Christ in Thailand

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Abstract

Design thinking has become a source of inspiration in the pursuit of innovation. Dealing with education and innovation in the post-COVID era, the focus in curriculum, teaching, and learning on applying the design thinking process is not enough; teachers must now move forward to mastering the capabilities of design thinkers. This research aims to study the current states, desirable states, and Priority Needs of teachers in the schools affiliated with the Church of Christ in Thailand (CCT) based on the concept of the capabilities of design thinkers. The sample size is randomly selected 274 teachers from 994 secondary teachers in 20 schools that provide secondary education under the provision of CCT. Online questionnaires were used as a research instrument. The findings revealed that a dynamic mindset showed the highest Need ($PNI_{modified} = 0.620$), while the overall need of the design thinking capabilities rated very high ($PNI_{modified} = 0.527$). It would greatly benefit teachers to become design thinkers by understanding and developing the individuals' sub-dimensions of the capabilities of design thinkers.

Keywords: Teacher Development, Design Thinkers, Priority Needs

Introduction

Innovation is now the key for the current era to gain competitive advantages in the BANI world, the world of brittle, anxious, nonlinear, and incomprehensible, where the actual challenge lies (Chesson, 2017). Driven by the unfolding influence of globalization, the rapid change of technology, and the

challenges of the economy, organizations and institutions face more wicked or complex problems that are highly complicated to solve. Most people have never been taught how to tackle a problem creatively by developing new ideas and exploring many innovative approaches (Hunter & Chaskalson, 2013).

In this case, design thinking has become a source of inspiration in pursuing innovation. With the notion of design thinking has arisen in an innovation context, the concept of design thinking has emerged as a multidisciplinary and human-centered innovation approach inspired by the way designers think, work, and apply to their operations (Kimbell, 2011, 2012; Johansson-Skoldberg et al., 2013). A significant distinction between design thinking and other approaches to problem-solving methods is that design thinking emphasizes creating solutions. In contrast, most other approaches focus on isolating the deficit causing the problem (Chesson, 2017).

Engaging in design thinking requires a series of skills and perspectives that help them distinguish between familiar patterns of management and decision-making (Johansson-Sköldberg et al., 2013). The design thinking mindset and process are intricately linked. Such a mindset is required before one begins to do the design thinking process (Brenner et al., 2016). It is advised that educators must shift from design thinking to becoming design thinkers (Lor, 2017). The focus on applying the design thinking process is not enough. Teachers must now move forward to mastering the capabilities of design thinkers.

Dynamic mindset, Human-centered, open to risk-taking, engaging to prototyping, and visual are mindset proposed to be developed. As the transformation from teachers to students to become design thinkers, significant changes have emerged in their approaches to innovative ideas. They started to develop a sense of resiliency that enables them to think “outside the box” (Goldman et al., 2012). Efeoglu et al. (2013) also stated that design thinkers are intrinsically motivated and are not scared of moving away from their comfort zone to re-invent and develop their conceptual thinking.

What a teacher must know and be able to do in the twenty-first century has changed. Today's instructors face a variety of challenging and confusing concerns that can be classified as wicked problems or adaptive challenges, all of which necessitate a change in thinking (Baran & AlZoubi, 2023). To tackle the uncertainties in education, other scholars assert that 21st-century teachers need to become design thinkers who consider not just the lesson itself but also setting stakeholders and resources to create a specialized learning experience every time they teach (Elwood et al., 2016).

Specifically, secondary schools under the provision of the Church of Christ in Thailand (CCT) are struggling to develop teachers for post-pandemic teaching and learning. To create the quality and capacity of educational instructions, CCT then actuates the strategy to improve the quality of education

to meet the standards of national and school education plans in a framework of education for the 21st century and Thailand 4.0 era. To drive and gear all sectors towards the school vision, most schools determined one of the objectives mentioned in the school strategic plan to cultivate students with a morality based on Christian ethics, leadership, and promoting learning skill, digital skill, creativity, and innovation. Consequently, the student achievements and outcomes in innovation were observable from the assignments and projects, which have not fostered the capabilities of design thinkers.

As mentioned above, building, embedding, and mastering the capabilities requires an understanding of the individual current states of the capabilities of design thinkers and ensuring the appropriate approaches to teacher development following the concept of the capabilities of design thinkers. Due to all these concerns, it is critical to determine the need to develop teachers' design thinker capabilities of the schools affiliated with CCT.

