The Reform Situation of Chinese Design Education in the 21st Century

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Abstract

Background The recent scientific and technological revolution and industrial changes have brought new challenges to design education, and the problems caused by the traditional education model have become the main motivations for design education reform. How design education responds to these challenges and issues and how it cultivates new design talents suitable for the times has become a much discussed topic today. Like South Korea, China is also undergoing a design education revolution. Therefore, research on Chinese design education is valuable for the development of South Korean design education. The purpose of this article is to study the development and reform of design education in China, identify characteristics of Chinese design education reform, and understand the future development trend of Chinese design.

Methods The research method of this study consists of three parts. First, we collected and analyzed the existing literature materials, and summarized the basic situation and development history of Chinese design education. Second, through the investigation of design teachers and graduate students, we found the existing problems. Third, we selected four representative design schools in China (two comprehensive universities and two art academies), by searching their websites, emailing professors, and collecting information such as brochures, documentation, and articles, and comparing and analyzing their reform models.

Results The final results of this research demonstrate the advantages of the new design education model. We showed that there are four commonalities in Chinese design education reform: promoting a 'problem-oriented' curriculum, adopting a segmented teaching structure, implementing interdisciplinary teaching, and emphasizing a project-based teaching mode combining 'Industry-University-Research Institution'. The research findings also revealed the advantages of designing education reform in universities of different attributes. The results indicate that the future goal of China's design education reform is to transform universities into social service institutions that can contribute to regional economic development and innovation.

Conclusions This research enables us to deeply understand the development history and current situation of design education in China, as well as the future development trend. Moreover, this research recognizes the importance that China attaches to design education for the development of new creativity and innovation economy. It is hoped that this study can help to better understand China, the world's second-largest economy, while providing references for the development of design education in South Korea.

Keywords Design Education, Chinese University, Educational Reform, Teaching Mode, Curriculum Settingest

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1. Introduction

In today's post-industrial era, design faces increasingly complex problems. The modern economy is characterized by a growing experience economy, and information and internet technology have become an indispensable part of modern life. The growing proportion of experience economy and tertiary industry in the economy is also reflected in the evolution of economic products in different periods: commodities - goods - service – experiences (Pine II & Gilmore, 1999). Accordingly, the government, enterprises, social organizations, and the designer must consider how to break through the traditional industrial products category and redefine design objects (including immaterial goods) so that design remains relevant under the new pattern of industry. The modern era has created many new possibilities for design, and the traditional disciplinary basis and philosophical framework of design are not enough to support the rapidly expanding applications of design nor can they explain many emerging practical activities or experiences (Xin, 2016). As the main undertaker of training designers, design education should consider how to break through the traditional design education mode so that it can better prepare designers to face the challenges brought by the new industrial pattern.

Both South Korea and China are major economies within Asia, and, in the face of a new round of industrial transformation, the development of the design and creativity industry is of vital importance within these nations. As that design education is the cornerstone of the future development of design, both South Korea and China urgently need to accelerate the reform of design education to improve their countries' international competitiveness and cultivate new design talent who are capable of solving complex problems. China is the second-largest economy in the world, and the economic and trade exchanges between South Korea and China are increasingly profound. As the design industry is a crucial part of economic development, it is of considerable significance for the economic cooperation between South Korea and China to understand the future development trend of Chinese design. Modern Chinese design education started late, but it has developed rapidly. Although there are some problems in the development process of Chinese design education, in the face of increasingly fierce international competition, the Chinese government has realized the importance of accelerating the reform of design education and training design talent for national development. In 2014, China's government published an official document, pointed out that the overall quality level and core competitiveness of China's design services must be improved. This study analyzed four schools in China that have made some progress in designing educational reforms. The purpose of this study is to understand the reform characteristics and future development trends of design education in China through in-depth research on the reform situation of design education in China.

2. Literature Review of Design Education

2. 1. Development of Design and Design Education

The concept of design originated in the Italian Renaissance. In early human activities, design was always integrated with art, so inherent "artistic will" has accounted for a large proportion of design (He & Liu, 2010). Throughout the history of modern design, artistic reforms regularly influenced the field of design. It was not until the 20th century, with the remarkable advances in industry, that modern design was gradually separated from art. Design emerged as an independent activity and discipline to serve the public and meet the needs of social and industrial development (Zhang, 2017).

