
Exploring the Concept of Design Thinker in Western and Chinese Contexts

Yating Li and Henry Ma

The Hong Kong Polytechnic University, Hong Kong

ABSTRACT

This research is a comparison study of the concept ‘design thinker’ in western and Chinese contexts. Qualitative research methodology was used. A western database with 105 selected papers and a Chinese database with 25 selected papers have been reviewed. 14 categories of 179 concepts from the western database and 11 categories of 31 concepts from the Chinese database have been collected. Three philosophies have been found: the concepts in the western context; the concepts in the Chinese context; the differences and similarities between these two concepts. The findings of this research can be used to understand ‘design thinker’ better and improve the teaching to nurture design thinkers.

Keywords: Design thinker, Western concept of design thinker, Chinese concept of design thinker, Comparison of western and Chinese concept

INTRODUCTION

Design thinking is a problem-solving approach, however, some academics claimed that design thinking is not only a process, it is also a mindset or attitude that people choose (Owen, 2007; Razzouk, 2012; Ma & He, 2019). Therefore it is important to research the concept ‘design thinker’. A better understanding of this concept can also benefit our teaching. In the western context, much more research has been done about the concept ‘design thinker’ than in the Chinese context. A research gap of comparative studies exists. Comparative study is used to explore the similarities and differences between the concept ‘design thinker’ in western and Chinese contexts.

Research Significance

Better Understanding of the Concept

This research can benefit the understanding of ‘design thinker’. There are not much Chinese research available on the concept ‘design thinker’. This concept originally comes from western research, then it spread to mainland China. Especially, when the keyword ‘design thinker’ is searched in Chinese, the result presents only one article (Ma & He, 2019) on the Chinese National Knowledge Infrastructure (CNKI), and only 25 papers mentioned

‘design thinker’. Therefore, to have a better understanding of the concept, a comparative study should be conducted.

Improve Teaching Design Thinking and Nurture Design Thinker

This study can also benefit educators who aim to nurture design thinkers or conduct design thinking in their classes. Generally, a design thinker is a person who can use design thinking to solve the problems. Students are able to be more competitive to catch future opportunities as design thinkers. It can be observed that the concept of ‘design thinker’ is understood in different ways in both western and Chinese contexts. This comparative study can offer a reference for them to improve teaching.

Research Questions

In this research, three major research questions will be answered:

1. What are the concepts of ‘design thinker’ in western academic publications?
2. What are the concepts of ‘design thinker’ in Chinese academic publications?
3. What are the similarities and differences of the concepts described by the western and Chinese academic publications?

BACKGROUND

Nurture Students to be Design Thinker

Relationship between Design Thinking and Design Thinker

The concept ‘design thinker’ contains the idea of design thinking. Designers in a different discipline, use design thinking to solve design problems. They are using certain processes and tools to generate creative solutions. Design thinkers are driven by certain behaviours when they are using the design thinking approach, such as human-centred focus, holistic considerations, non-linear process, creative thinking, use of cognitive tools, intuition and subjective thinking, learning-by-making, exploring and discovering opportunities (Ma & He, 2019).

Use Design Thinking to Nurture Students to be Design Thinker

Design thinking is also applied in teaching pedagogy and affects students’ personalities. Many business schools and institutes use Design Thinking as a problem-solving approach (Dunne & Martin, 2006; Davis, 2010). In western countries, Design Thinking has already been successfully applied in many schools and programmes. Today’s business people need to become design thinkers instead of understanding designers (Dunne & Martin, 2006). Students who successfully become design thinkers have independent personalities. The representation change theory includes design thinkers’ personal traits, which are taking sensible risks, the willingness to take self-responsibility, the presence of strong self-efficacy and the willingness to tolerate ambiguity (Ma & He, 2019).

Design Thinker Research in Mainland China

Lack of Research in Design Thinker

It is not much research of the concept ‘design thinker’ are available in mainland China. Article with the topic of ‘设计思维者’ (Chinese translation of ‘design thinker’) on CNKI was searched, the search result returned only 1, but this paper is from India Srishti Labs (Warren, 2015). One article in CNKI uses ‘design thinker’ with the keyword of design thinker (Ma & He, 2019) and talked about it. When ‘design thinker’ with the appearance in the whole context on CNKI was searched, 31 academic journals have been founded (but in fact only 25 that show the word ‘design thinker’ in the context). These papers mention ‘design thinker’ in different ways, therefore, it is difficult to see the whole picture of the concept ‘design thinker’. If this information was used as a reference for research or teaching, teachers in this field may counter problems for using not holistic information.

