

Curriculum Reform of Design History and Application of Teaching Methods: a Review of Thematic Literature Based on Citation Analysis

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Abstract: This paper aims to classify the topics of literature related to the teaching reform of design history and identify the relevant studies that have direct or indirect influence. The literature combing method based on qualitative method is mainly adopted, and citation analysis is used to determine the research bias of references. The reform of teaching methods, the application of cutting-edge theories, and the application of technology in teaching are three main themes of research. The improvement of teaching methods is a research hotspot which has direct research influence, while the application of cutting-edge theories and technologies has indirect influence. The application of frontier theory still needs to be advanced, and the application of new technology will gradually become a new hot topic. The literature related to the teaching reform of the history of design is systematically sorted out, and a literature review is provided for promoting the related research. This research establishes a thematic model for the related research on the teaching reform of design history and clarifies the current hotspots. This paper makes up for the vacancy of literature review in this field, reviews the existing studies, and predicts the future research hotspots.

Keywords: Curriculum of Design History; Teaching Reform; Thematic Analysis; Higher Education; Application

The curriculum of design history is an integral part of design education, and the pre-history research on the relevant literature of the reform of design history curriculum is the preparatory work for the research on the reform of design history education. According to the current literature review status, there is no review of the thematic research on the curriculum reform of

history of design at China and abroad. However, the education reform of the curriculum from abroad are related research method, can act as reference. Some scholars in the thematic analysis review adopted a quantitative research method which based on software analysis (Annisa Ummihusna, 2021; R. P. Borges, P. R. F. Oliveira, R. G. da R. Lima, R. W. de Lima, 2018), some scholars use the quantitative analysis method in the construction of thematic model (Marjo Joshi, Mika Alavaikko, 2020), and scholars are adopted qualitative analysis method based on citation (Yasir Rashid, Ansar Waseem, Ahmad Ahsan Akbar, Fatima Azam, 2018; V. Gremeaux, E. Coudeyre, 2010). No scholars use research method of citation analysis into review of design history curriculum reform. The author adopts a systematic literature combing method to analyze the citation of the literature related to the curriculum reform of design history, and establishes a thematic model. The aim is to make up for the vacancy of the research review on the curriculum reform of design history and point out the research hotspots and future trends. The research shows that the reform of teaching methods of design history is the research topic that has a direct impact on this research field. The application of cutting-edge theories and the innovation of technology application in teaching constitute the main research topics. The application research of frontier theory is still in lack of in-depth status, and the application of technology will become a new hotspot in future research.

1. Literature Review

From the perspective of relevant domestic researches, most scholars focus on the teaching reform of industrial design history. Cheng-ai Na and Zhijun Wu put forward the teaching method of "driving factors-development mainline-design highlights" as the mainline (Cheng-ai Na, Zhijun Wu, 2008). Bailu Zhang analyzed the current

course status of industrial design history, and proposed improvement measures for the teaching of design history through two links, in-class and after-class(Bailu Zhang, 2019). Jingyuan Chen and He Wang adopted the task-driven teaching method to construct the teacher-led teaching method(Jingyuan Chen, He Wang, 2013). Qifang Bo and Lebin Jia put forward the "thematic" teaching mode of design history(Qifang Bo, Lebin Jia, 2019). Xiangfu Kong proposed a reform approach to cultivate students' awareness of design with local characteristics from the perspective of comments(Xiangfu Kong, 2009). Yu Yu believes that the ideological and political content should be combined with the classroom content to improve the ideological and political curriculum(Yu Yu, 2020). Min Fang promotes the teaching effect of design history education with the teaching method of flipped curriculum(Min Fang, 2018). Jun Yao and Jing Zhao believe that it is necessary to combine the theory of design history with design practice, so as to cultivate students' ability to understand and criticize design(Jun Yao, Jing Zhao, 2012). Yuanyuan Tan put forward the situational teaching mode, which reformed in three aspects: creating realistic scenes, creating learning environment and reforming the form of homework(Yuanyuan Tan, 2009). Wei Xiong tried the construction of interactive research teaching mode and improved the interactivity of design history teaching(Wei Xiong, 2013). Xi Zhou guided by the concept of "curriculum integration", reformed the teaching of design history(Xi Zhou, 2010). The above teaching reforms on the history of industrial design have mainly improved the daily teaching methods and promoted the refinement of the education on the history of design.