Research objective

To study the current states, desirable states, and priority needs of teacher development of the schools affiliated with the Church of Christ in Thailand based on the concept of the capabilities of design thinkers.

Conceptual framework

In this paper, the capabilities of design thinkers refer to the teachers who employ essential capabilities of an underlying mind shift to approach an initiative and inventive ideas to solve challenging and complex problems. Design thinkers have conceptual mind shifts that can lead to creating and enhancing solutions and innovations with other disciplines and interdisciplinary. There is a significant concept of design thinkers' capabilities underlying the study's conceptual framework to discover the priority needs. Five sub-dimensions are considered: dynamic mindset, human-centered, open to risk-taking, engaging to prototyping, and visual.

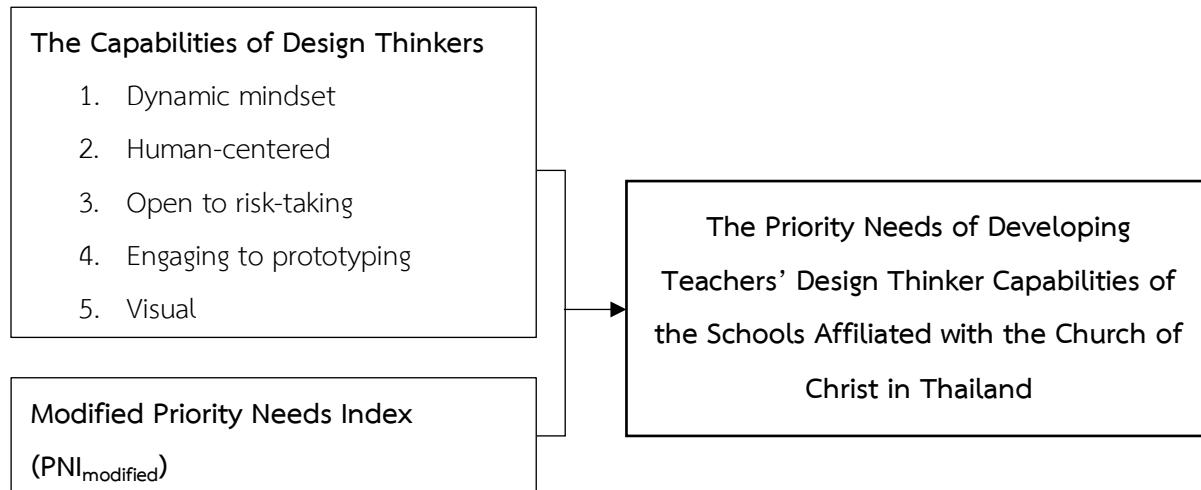


Figure 1 Conceptual Framework of the Research Study

Table 1 Summary of design thinking capabilities.

Upon reviewing various related concepts and literature, five capabilities of design thinkers are underlying and proposed as the study's conceptual framework.

Capabilities	Definition	Citations
1) Dynamic mindset	The teacher's ability to shift between inventing thinking, where new ideas are generated, and analytical thinking, where ideas are tested to identify an appropriate solution	(Chesson, 2017; Dosi et al., 2018; Ladachart et al., 2021; Luecha et al., 2021)
2) Human-centered	The teacher's ability to put the human experience at the center of problem-solving where the lives of students, their challenges, and their ideas are closely and deeply examined by engaging with students in their everyday environments	(Che Noh & Karim, 2021; Chesson, 2017; Dosi et al., 2018; Lee, 2018)
3) Open to risk-taking	The teacher's ability to have an appreciation for rules but also be willing to break the rules and move knowledge forward	(Chesson, 2017; Dosi et al., 2018; Gallagher & Thordarson, 2018)
4) Engaging to prototyping	The teacher's ability to view solution finding as an iterative process that requires refining and combining ideas to arrive at a final answer and to transform conceptualized ideas into tangibles	(Che Noh & Karim, 2021; Chesson, 2017; Dosi et al., 2018; Gallagher & Thordarson, 2018)
5) Visual	The teacher's ability to speak to a form of thinking that brings about new ideas and to imagine what solutions could exist, how things should be, and conceptualize things that do not yet exist	(Chesson, 2017; Dosi et al., 2018; Gallagher & Thordarson, 2018; Ladachart et al., 2021; Lee, 2018; Luecha et al., 2021)

Research methodology

The study employed descriptive research to determine the current and desirable states of developing teachers' design thinker capabilities of the schools affiliated with the Church of Christ in Thailand (CCT). A unit of study was 994 secondary teachers from 20 schools that provide secondary education under the provision of CCT. The sample size was 274 secondary teachers determined by using the table of Krejcie & Morgan (1970). The samples were randomly selected from 20 schools.