Later Start of Design Thinking and Design Thinker Research

One of the reasons that design thinker research in China started later than in the West is Chinese design thinking research itself lags behind that of the West. As can be seen from the CNKI data, research on design thinking in China surged from 2012 with 59 publications in CNKI, to 2020 with 225 publications. Also, the last five years have seen the highest number of publications. However, the research of design thinking has been started earlier in western countries. In 1969, Simon’s foundational work about the nature of the design (Simon, 1969) brought increasing publications about design thinking. From the 1980s, design theorists began to publish, and the number of publications largely increased around 1999 and reached a peak in 2009 (Johansson-Sköldberg, Woodilla, & Çetinkaya, 2003). In addition, design thinker was mentioned several times in these design thinking related articles. While the concept has been explored as a topic in western contexts, related research in China has not yet begun.

Design Disciplinary Background in Mainland China

Why did design thinker research in Mainland China start so late? On the one hand, the historical reason is that design thinking research in China started later than in the West, which has led to a lag in the study of design thinkers. On the other hand, the disciplinary background is also one of the reasons. Current education system of mainland China was developed based on the needs of industrialization in nineteenth century, while today new needs and challenges for design should be considered. Design discipline needs to be further developed in Chinese education. Majority of Chinese design teachers are from art background, they have less experience in teaching design and design thinking. Obviously, difficulties exist in nurturing qualified design thinkers.

METHODOLOGY

This study employed the qualitative approach, using the comparative methodology. Data collection was carried out initially and concepts were categorized later, followed by comparative analysis.

The study employed qualitative approach to conduct a comparative study between western and Chinese contexts. The data of this comparative study was collected in two databases (a combination of western databases and CNKI). The western database combines 105 papers selected from Google scholar high cited, Scopus, JSTOR, Web of Science. 55 academic papers were collected from the 56 results of Scopus by keyword search of 'design thinker'. Then 23 academic papers of 25 JSTOR results with the search of 'design thinker' in all content were selected. And 1 paper was picked from 4 results from Web of Science with a topic search of 'design thinker', since the other 3 papers duplicate with Scopus. Moreover, 26 google scholar high cited papers or books were chosen from about 132000 search results of 'design thinker', with more than 12 citations (the highest citation is 6308).

For Chinese databases, CNKI was used, which is the most authoritative academic database in China and where all officially published academic articles are issued. In the CNKI database, the only 1 paper with the keyword 'design thinker' was collected. Then papers that mentioned 'design thinker' in the whole context were searched and 31 more papers were found, but actually 6 of them do not show 'design thinker' in the context. Therefore, only 25 papers were selected.

Once the data had been collected, a comparative analysis was carried out. Firstly, the literature review was used to summarize concepts in the western literature database (14 categories in total) and the frequency of a concept appearing was recorded. Secondly, review selected literatures in CNKI, summarized concepts and also recorded the frequency of the 14 categories. Finally, compared the result from these previous two steps and obtained findings.

FINDINGS

Finding 1: Western Concept of 'Design Thinker'

In the western database, concepts of 'design thinker' appeared 179 times in 106 papers. These concepts were summarized as 14 categories in table 1. These 14 categories are characteristics (including traits, personality and profile), thinking style (including mindset, mind shift and cognitive style), nurture (including education), behaviour, attitude (including value and decision), ability (including capability), skills (including knowledge), focus (including goals), weakness (including limits), problem-solving strategy, tool (including toolkit), favourable factors, evaluation, motivation. Furthermore, the frequency of concepts was also recorded in table 1.

Obviously, the first three categories take the majority ratio (approximately 57%) of the sum (179 times). The most frequently appeared concept is that design thinkers have common characteristics (including traits, personality and profile), such as human-centred concern, ability to visualize, predisposition toward multifunctionality, systemic vision, ability to use language as a tool, affinity for teamwork, avoiding the necessity of choice, etc. (Owen, 2007; Razzouk, 2012; Chesson, 2020). The second frequently appeared concept is that design thinkers have their own thinking style, and some articles also call it cognitive style, or a design thinker mindset (or mind shift),

Table 1. Frequency of concepts in the western database (keep two decimal places).