As Heskett (2005) explained, for a long time, design has been understood simply to be applied art, and the training of creative thinking and conceptual expression were the core tasks of design talent training. But today, as design increasingly participates in up-front user research and product decision-making, design has begun to become a complex business and social activity. Design education has also evolved from a discipline once attached to technology and art into a key discipline that is vigorously developed in every country. Historical trends in design research reflect the rapid changes in the discipline. Beginning in the early 20th century, research topics related to the reform of the design discipline have appeared almost every 40 years. In the 1920s, the research focused on the development of scientific design products. Then, in the 1960s, the focus shifted to the scientific design process. The current emphasis in design education research is on problems or projects of an interdisciplinary nature. Thus, aggregating the perspectives and methods of practice from different disciplines will point the way for design education at this stage and provide new possibilities (Bremner & Rodgers, 2013). Moreover, as Simon (1996) asserts in his book, design is a meta-discipline of all professions. He further explained, “Design is the core of all professional training; it is the principal mark that distinguishes the professions from the sciences. Schools of engineering, as well as schools of architecture, business, education, law, and medicine, are all centrally concerned with the process of design”.

The tremendous changes in the world's industrial structure and demand for talent in the 21st century have also brought about historical changes in design education. With a focus on how to improve industrial competitiveness and innovation, design education in various countries is undergoing reforms in discipline integration, cross-cooperation, and curriculum systems. The integration of the knowledge of design and other fields in curriculum development and discipline construction as well as the cultivation of high-skilled, composite, and decision-making innovative design talent are becoming the mainstream trends in design education reform.

2. 2. Design Education in China

In China, design education developed from art education. For a long time, the field of design was naturally considered to be an extension and application of art knowledge in various fields of life and production (Xu, 2017). Accordingly, the term "art design" was used in the Chinese Ministry of Education’s Professional Directory of General Colleges and Universities from 1998 to indicate the design discipline. Professor Yuan (2014) offered a more comprehensive

definition of art design: "Art design is a creative activity that starts from the technical, economic, social, and cultural perspectives. For functional utility and pleasantness, use materials and process technology, apply certain artistic methods, and conceive and plan according to the rules of beauty, so that it can be transformed into a specific function, external form, human-machine relationship, and cultural meaning in practical products. " To some extent, this is also the general definition of art design in the Chinese design circle. The basic design curriculum still includes Chistiakov's sketch teaching system, which were formerly used in the Soviet Union. Based on this, the German Bauhaus teaching method is introduced. (Lin, 2005). In China, the classification of design majors also reflects this understanding of design. Since the 1980s, 90% of the design majors in Chinese universities have been classified according to four design categories: visual communication design, environmental design, industrial design, and fashion design.

More recently, following the development of China's economy and society, design educators in China have gradually begun to use the term "design" alone, and curricula are beginning to emphasize the difference between art education and design education. In 2012, the design was upgraded to a first-level discipline by the Ministry of Education, and, in 2013, the Ministry of Education identified design as a discipline that was defined as having both practical and theoretical characteristics, both humanistic and engineering characteristics. Design creation and its development model were taken as the research object and a comprehensive study of its practice, history, and education was carried out. Thus, it can be seen that design education in China is considered to be a knowledge system and discipline that integrates science, art, the basic principles of engineering, and innovative ability education (Xu, 2017). At present, design education in China is mainly affiliated with three types of universities: comprehensive universities, art colleges, and universities with engineering advantages. The design disciplines in comprehensive universities are dedicated to collaboration with other disciplines. In art colleges, more attention is paid to the in-depth and cutting-edge research of one discipline. The design discipline education in engineering-advantaged universities focuses on the close connection with advanced industry.

2. 3. History of the Development of the Chinese Design Education

China's design education originates from China's traditional craft education, and its source can be traced back to the "craft inheritance system" in the Pre-Qin Dynasty. By the end of the Qing Dynasty, China was in a semi-colonial and semi-feudal society, and the capitalist production relations and economic models from western countries that were brought into China through war severely challenged the traditional form of craft education. Facing this situation, the Qing government established the "craft school," which is the prototype for Chinese school-style design education (Zhai, 2018).

The "Patterns Education" model, which began in 1918 in the Republic of China, is generally regarded as the beginning of modern design education in China. This model, which derives from Japan, is divided into two types: craft patterns and basic patterns. The purpose of pattern education was to balance traditional craftsmanship and the emerging machine craftsmanship. In 1918, China established the first professional design education school, the National Beijing Academy of Fine Arts (now the CAFA). The academy's original pattern

department eventually evolved into the design major of today (Song, 2019).

After the founding of the People's Republic of China, the main trend in design was "Arts and Crafts Education," an industrial arts education that emphasized the combination of "beauty" and "practicality." The arts and crafts education during this period emphasized vocational skills training, and its purpose was to respond to the large demand for crafts in the contemporary planned economy (Zhai, 2018).