The research instrument was developed from the framework of the concept of the capabilities of design thinkers by reviewing various related concepts, theories, and literature. The instrument used in this procedure was a five-level rating scale questionnaire which consists of 2 parts: 1) respondent's background consisted of questions about the general information and 2) the current states, and the desirable states of each capability of teachers' design thinker of the schools affiliated with CCT. Each capability consisted of 5 subordinating statements of behavioral indicators reflecting their current and desirable abilities. The research instrument was assessed the content validity by 3 experts.

The data were analyzed using frequency distribution, percentage, mean, standard deviation, and $\text{PNI}_{\text{modified}}$ to justify the priority needs.

Research results

The respondents' background

The respondents were 274 teachers. The majority of respondents are female (72.26 %). The age of the majority is less than 30 years (66.06 %). The highest level of education of the majority is Bachelor's degree or equivalent (73.72 %), and their work experience is one to ten years (41.20 %).

The current states, desired states, and priority needs index for developing teachers' design thinker capabilities of the schools affiliated with the Church of Christ in Thailand.

As shown in Table 2, the total scores of $\text{PNI}_{\text{modified}}$ were 0.507, which can be implied that the teachers in the schools affiliated with the Church of Christ in Thailand have a very high need to develop all sub-dimensions. Further investigation showed that a dynamic mindset ($\text{PNI}_{\text{modified}} = 0.620$) appears more crucial than others. In recent research, scholars asserted that design thinkers pursue transforming existing situations into desirable ones (Chesson, 2020). A dynamic mindset requires the first optimistic outlook, believing better solutions are possible. It is more accurate to describe the design thinking process as cyclical or iterative, which requires a dynamic mindset (Brown, 2008). Design thinkers with a

dynamic mindset will likely be comfortable allowing ideas to evolve by moving back and forth between and when thinking and analytical thinking.

Table 2 The current states, desired states, and priority needs index for developing teachers' design thinker capabilities of the schools affiliated with the Church of Christ in Thailand.

No	Design Thinker Capabilities	Current States			Desired States			PNI _{modified}	Order
		(X)	(SD)	Level	(X)	(SD)	Level		
1.	Dynamic mindset	3.05	0.438	Moderate	4.94	0.245	Very High	0.620	1
2.	Human-centered	3.26	0.538	Moderate	4.85	0.315	Very High	0.488	3
3.	Open to risk-taking	3.27	0.530	Moderate	4.86	0.272	Very High	0.487	4
4.	Engaging to prototyping	3.24	0.580	Moderate	4.84	0.356	Very High	0.497	2
5.	Visual	3.32	0.565	Moderate	4.79	0.360	Very High	0.443	5
Total Scores		3.23	0.530	Moderate	4.85	0.310	Very High	0.507	

Table 2 displays the mean, standard deviations, and PNI_{modified} for developing teachers' design thinker capabilities of the schools affiliated with the Church of Christ in Thailand. The result displayed a moderate overall state of design thinker capabilities ($\bar{X} = 3.23$, SD = 0.530). When considering each sub-dimension, the visual mindset had the highest mean ($\bar{X} = 3.32$, SD = 0.565), followed by open to risk-taking ($\bar{X} = 3.27$, SD = 0.530), human-centered ($\bar{X} = 3.26$, SD = 0.538), engaging to prototyping ($\bar{X} = 3.24$, SD = 0.580) and dynamic mindset ($\bar{X} = 3.05$, SD = 0.438) respectively.

In terms of the overall desired state for developing teachers' design thinker capabilities of the schools affiliated with the Church of Christ in Thailand, the overall desired state was at the highest level ($\bar{X} = 4.85$, SD = 0.310). When considering each sub-dimension, the dynamic mindset had the highest mean ($\bar{X} = 4.94$, SD = 0.245), followed by open to risk-taking ($\bar{X} = 4.86$, SD = 0.272), human-centered ($\bar{X} = 4.85$, SD = 0.315), engaging to prototyping ($\bar{X} = 4.84$, SD = 0.356) and visual ($\bar{X} = 4.79$, SD = 0.360) respectively.