In addition, it also involves the teaching reform of Chinese and foreign design history. Yu Zhang proposed a teaching model combining case teaching method with students' independent explanation method(Yu Zhang, 2016). Li Lin and Lingling Peng constructed a four-in-one teaching model of "watching, listening, learning and acting"(Li Lin, Lingling Peng, 2011). Xin Yi, Meng Jiang and Xianfu Zhang analyzed the innovation and deficiency of network teaching and affirmed the significance of network teaching for design history education(Xin Yi, Meng Jiang, Xianfu Zhang, 2020). Yi-xiao Wei and Yuan-gu Duan discussed the characteristics

of blended learning strategy in the teaching of design history course(Yi-xiao Wei, Yuan-gu Duan, 2018). Quanchang Song and Haoran Liu reformed the teaching of design history based on Bloom's theory of "stratification of educational objectives"(Quanchang Song, Haoran Liu, 2019). Linghong Li, Chunyuan Liu, Fuchang Zhang improved the teaching of design history based on the comparative teaching method, and compared the differences between the history of Chinese art and design and the history of Chinese arts and crafts(Linghong Li, Chunyuan Liu, Fuchang Zhang, 2004). Guotao Jia proposed to explore the traditional classical design and related theories into practice, highlighting the tension and openness that should be inherent in the teaching of design history(Guotao Jia, 2014). These teaching reform methods are mainly based on the macroscopic history of design at China and abroad, and various teaching modes are proposed to promote the teaching effect of design history classroom.

According to the relevant foreign literature, there are not many relevant researches on the education reform of design history, and more focus on the discussion of art education. Pohjakallio believes that multimedia tools (CD-ROMs) are important for Finnish art education, as they can record historical images(Pirkko Pohjakallio, 1998). Mulberg explores the role of a technology perspective in classroom teaching, and examines the context of the national curriculum for science and technology and the core of the debate over the definition of science and technology(Mulberg, 1993). Adey discussed the issues of participation and appreciation in art education, and clarified the important position of art history curriculum in art education(Jennifer Adey, 1987). Dreamson emphasized the role of online teaching in the social situation under the normal epidemic situation, and explained how the meta-link teaching method has become a new online teaching method(Neal Dreamson, 2020). Chong Xu, Yi Huang and Dewancker can use digital media technology to integrate traditional Chinese patterns into the teaching of architectural design(Chong Xu, Yi Huang, Bart Dewancker, 2020). Hein and Dooren analyzed how students learn architectural history and how to transform historical knowledge into design practice by means of questionnaire survey(Carola Hein, Elise van Dooren, 2019). Yajun Chen and Hongwei Jiang developed an

art and design education platform based on instant messaging, and evaluated the impact of online courses on teachers, classes and students by using a linear mixed model(Yajun Cheng, Hongwei Jiang, 2005). Oppenheimer established an original model for design education by combing the literature of "History of Design" for 30 years(Maya Oppenheimer, 2016). Poitras, Lajoie and Yuanjin Hong designed metacognitive tools to facilitate students' understanding of historical knowledge(Eric Poitras, Susanne Lajoie, Yuanjin Hong, 2012). Kickert and Fishman discussed the situational teaching method of urban design history to make up for the disconnection between theoretical courses and studio practice(Conrad Kickert, Robert Fishman, 2017). Most of the above studies involve classroom teaching in a technological way, thus playing a role in improving art education. In general, there are more researches on the teaching reform of the history of design in China, which is dominated by the teaching reform of the history of industrial design. The teaching reform of history of design in foreign countries is less. Most of them focus on the quantitative analysis of the influencing factors of classroom teaching and the construction of technical teaching models.

2. Research Methodology

Citation is the way scholars identify with each other, and references to the literature in the bibliography are crucial. In order to analyze and explain the literature in the research review, the author combined the method of bibliometrics and made a qualitative analysis of the citation. FIG 1 shows the seven steps of the research. The main steps can be summarized as follows: First, identify references with reference significance by selecting measurement methods that meet the criteria; Secondly, the citation analysis is carried out on the literatures with the most cited times to identify the literature topics with similar content. Thirdly, according to the similar literature, it explains the significance of its collection. Finally, the conclusion is drawn and the content similarity of most cited literature is evaluated.