In the late 20th century, China began to introduce modern western design concepts and courses on a large scale, which had a significant impact on the development of design education. For example, in 1980, the previous teaching model of "Painting + Pattern + Art and Craft Creation," which had been used since the 1950s, was retired in favor of the model "Painting + Bauhaus Model + Art Design Course" (Lin, 2005). In July 1998, the official Professional Directory of General Colleges and Universities of the Ministry of Education of China formally replaced “Arts and Crafts” with “Arts Designs,” thereby establishing art design education as a higher education specialty prescribed by the state (Yuan, 2014).

In 2012 China updated the *‘Directory of Colleges and Universities’*. In the new catalog, “Art” has been upgraded to the 13th discipline in China. "Art Design," which has been renamed “Design,” has been revised to have a broader meaning and has become a first-level discipline under “Art.” These changes are the result of a deepening understanding of the meaning of design among Chinese educational circles, but they also put forward higher requirements for design education. Now, the most important issue facing design education reform is how to adapt to the transformational needs of modern society. (Wei, 2016). This development represents the beginning of a new era in Chinese design education.

3. The problem of Chinese Design Education

Since China introduced the modern design education system in the 1980s, after more than 20 years of development, design education has expanded rapidly. Especially under the rapid growth of the manufacturing industry and the drive for industrial transformation and upgrading, there is a great demand for design talent in the job market. Not only does design receive the strong support of China's national policy, but design majors have quickly become one of the most popular majors at Chinese universities. In 1982, there were only 18 design schools in China, with 1,220 students and 380 teachers. By 2018, China had opened 1,928 design schools, and the number of new students enrolled reached 529, 713. In the 21st century, China has also become one of the world's largest design education nations.

However, unlike the western developed countries, China’s design education has developed against the historical background of rapid social and economic development and transformation. Therefore, China’s design education is still in its primary stage, and the problems and difficulties it faces are particularly prominent. This study analyzes and summarizes the major problems of design education in China through the investigation of

30 design teachers and 30 graduates (within two years after graduation) from universities in different regions of China.

First, the foundation of the course arrangement cannot support the rapidly expanding practical industrial application areas. Figure 1 displays that 50% of respondents think that the course arrangement is just barely meeting social development, and 23.3% of respondents think that the curriculum arrangement is the same as before, lagging behind the needs of social development. China's curriculum for design disciplines originated from the Bauhaus model in the early 20th century and "Ulm's model" in the 1960s. Most schools still follow these curricula. These teaching models were developed for the early industrial revolution and industrialization development and cannot cope with the more complex problems and new development needs of design in the 21st century.

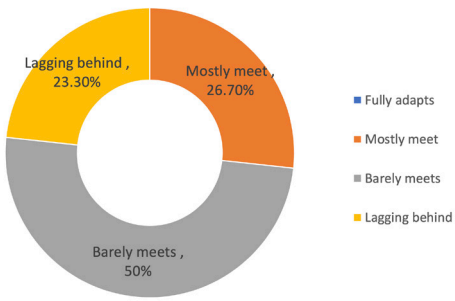

Figure 1 The Evaluation of Curriculum Arrangement (Answer: Teacher&Graduates 60)

Secondly, the curriculum for design majors is too simple can not provide enough comprehensive knowledge. Many schools in China still follow the traditional teaching model, and the teaching content is also limited. According to the investigation, although more than half of respondents' said they had co-teaching on some course, however, only 3.3% of them had a course with two teachers from different disciplines. Also, 36.7% of respondents' school courses are still taught by their own teachers alone (Figure 2). Besides, As shown in Figure 3, 63.3% of respondents said they only have one or two (or even no) other disciplines courses (like Market or technology related) in their school. That means that design students concentrate on a single area while ignoring the knowledge cultivation of other disciplines. Chinese design education lacks comprehensive interdisciplinary knowledge training.