Frequency	24.58%	18.44%	13.97%	8.94%	7.26%	6.15%	3.91%
Concept	Characteristics	Thinking style	Nuture	Behaviour	Attitude	Ability	Skills
Frequency	3.35%	2.79%	2.79%	2.79%	2.23%	2.23%	1.12%
Concept	Focus	weakness	Problem-solving strategy	Tool	favourable factors	Evaluation	Motivation

such as empathetic (Schmiedgen, 2015; LIEDTKA, 2021), critical thinking (Campbell & Brown, 2018; LIEDTKA, 2021), and creative ideas (Dinar, 2015), and multidisciplinary collaboration (Köppen & Meinel, 2015). The third representative concept mentioned by these papers is that design thinkers can be nurtured by some approaches, such as the use of different ways of thinking (Martin & Euchner, 2012), ‘fail early and fail often’ (Gabrysiak, Giese, & Beyhl, 2012), working on issues that require complex solutions (Revano & Garcia, 2020).

Finding 2: Chinese Concept of ‘Design Thinker’

Chinese researchers talk about the concept ‘design thinker’ fewer than western. Searching result of CNKI with the Chinese translation of ‘design thinker’ (设计思维) presents only one paper that used the keyword ‘design thinker’ (Ma & He, 2019). Another 24 papers mentioned design thinkers among the whole text. The concepts were summarized and the frequency of the 14 categories of concepts were recorded in table 1. The concept of ‘design thinker’ appearance 31 times. The most obvious mentioned two concepts are characteristics and thinking style. They approximately take 61% of the sum. Within characteristics and thinking style, Tim Brown has been cited 5 times which is the highest cited when these Chinese researchers talk about ‘design thinker’. Other people’s ideas (Owen, 2007; Plattner, Meinel & Leifer, 2011; Razzouk, 2012) were also mentioned by Chinese researchers, but not mentioned as frequently as western. The other concepts (nurture, behaviour, attitude, ability, skills, focus, problem-solving strategy, tool and evaluation) are less mentioned. Moreover, no article talks about weakness, favourable factors and motivation.

Finding 3: Comparison Result of Western and Chinese Concept of ‘Design Thinker’

Differences exist in the number of the concept ‘design thinker’ in the western and Chinese context, and the western contexts has more complex descriptions of ‘design thinker’ than in Chinese context. There are about 132000 researches talk about design thinkers in the western context, while in the CNKI database only little information of Chinese understanding on the subject can be found from 25 papers. In the western context, a more systematic and comprehensive understanding of ‘design thinker’ can be seen within 14 categories of 179 concepts. However, in the Chinese context, there are only

Table 2. Frequency of concepts in the Chinese database (keep two decimal places).

Frequency	38.71%	22.58%	3.23%	3.23%	6.45%	6.45%	3.23%
Concept	Characteristics	Thinking style	Nuture	Behaviour	Attitude	Ability	Skills
Translation	品质	思维	培养	行为	态度	能力	技能
Frequency	3.23%	0.00%	3.23%	6.45%	0.00%	3.23%	0.00%
Concept	Focus	weakness	Problem-solving strategy	Tool	favourable factors	Evaluation	Motivation
Translation	焦点	弱点	问题解决策略	工具	有利因素	评估	动机

11 categories of 31 concepts, which are much less than in the west and still need to be clarified. The concepts in the western context have more mature and sophisticated descriptions, while in the Chinese context have just started the discussion and exploration. Chinese research of the concept ‘design thinker’ is still waiting for its mature stage.

Similarities also exist in the understanding of the concept ‘design thinker’. From table 1 and table 2, both western and Chinese research mentioned design thinkers’ ‘characteristics’ and ‘thinking style’ the most frequently (western contexts also talk about ‘nurture design thinker’ with the third frequency). Some researches have influenced both western and Chinese context. For example, Tim Brown and IDEO’s idea about ‘design thinker’ have both been cited in the western and Chinese context. Chinese researcher Mostly cited Tim Brown, but they also noticed Owen and Razzouk’s high cited paper in 2007 and 2012, which have also influenced the concept in Chinese context (even though they have been cited in the western context more frequently). Gradually, the concept of ‘design thinker’ in Chinese context are going to clear by following western context.

DISCUSSION AND CONCLUSION

In conclusion, this study found 14 categories of 179 concepts in the western context and 11 categories of 25 concepts in the Chinese context, and the similarities and differences between them. For the concepts, western contexts mostly (approximately 57%) talk about the characteristics, thinking style and nurture of design thinkers while Chinese mostly talk about the characteristics and thinking style of design thinkers (approximately 61%). These two contexts both take characteristics and thinking style as the majority of the concept of ‘design thinker’. Similarities exist: (1) Characteristics and thinking style are the most common recognized concepts of ‘design thinker’ among the two contexts; (2) 11 categories in table 2 have been both talked about; (3) Some researchers have influenced the understanding of the concept in both two contexts (Brown, Owen, Razzouk, Plattner, Meinel and Leifer, etc.). Differences exist: (1) the number of researches in western is much more than in Chinese; (2) the quality of research in the concept is more mature and sophisticated in western context than in Chinese context; (3) the understanding of

the concept ‘design thinker’ is more holistic in the western context than the Chinese context.