Table 1. Logical Grid Based on Keywords Recognition

Keywords	Database	Intervention comparison	Output mode
history of design * higher education	CNKI	History of design	Technology application
History of design * curriculum	Web of	Design history learning	Teaching model
history of design * higher education	Science	Teaching design of design history	Teaching method
Higher education * course	Scopus	Design history curriculum	Education theory
	Jstor	Design history education	Teaching characteristics

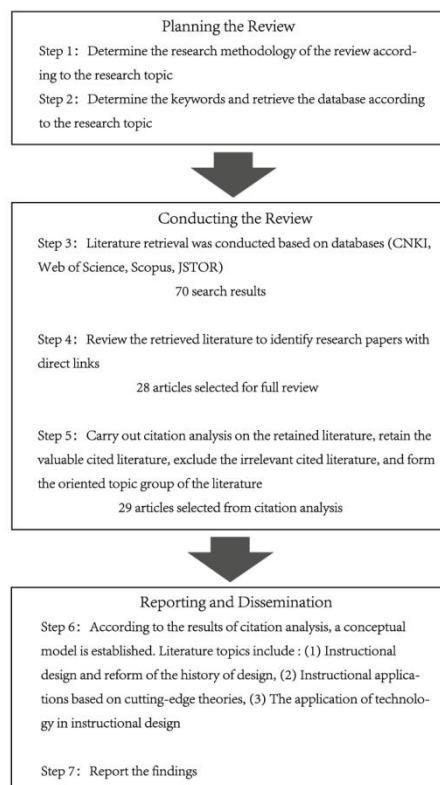


Figure 1. Diagram of Research Procedure

2.1 Review Preparation

In March and April 2020, the author adopted several mainstream databases for literature retrieval. They are CNKI, Web of Science, Scopus and JSTOR, and literature retrieval is adopted for these four databases based on the standard of keywords. The search scope is limited to design history courses and related fields of higher education, and only includes monographs and conference papers. Due to the scarcity of relevant literature, the time dimension is adjusted to the literature from the earliest to the present. Table 1 mainly marks out the search conditions, namely keywords, database, intervention comparison, output mode and other information. Through searching, the author found that many literatures were not related to the teaching of design history, but were related to higher education. Based on this, we selected the monotheses that were directly or indirectly related to the topic of the review, and excluded the literatures that were completely unrelated.

2.2 Conducting the Review

On the basis of the mainstream database, the author takes the number of citations and keywords as the retrieval criteria. For example, in the setting of keywords, with "design history * higher education" or "design history * curriculum" or "design history * higher education" or "higher education * course" as the search settings, a total of 70 results were searched. Then, the author made a comprehensive evaluation of the searched literature, excluded the literature that did not conform to the review topic and repeated topic, and selected the literature that closely related to the topic. After comprehensive comparison and evaluation, 28 articles were retained.

2.3 Report Output

Finally, the author uses the method of citation analysis to the retained articles. Through the thematic way to form a collection of various kinds of research, to form the output report. The cited times of literatures are arranged by the order of most or least, which directly reflects the related topics of design history research. In general, the research method mainly consists of the following points: through the review and screening to meet the criteria of the literature. The most cited references were used for citation analysis. According to the similarity degree of cited literature, the subject cluster of literature was identified. Analyze and explain the similarity of topic clusters.

3. Citation Analysis

After identifying the citation status of the main references through retrieval, the oriented topic group of the cited references can be identified through searching relevant literatures. These cited references clearly show the topics of concern of the research.

3.1 Reference Features

Based on citation retrieval, the unrelated and duplicated literatures were excluded, and 29 closely related literatures were finally retained. According to the topic of the cited literature, it is mainly divided into three kinds of topics. It includes three clusters: teaching design and reform of design history, teaching application based on frontier theory, and teaching innovation based on technological innovation, which are directly or indirectly related to the topic of cited

literature.

3.1.1 Teaching Design and Reform of Design History

First of all, the relevant research on the teaching reform of design history. Ying Liu explored the method of case assisted teaching to promote the combination of theory and practice of design history(Ying Liu, 2017). Tao Hong and Xin Gu analyzed the problems and current situation of art history teaching and pointed out the problems that need to be improved(Tao Hong, Xin Gu, 2018). Xiangxue Zhao improved the interest of history teaching through the comparative teaching method(Xiangxue Zhao, 2016). Nawen Li takes a multi-angle evaluation method in the teaching reform of design history to build an ecological system of design history theory(Nawen Li, 2020). Their research mainly focuses on the optimization of teaching process. Most of the topics in this direction lack the combination of new theory and practice and belong to the improvement research within the framework of existing teaching design.