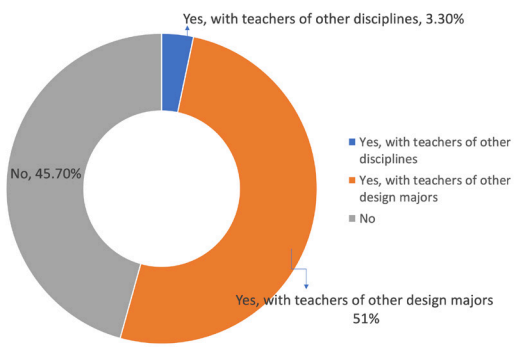

Figure 2 Co-teaching Situation in Chinese Design School (Answer: Teacher&Graduates 60)

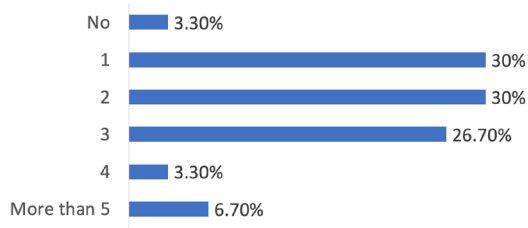

Figure 3 The Number of Other Discipline Courses in Chinese Design School (Answer: Teacher&Graduates 60)

Third, the quality of design talents cultivated is unsatisfactory. As Professor Liu Guanzhong (2004), a pioneer of design education in China, has observed, there is a serious imbalance between design education and the design industry in China. In the investigation about graduates, only 10% of respondents can adapt to the real design work immediately after graduation, and the other respondents need at least three months(or more) to adapt(Figure 4). Although there is a high demand for design professionals in the industry and there has been a substantial increase in the number of design majors, many graduates cannot find design-related work because their skill-level does not meet employers' requirements. Therefore, many design graduates choose to engage in other professions (Hu, 2016).

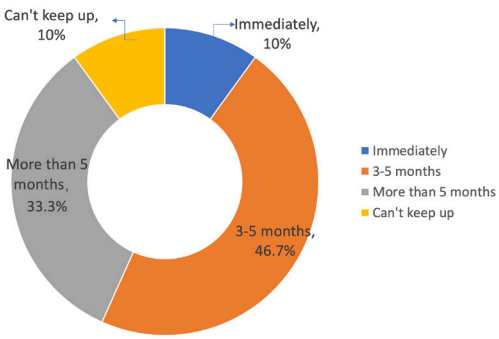

Figure 4 The Time Required for Graduates to Adapt Real Design Work (Answer: Graduates 30)

Fourth, China's design education is seriously misaligned with the demands of industrial development. Figure 5 displays that 50% of graduates believe that only a small part of the knowledge taught by the school is suitable for real design work. This means that design education in China has not kept up with the actual requirements of the industry, which has led to a growing gap between the demands of design education and the manufacturing industry.

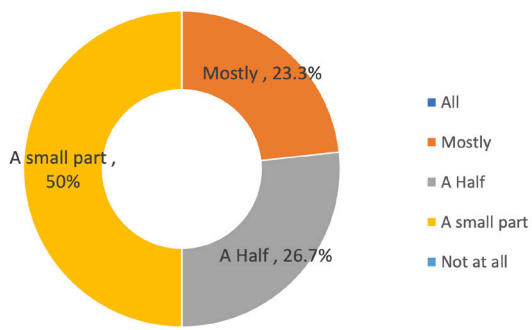

Figure 5 The Usefulness of Knowledge Taught by School (Answer: Graduates 30)

Considering the issues facing China's design education, two entry points for the reform of Chinese design education can be identified (Figure 6): first, a change with the design education's basic model is needed; second, to synchronize design education with industrial development. Design educational circles in China have deeply realized that it is necessary to quickly adjust the teaching goals and teaching methods to meet the changing needs of industrial upgrading and transformation. Chinese design educational circles have begun to take action to promote the reform of design education vigorously, and several universities have achieved significant reform results.

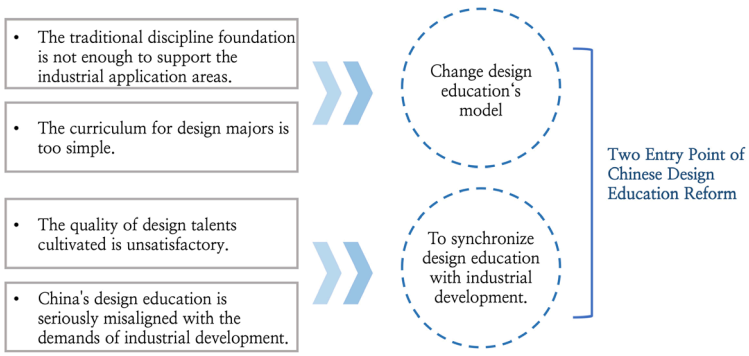

Figure 6 Two Entry Point of Chinese Design Education Reform

4. Case Study

4. 1. Case Introduction

Although due to the vast land area of China, the development situation of different regions may be different, the direction of reform is similar. And many schools have begun to reform the design education model. This study selected four universities from four different regions with leading positions in design education in China to conduct a case study on Chinese education reform. They are two comprehensive universities: Jiangnan University, Tongji University, and two art academies: the Central Academy of Fine Arts and the Guangzhou Academy of Fine Arts (Table 1). These four schools not only have a long history of design education but also have leading figures of Chinese design education sector teaching in it. Under their leadership, these four schools have become pioneers and experimenters in China's design education reform.