In western studies, the concept of ‘design thinker’ has been maturely developed. Many people claimed that design thinking is not only a process, it’s also an understanding of people (e.g. characteristics, mindset and nurture of design thinker should be discussed). Even though searches of ‘design thinker’ developed slowly in Chinese context, it doesn’t mean that nobody talks about it. Since western countries started earlier than China, the interest of ‘design thinker’ in Chinese researchers has been started later. Because in the recent five years, Chinese researchers are mostly focus on design thinking. After some years passed, when the concept of design thinking is clearer, the concept of design thinker will be more clarified.

It is hard to nurture design thinker if educators don’t understand the concept. When educators have a systematic and holistic concept of design thinker, they will be able to see clear direction to improve teaching when they want to nurture students to be design thinkers. This study can benefit in understanding of the concept of ‘design thinker’ in western and Chinese context. For the future studies, it can help to add understanding of ‘design thinker’ as well. Other researches can apply these findings in their future studies and educators can use them to improve teaching.

REFERENCES

- Campbell, A. D., Brown, I. L., Costandius, E., & botes, H. (2018). A Potential Difference Model for Educating Critical Citizen Designers: The Case Study of the Beegin Appropriate Technology Beekeeping System. In *Educating Citizen Designers in South Africa* (1st ed., pp. 85–104). African Sun Media.
- Chesson, D. (2020). Design Thinker Profile: Capabilities for Overcoming Barriers to Change. *Organization Development Journal*, 38(2).
- Davis, B. M. (2010). Creativity & innovation in business 2010 teaching the application of design thinking to business. *Procedia-Social and Behavioral Sciences*, 2(4), 6532–6538.
- Dinar, M., Shah, J. J., Cagan, J., Leifer, L., Linsey, J., Smith, S. M., & Hernandez, N. V. (2015). Empirical studies of designer thinking: past, present, and future. *Journal of Mechanical Design*, 137(2), 021101.
- Dunne, D., & Martin, R. (2006). Design thinking and how it will change management education: An interview and discussion. *Academy of Management Learning & Education*, 5(4), 512–523.
- Gabrysiak, G., Giese, H., & Beyhl, T. (2012). Virtual multi-user software prototypes III. In *Design Thinking Research* (pp. 263–284). Springer, Berlin, Heidelberg.
- Johansson-Sköldberg, U., Woodilla, J., & Çetinkaya, M. (2013). Design thinking: past, present and possible futures. *Creativity and innovation management*, 22(2), 121–146.
- LIEDTKA, J., HOLD, K., & ELDRIDGE, J. (2021). IMMERSION. In *Experiencing Design: The Innovator’s Journey* (pp. 35–50). Columbia University Press.
- Köppen, E., & Meinel, C. (2015). Empathy via design thinking: creation of sense and knowledge. In *Design thinking research* (pp. 15–28). Springer, Cham.
- Ma, H., & He J. (2019). Design Education and Design Thinking. *Design Research*, 9–13.

- Martin, R., & Euchner, J. (2012). Design Thinking: An Interview with Roger Martin. *Research Technology Management*, 55(3), 10–14.
- Owen, C. (2007). Design thinking: Notes on its nature and use. *Design Research Quarterly*, 2(1), 16–27.
- Plattner, Hasso, Meinel, Christopher, and Leifer, Larry. (Eds) (2011). *Design Thinking: Understand-Improve-Apply*. Springer.
- Revano, T. F., & Garcia, M. B. (2020, December). Manufacturing design thinkers in higher education institutions: the use of design thinking curriculum in the education landscape. In 2020 IEEE 12th International Conference on Humanoid, Nanotechnology, Information Technology, Communication and Control, Environment, and Management (HNICEM) (pp. 1-5). IEEE.
- Razzouk, R., & Shute, V. (2012). What is design thinking and why is it important?. *Review of educational research*, 82(3), 330–348.
- Simon, H. (1969) *The Sciences of the Artificial*, 1st edn. MIT Press, Cambridge, MA.
- Warren Greving & 刘蓁.(2015). 为什么你不必是设计师, 却需要成为设计思维者. *中国社会组织* (20),61-63.