3.1.2 Application to Teaching Based on Frontier Theory

Secondly, the research on the specific application of the frontier theory in instructional design. Quanchang Song and Haoran Liu applied the theory of "educational goal stratification" to the teaching of design history(Quanchang Song Haoran Liu, 2019). Di Peng applied the pyramid theory of learning effectiveness in the teaching of design history to improve the teaching quality(Di Peng, 2019). Xiu hao Mai applied the research methods of new historiography and design science to the teaching methods of industrial design history, and adopted the inquiry-based classroom teaching combining "people", "things" and "things"(Xiu hao Mai, 2018). The above researches mainly draw lessons from western teaching theories, which are applied in teaching practice, but are still lacking in research depth.

3.1.3 Application of Technology in Instructional Design

Finally, the related research of high and new technology in the teaching of design history. Xiuli Sun established a database based on the teaching content, aiming to reconstruct the knowledge graph(Xiuli Sun, 2019). Yong Wang, Yiwei Liu and Yan Zhou used the network platform to combine offline flipped classroom, so as to build a mixed teaching model(Yong Wang, Yiwei Liu, Yan Zhou, 2021). Yan Wu

and Keye Li try to apply AR technology to the teaching of product design history(Yan Wu, Keye Li, 2020). They mainly adopted the application of technical dimension to promote the fit between the teaching of design history and the development of the times, and to improve the depth and breadth of course communication. From the relevant literature oriented by the above-mentioned cited literature, the articles on the three themes show the important themes related to the study of design history from the side.

4. Conceptual Model

By referring to literature and citing literature, this paper constructs a model of the research classification theme of design history. Table 5 shows the theme models affected by direct or indirect factors. The research directions of the three parts constitute the main part of the teaching reform of design history. Under the research directions, the methods and perspectives are subdivided, thus forming a conceptual model on the whole.

4.1 Model Features

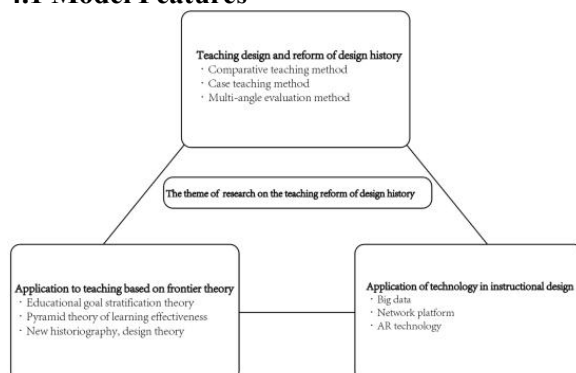


Fig2. Conceptual Model

4.2 Evaluating the Model

From the perspective of conceptual model, the research on teaching reform of design history has been influenced by direct or indirect factors. The model presents a stable triangular shape. In terms of the direct influence at the upper end, the research led by teaching method reform constitutes the primary factor of teaching reform of design history, accounting for the majority in terms of the number of literatures. From the perspective of research, it is subdivided into comparative teaching method, case analysis method and multi-angle evaluation method, etc. In the bottom of the indirect effects, frontier theory in the perspective of subdivided into

education target stratification theory, learning theory and the pyramid new historiography, the design theory of science, high technology and new technology application in the teaching method of subdivision for big data, network platform and AR technology, etc. They both constitutes the secondary influence factors of design history teaching reform, compared to the reform of teaching method research for minority. It should be noted that the application of cutting-edge theory and high technology is the foundation of the teaching reform of design history course.

5. Conclusion

In a word, through mutual verification of references and references, the author has obtained the subject classification related to the teaching reform of design history. They include three main aspects: instructional design and reform, the application of cutting-edge theory in teaching, and the application of technology in instructional design. From the perspective of reference literature, China's relevant research occupies the majority, mainly focusing on the teaching reform of industrial design history, while foreign relevant literature is relatively scarce, focusing on the research of higher education related teaching methods. From the perspective of the number of citations, research on teaching methods of design history teaching occupies the majority, and the results of this type of research have a direct impact on teaching reform and are a hot spot of existing research. Compared with the research on instructional design reform, which has the majority of literature, the applied research of frontier theory is less and the research depth is still lacking. Therefore, it is the future topic selection direction that scholars need to pay attention to urgently. In view of the mainstream trend of the development of The Times and the social status quo of the epidemic becoming normal, in the future, the application of high and new technology in the teaching course of design history will be on the rise, and will gradually become a new hotspot of research.

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