Table 1 Lists of Design Education Reform Case in China

School Name	Types of School	Location	Start of Design Education	Start of Reform
Jiangnan University (School of Design)	Comprehensive university	Wuxi City, Jiangsu Province	1960	2012
Tongji University (The College of Design and Innovation)	Comprehensive university	Shanghai	1986	2012

The Central Academy of Fine Arts (CAFA) (School of Design)	Art academy	Beijing	1950	2015
Guangzhou Academy of Fine Arts (GAFA) (School of Innovation Design)	Art academy	Guangzhou City, Guangdong Province	1980	2011

The schools' approaches to design education and its reform were compared and analyzed based on data collected from the schools' promotional material (e.g., websites and brochures), communication with professors, and documentations. The educational reform methods of these four schools are being promoted and learned by other schools in China. So, it can believe that by studying their reform methods, can understand the future development trend of Chinese design education.

4. 2. School of Design, Jiangnan University

The School of Design at Jiangnan University was founded in 1960 and has one of the longest histories in modern Chinese design education. Since 2012, Jiangnan University has carried out a series of design education reforms around the concept of "big design" holding a series of "design education redesign" international conferences.

In its reforms, Jiangnan University changed its talent training goal from "cultivating elite designers" to "cultivating responsible and respected designers." The school is committed to problem-oriented design education. On the basis of original subject knowledge, the school builds the "1 + 2 + 1" innovation talent training model (Figure 7).

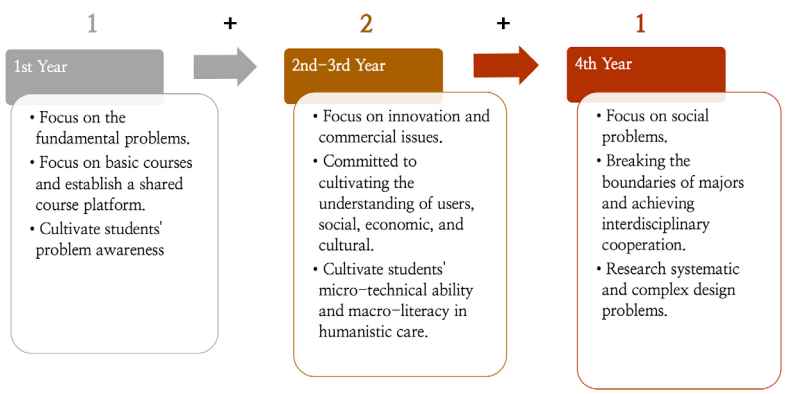

Figure 7 "1+2+1" Innovation Talent Training Model

In the face of more and more diversified design objects, the School of Design has established an innovative design experimental class for cultivate "Composite Design Talents." The class focuses on developing problem awareness, interdisciplinarity, and diversity, and the professors for the class come from various disciplines. Students from various majors can apply for the class after completing the first-year basic course; students are selected through interviews. The class's curriculum is based on the four themes of design expression, design realization, strategy management, and professional theory. Establish a comprehensive system of teaching, scientific research, development and utilization, and production practice.

Carry out a problem-oriented "project-based" teaching model. The teaching direction is guided by industrial demand, the teaching results are returned to the industrial demand, and the research results are transformed into teaching resources.

The reform of design education at Jiangnan University has broken the conventional focus in design research and education on "material objects" and found a new development direction for design research and education. The reform also provides opportunities for other disciplines to participate in design research, thereby enabling design to become an impetus for the integrated innovation of other disciplines.

4. 3. College of Design and Innovation, Tongji University

In 2009, Tongji University established the College of Design and Innovation, which was formerly the Art Design Department, drawing on the latest concepts and models of the international discipline of design and innovation. The college's focus is on "intelligent and sustainable design for industrial transformation and future life." In 2012, the College of Design and Innovation was identified as the university's pilot school of education reform. In redesigning the management system, talent training, discipline construction, and other aspects, three main reforms were enacted.

