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\*Corresponding Author: tajul@fskik.upsi.edu.my

## DESIGN COMPETITION AS A PEDAGOGICAL TOOL FOR TRAINING STUDENTS' DESIGN THINKING IN ART DESIGN EDUCATION

Liu Jingwen<sup>1</sup>, Wang Luming<sup>2</sup>, Tajul Shuhaizam Said<sup>1\*</sup>

<sup>1,3\*</sup>Department of Art and Design, Faculty of Art, Computing and Industry Creative,  
Universiti Pendidikan Sultan Idris, Tanjong Malim, Perak, Malaysia

<sup>2</sup>Department of Sports Management, Faculty of Education, Universiti Kebangsaan Malaysia,  
Selangor, Malaysia

13261170706@163.com<sup>1</sup>, 475339511@qq.com<sup>2, 3\*</sup>

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### ABSTRACT

This study aimed to identify the possibility of developing students' design thinking system by participating in student design competitions to increase their practical design experience when they initially learn design. Information obtained through quantitative methods that were used to analyze data of studies that had been collected. The study sample consisted of 44 students from the Shandong Vocational and Technical University (SWUT). Research instruments consisted of analysis the result of students work, questionnaires and university lecturer system. Questionnaires were distributed online to study samples through Wenjuanxing (WJX) form method. The results showed that 19 college students who have participated in design competition have a higher level of design thinking traits than those who have not. Courses with design competition can significantly improve the design thinking traits of college students, especially the two dimensions of cooperation and innovation. This paper also proposes that use of design contests as a curriculum delivery method and the creation of a set of teaching techniques appropriate for the development of design students' inventive abilities is workable in the future.

**Keywords:** Design Competition, Art Design Education, Design Thinking, Curriculum Method, Teaching Method

### INTRODUCTION

The art and design industry is not only highly dynamic but also at the forefront of creative innovation and cultural expression. In response to the industry's dramatic transformation and new challenges, the emphasis of art design programmes is on quality education, focusing on high-order thinking and learning, such as synthesised analysis and problem-solving skills in product design and development, international marketing, research and development, and innovations (Yick et al., 2019). In product design, design thinking is now considered essential to product development (Mintrom & Luetjens, 2016). However, for students who have just entered college, these are the ultimate goals rather than the primary goals. In the past few years, job market demands have substantially changed while the instructional methods have generally remained the same. Employers find graduates weak in higher order thinking, and problem-solving abilities, as well as in teamwork, communication, and other soft skills (Mihic & Zavrski, 2017). Wang wrote in 2019, the ambiguity of the quality standard of design

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art education leads the society to pay more attention to explicit educational achievements, such as techniques and advertising, thus neglecting the core concept of design education, that is, the training of design thinking and design taste (Wang, 2019).

For fresh art and design students, they do not lack imagination, but lack systematic design thinking to realize the design process. According to Padgett, due to their lack of experience, students frequently have two related issues: they lack the intuition developed from experience and have a strong need for real-world applications in the classroom. Without a solid experience foundation to anchor concepts, students struggle to stay engaged throughout the "dry" or academic sections of the course, and without the information obtained via experimenting, design appears more like guesswork rather than deliberate choice (Padgett, 1997). Research has shown that, Multi-university student design competitions can be very effective in achieving desired learning objectives relating to the design process, teamwork, leadership, and design communication (Buchal, 2004). Jesenka in 2010 organized a design competition to improve student's design and problem solving skills and competencies, to increase their creativity, awareness and understanding the issues relating to the specific project (Pibernik et al., 2010). Although the concept is well accepted, there are limited studies focus on it efficacy towards of fresh college student design thinking system construction education. Therefore, this thesis focuses on the possibility of developing students' design thinking system by participating in student design competitions to increase their practical design experience when they initially learn design.

## **DESIGN COMPETITIONS AND DESIGN THINKING IN EDUCATION**

### **Design Competitions**

In recent years, the art and design world has witnessed a surge in high-level design competitions, capturing the attention of creative minds, professionals, and enthusiasts alike. The international design competitions include iF Design Award, Red Dot Design Award, K-Design Award, Communication Arts and so on. The more authoritative domestic ones in recent years include the National College Students Digital Art and Design Competition (NCDA awards) and the Challenge Cup National College Students Advertising Art and Design Competition. These competitions are distinctive and highly authoritative, which are suitable for college students to participate (Li & Liu, 2019). However, in today's era of information explosion, numerous types of design competitions have emerged on the Internet, and their levels vary widely, which seriously affects students' enthusiasm for design competitions. Therefore, teachers play a crucial role in this segment by selecting the most appropriate and practical design competitions that provide students with confidence and enthusiasm. By selecting design competition topics that match the curriculum plan and introducing design competitions into design practice teaching, it can not only increase the vitality of the teaching link and communication opportunities, but also promote teaching and learning by competitions, so as to achieve the purpose of combining competitions and teaching (Liu, 2020).