In terms of the Modified Priority Needs Index (PNI_{modified}) for developing teachers' design thinker capabilities of the schools affiliated with the Church of Christ in Thailand, the subdimension that showed

the highest level of need was dynamic mindset ($PNI_{modified} = 0.620$), followed by engaging to prototyping ($PNI_{modified} = 0.497$), human-centered ($PNI_{modified} = 0.488$), open to risk-taking ($PNI_{modified} = 0.487$), and visual ($PNI_{modified} = 0.443$), respectively.

Discussion and Conclusions

In summary, the findings of this study shed light on exploring the priority need for design thinkers' capabilities in the schools affiliated with the Church of Christ in Thailand. The results revealed that the teachers need to develop all sub-dimensions of the design thinkers' capabilities due to the high needs in overall scores. It indicates that teachers' most significant capabilities deficit was a dynamic mindset, which is arguably a high priority. The highest need was the dynamic mindset, engaging to prototyping, human-centered, open to risk-taking, and visual, respectively.

Prior research and studies explore the critical elements of learning the design thinking process. The focus is now on the development of conceptualization of design thinking capabilities or mindsets. Sobel et al. (2019) stated that although people or whole companies may embrace the method and tools of design thinking to acquire new innovative practices over time, the idea of design as a state-of-mind indicates that genuine innovation is a company-wide phenomenon and should not be left to marginalized functions within a firm. The capabilities or mindsets ultimately help achieve innovation objectives at a deeper and more sustainable level.

Before understanding the mindsets as shifts, the researchers focused on the skills and processes of design thinking that were observable and documented based on the performance of tasks and activities. However, after this change in orientation, the researchers focused on work specifically on assessments that help make visible and document the development of a human-centered mind shift. A dynamic mindset is a mind shift of epistemological viewpoints in flux. It is the whole part of the process of becoming a design thinker. That explicitly illustrates a dynamic mindset is the priority of the teachers' needs in the schools affiliated with the Church of Christ in Thailand.

We determined three typical primary stages after synthesizing the various existing design thinking process models. The understanding stage focuses on discovering the problem. The conceptualizing stage focuses on generating ideas for solutions. The experimenting stage focuses on testing and evolving ideas to develop a final solution. Those three primary stages require the capabilities; of engaging to prototyping, human-centered, open to risk-taking, and visual, which can be thought of as gears within the container that facilitate the process (Chesson, 2017).

With more innovation-oriented education, design thinking has the potential to be at the center of teaching and research. Interchangeably, researchers, teachers, designers, makers, developers, and administrators with various subject matter backgrounds and interests have applied design thinking capabilities. Design thinking capabilities must be integrated into academic content. The school should perceive teachers as design thinkers, innovators, and change agents. This trend will continue over the next ten years in numerous areas.

Schweitzer et al. (2016) identified a set of commonly applied mindsets corresponding with a dynamic mindset, engaging to prototyping, human-centered, open to risk-taking, and visual. School administrators in the post-covid era need to shift their cutting-edge ideas to the development of “teachers as design thinkers” identities which can be achieved through the systematic implications of the appropriate teacher development approaches.

Recommendations

Recommendations for the use of research outcomes

According to the study’s findings, dynamic mindset is the first priority need. The school administrators need to concentrate beforehand on finding the appropriate development since the dynamic mindset is a prerequisite outlook, and the design thinkers are groundbreaking concepts.

The results of the priority needs revealing that all capabilities are in high needs since the design thinkers are groundbreaking concepts. The school administrators cannot overlook at such capabilities. They are also in demand to be develop simultaneously.

The school administrators can use the results in the executive planning and coaching process to identify strengths and opportunities for individual teachers to evolve to develop the capabilities needed to meet current challenges.

Furthermore, school administrators should focus on assisting teachers in implementing, disseminating, and embedding what they have learned into the school community to have the most impact.

Recommendations for future research

The research revealed that design thinkers’ capabilities could help teachers and students pursue innovation and deal with complex challenges. It would be the best deal if the study also finds the

approaches for developing those capabilities of design thinkers of teachers and school administrators, which could benefit the whole school.

It is also essential to consider a more diverse sample in future research. This means that the samples should not limit to certain schools but instead include teachers from both private and government schools. By doing so, it can be ensured that the research results represent the real needs and insights of all teachers. The results can be generalized and will help the researchers develop the appropriate approaches for developing the capabilities of design thinkers.

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