(1) Implementation of a "1+3" talent training mode. Tongji University has set up a "Freshmen College" for first-year students that specializes in basic design knowledge teaching and breaks down existing barriers between majors and disciplines to promote interdisciplinary training. Starting in their second year, students can choose a major and enter the professional learning stage. This method allows students to experience the characteristics of each major at the beginning of their contact with design, which empowers them to make a more suitable choice of major. Moreover, it enables students to establish a comprehensive foundation in design from the beginning of their education.

(2) Development of a "three-dimensional T" design educational framework (Figure 8). Undergraduate education at Tongji focuses on cultivating vertical ability, emphasizing professional design talents with innovative thinking and broad knowledge. The master's program will focus on horizontal ability, with a special emphasis on interdisciplinary knowledge, integrated innovation, design methods, and international experience. The doctoral program focuses on cultivating the depth of knowledge and theory (Ma & Lou, 2016).

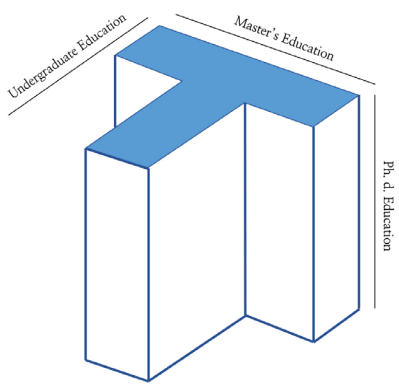

Figure 8 "Three-dimensional T" Design Educational Framework

(3) “Main + auxiliary” curriculum system with project-based learning. The course schedule for each semester of the design major consists of one main course and several auxiliary courses. The main course is project-based, and the course content is arranged in combination with the final design project. The curriculum promotes cross-disciplinary cooperation and hire co-teacher from companies to work with professors to guide students through projects. The design skills required in the main course are taught to students through auxiliary courses.

Tongji University breaks the traditional model of dividing first-year students into different majors. Doing so allows students to acquire basic, foundational knowledge more comprehensively, which is conducive to the establishment of comprehensive design concepts in the future. Furthermore, by adopting a teaching mode that is guided by project-based learning, the curriculum empowers students to understand the entire process of design. In the 2019 QS (Quacquarelli Symonds) World University Rankings, Tongji University’s College of Design and Innovation ranks 14th in the world in the "Art and Design" discipline ranking, and Asia ranks first.

4. 4. School of Design, The Central Academy of Fine Arts

The Central Academy of Fine Arts (CAFA) was the first national art education institution in China and also the beginning of modern art education. CAFA’s design curriculum is structured in four dimensions: basic training, professional education, applied innovation, and future trends. The program offers a modern design education system with a complete teaching structure; it is the most reasonable education model in China. As the teaching method, CAFA initiated the 'Professor Studio System’ (Song, 2019).

In 2015, the School of Design further carried out a series of teaching reforms. First, CAFA reconceptualized their approach to design talent by reforming the content and mode of the recruitment examination and talent training. Instead of assessing students based on the level of skill, the school’s key educational objectives are professional-based social discussion and problem thinking. Students are evaluated according to their logical thinking, imagination, and sensitivity and insight to social problems. Second, the school established a student-centered interdisciplinary education model. An open tutor teaching mechanism was implemented that emphasized the integration and development of different majors. In addition, the proportion of advanced technology and humanities social science courses were increased. Thirdly, the School of Design takes problems and project practices as the core of the curriculum. Multiple possibilities of future social development are incorporated into the teaching topics. The school implemented the “problem-guide” model, adjusted the structure of the curriculum setting, and adopted a three-stage structure consisting of 1grade, 2+3 grade, and 4grades. The new curriculum actively introduces emerging technologies, emphasizing the integration of art, design, and technology.

While improving the discipline’s foundational curriculum and strengthening the advantages of key disciplines, CAFA strives to find the academic frontier and future direction of the discipline. The school actively participates in social services at the state, societal, public, and industrial levels and drives social development, industrial upgrading, and public value

improvement through design innovation. CAFA's program focuses on the construction of the "Industry-University-Research Institution" integrated innovation system and returns the research results to society.

4. 5. School of Innovation Design, Guangzhou Academy of Fine Arts

The Guangzhou Academy of Fine Arts (GAFA) is well known as an institute that keeps up with the times, pays attention to social needs, focuses on the cultivation of design innovation ability, integrates multiple disciplines, and actively serves social and economic development. The Guangdong province has unique advantages as an experimental area in China's economic reform and opening. Relying on the benefits of its strategic location as well as the available economic and cultural resources, the school promotes talent cultivation with a high starting point.

GAFA has undertaken a significant project to establish an interdisciplinary "question-oriented" teaching and research platform that is more suitable for subject development and industry trends. GAFA has taken major structural adjustment as the driving force for these reforms and created several professional studios that integrate teaching, scientific research, and practice. Therefore, the school's educational reform is based on the "studio" system used in traditional art teaching, which has combined with the "project" system to form the " Studio and Project-based Teaching Method," an innovative teaching reform (Figure 9).

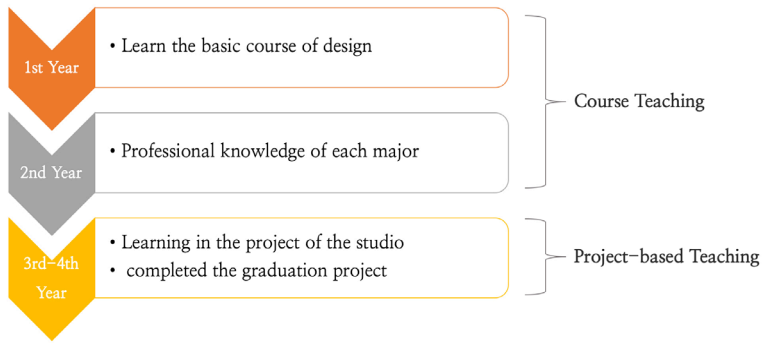

Figure 9 Undergraduate Curriculum Frame for School of Innovation Design, GAFA

The teaching framework is that students learn the basic course of design in the first year, and, in the second year, they are introduced to professional knowledge of each major. From the third year, students choose to join a studio according to their interests and future career goals. Based on the "Studio and Project-based Teaching Method," these studios are responsible for the student's professional education and graduation project, which are completed in the third and fourth years of the degree program. The studio's teaching team is comprised of teachers from different professional backgrounds. Communication and collaborative teaching are encouraged among studios. In addition to mentoring students within the studio, each semester, each studio also provides elective courses for students of other studios. Students are required to choose topics for their studio project that are closely connected with the characteristics of the local industry. They must find a corresponding cooperative industry or government project in the regional economic circle and create an

industry-university-research platform that integrates teaching, research, and practice. The results of this research will be returned to society, thus driving the innovative development of industry and the local economy.

5. Analysis and Result

These four schools represent the 21st-century design education reforms in China. Each is committed to breaking through the limitations of the traditional teaching system and pushing China's design education to a new stage with a more open platform, an international perspective, innovative ideas, and a multidisciplinary training model. The schools model new ways of designing education to deal with complex social contexts and solve complex design problems. The analysis of the four universities' design education reforms and the interviews with their graduates reveals that the focus of their reform is on how to train design talent to meet the requirements of the new era, specifically how to set courses, how to teach, and how to maintain close contact with industry (Table 2).

Table 2 Comparison of the Design Education Reform of Four Universities

School	Types of School	Education reform	
		Model	Characteristics
Jiangnan University (School of Design)	Comprehensive university	• The phased curriculum setting with "problem-oriented", and the "project-based" teaching model.	• Interdisciplinary teaching • Industry-University-Research institute Cooperation
Tongji University (The College of Design and Innovation)	Comprehensive University	• In the first year, public basic teaching. • The "project-based" teaching model is adopted with the "main+auxiliary" curriculum system.	• Establishing a " three-dimensional T " Education Framework • Interdisciplinary cooperation
CAFA (School of Design)	Art College	• Establish an interdisciplinary education model under the three-segment structure. • "Project-based" teaching model. • Professor studio	• Repositioning talent training models, • Tutor open teaching mechanism • Industry-University-Research institute Cooperation
GAFA (School of Innovation Design)	Art College	• "Studio and Project-based Teaching Method "model	• Industry-University-Research institute Cooperation

Thus far, it appears that the educational reforms of the four universities have been relatively successful. As shown in Table 3, it is the comparison between new design education and traditional design education. Its advantages are in the following aspects: First, the new education model is dedicated to cultivating students' interdisciplinary knowledge perspective and "facilitator" communication and collaboration ability. Second, the new education model lets students get more opportunities to fully participate in real projects, increase practical experience, and understand the whole working process, which can quickly get into the working state after graduation.

Table 3 Comparison of Traditional Education and New Education

Category	Traditional Education	New Education
Cultivation Focus	Professional skills and knowledge	Interdisciplinary knowledge perspective, communication, and collaborative ability
Course Assignments	Design sketch/renderings	Complete project presentation
Teaching Methods	Theory and practice are separated	Practical learning drives theoretical learning
Projects	Conceptual design projects	Real commercial project

Design education will inevitably change under new social contexts. The analysis of these schools' reforms shows that modern Chinese design education focuses on specific implementation strategies in the reform process, such as reforming "teaching mode" and "curriculum setting." Additionally, some commonalities can be observed in the reform of design education in China:

First, the reforms have promoted a "problem-oriented" curriculum. Today, designers face increasingly complicated social problems, and the conventional way of defining courses in applied fields is insufficient. Shifting to a "problem-oriented" curriculum will teach students to adapt more readily to new situations.

Second, Schools have adopted a segmented teaching structure to break from the previous teaching structure in which the grade was the node. The traditional semester-based teaching structure is too urgent and has limitations. The new education model sets teaching tasks according to the specific training objectives of each stage so that the curriculum arrangement can be more targeted.

Third, Interdisciplinary teaching is a significant trend in design education. Single-subject teaching is inadequate considering today's complex design objects and environmental challenges. Adopting an interdisciplinary approach is a meaningful way to cultivate design talent and emphasize the construction of interdisciplinary knowledge and education methods. As this study has found, design education in comprehensive universities is particularly suitable for interdisciplinary cross-teaching. Cross-teaching is not limited to the intersection of various design majors but can incorporate other fields, such as engineering. Such interdisciplinarity will provide students with more comprehensive knowledge. Art academies, due to the limitations of their disciplines, have more narrow opportunities for incorporating interdisciplinary study; however, students can benefit from the implementation of studio teaching, which similarly allows students to gain a more complete understanding of the design process. Through continuous studio teaching, students can have more direct and in-depth communication with their tutor and receive more comprehensive guidance.

Forth, there has been a shift to "project-based" teaching and, especially, approaches that emphasize the connections and interrelationships between the "Industry-University-Research Institute." Students gain more knowledge from the process of completing a full project than they do from traditional lecture-based education. Moreover, cooperation between schools and enterprises promotes innovation and core competitiveness.

This study also reveals that the current design education reforms in China not only focus on restructuring the teaching model but also aim to transform design school into a social service institution. This may be the educational goal of Chinese design in the future. Design school should dig deep into the characteristic resources of local related industries and integrate the superior resources of enterprises so as to build an integrated collaborative teaching platform that integrates "industry-university-research institute." Research results should be translated into actual economic benefits and promote the innovative development of regional industries. This is not only conducive to the formation of unique characteristics of professional education but also is the best way to break down the barriers of universities and enterprises and achieve mutually beneficial results.

6. Conclusion

Designers today no longer solve individual problems; rather, they solve multiple problem systems with complexity, dynamics, and uncertainty. Design knowledge is not static but needs to keep pace with the times and develop dynamically to follow contemporary trends and fit each situation. Design is an essential part of the construction of a national innovation system. Driven by the increasingly complex social context of modern life, design education must be reformed to cultivate innovative designers who can meet the needs of the new era and resolve the challenges of complex problems.

Studying design reform in different countries is helpful to understand trends in design's future development. Design education in China is a particularly revealing case study. In light of the country's remarkable economic growth in recent years, there has been an urgency for design education reform in China, which reveals the importance that has been attached to the development of the design industry.

This study introduces the universal problems faced by China's design education at present, through the investigation of college design teachers and students in different regions of China. The Chinese design education circle has recognized these problems, and some reform strategies have been put forward by insightful people. The four case schools selected in this study are the pioneers and the experimenters of the education reform. At present, it seems that their educational reform is successful, which is due to the following factors. First, it is not limited to the cultivation of a specific design professional skill but devotes itself to the advancement of students' interdisciplinary knowledge perspective and "facilitator" communication and collaboration ability. Second, it advocates giving students more choices of future development directions, driving theoretical learning with practical learning, and giving students more opportunities to participate in real projects fully. An analysis of these reforms found four commonalities were identified in Chinese design education reform: 1) Promotion of a "problem-oriented" curriculum; 2) Adoption of a segmented teaching structure; 3) Incorporation of interdisciplinary teaching; 4) Emphasis on "project-based" teaching and advocation of the "Industry-University-Research Institute" combination.

The main focus of design education reform in China pertains to specific implementation strategies of talent training. China has promoted the construction of a new model of future design education in China in various ways, and the country is also committed to turning universities into social service institutions to contribute to regional economic development. Due to the limitations of the case sample, this study fails to make a more comprehensive study on the educational reform model of Chinese universities. However, the study provides an informative overview of the current situation of design education in China and the direction of educational reform in the discipline. Design educators in other universities and countries can benefit from understanding trends in Chinese design education as they similarly seek to align design education with contemporary challenges and demands.

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