There are two main trends in current domestic and international design competitions, one is based on actual projects, where competitors can use creative thinking to develop designs based on prior research, or creatively come up with solutions that are entirely different from prior proposals from new perspective (Li & Liu, 2019). The For College Students competition operates in this way, with projects from various businesses issued every year for real project design, including creating a promotional poster for the beverage firm Wahaha Group. These discussions frequently entail knowledge from other fields, and participants must be skilled generalists or good team players. This kind of project has been widely employed in several professional contests and worldwide design competitions due to its high intellectual and practical worth, and has become one of the prominent subjects in various events. Another form of design project topic may be found in a variety of categories, and as long as it satisfies the requirements for the proposition, it is eligible to compete. In these categories, there are no tight limitations on the type of design object and how it is presented. By examining the subject at hand and other pertinent information, the participants might in this situation comprehend the design challenge from many angles. The NCDA Awards, as an example, can be thought of as a very typical example. Participants in design competitions in the wide subject category frequently employ their creativity and

design expertise to interpret the rules and guidelines of the competition's broad design proposal in accordance with their own preferences and entry criteria. The competition submissions become more alluring as a result.

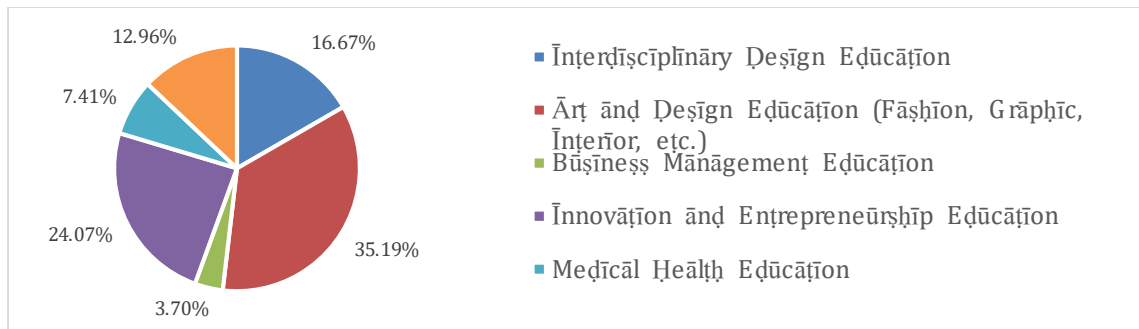
Any form of design competition gives students the chance to express their ideas, feelings, comprehension, and creativity via their own creations. It gives designers a larger creative canvas, which broadens their perspectives. This format can advance both the reform of art and design instruction in colleges and universities as well as designers' pursuit of their own originality (Li, 2022). The design organisers may not only disseminate and publicise the information of the original topic project, but also inspire more people's curiosity, attention, and thinking, resulting in a larger effect, when exceptional creative works are shown to the public in a vivid way. Design contests are becoming an essential component of art education at colleges and universities. In addition to encouraging students to engage in design-related activities, it also elevates design into a phenomena that is widely embraced and perpetuated. In order to more effectively attain design goals and as a beneficial attempt to depart from the conventional paradigm of art and design education, design concepts and practises are tightly interwoven through the organisation of design contests. More and more people are becoming aware of the importance of design contests in the market and their motivating impact on design education because to the widespread popularity and promotion of various communication mediums.

In most schools, the teaching of primary design courses is still at the traditional stage, focusing primarily on the teaching of theoretical knowledge and lacking the cultivation of practical and hands-on skills (Huo & Ding, 2023). This is relevant to the current teaching situation of design competitions. Of course, if theoretical understanding is lacking, the designed works would undoubtedly lack a solid base. The demand for applied abilities in society is increasing along with economic progress, but the students now taught by our institutions are unable to match this new demand. Higher education institutions are increasingly looking at training options for recent graduates to tackle this problem. Therefore, new requirements have been put forward on how to cultivate students' creative ability, i.e. to improve students' creative consciousness, creative spirit and creative thinking ability through design competitions.

### **Design thinking**

Design thinking comprises a variety of creative strategies for stewarding projects with multiple stakeholders or fostering organizational innovation (Panke, 2019). Clearly if the practice of bringing design thinking to new fields is more than the latest fad it could represent something of a gold mine for curriculum renewal in design schools (Melles et al., 2012). However, to date, no single definition has emerged of what constitutes design thinking (Mintrom & Luetjens, 2016). Design thinking is constantly emerging in the educational landscape, and it has penetrated into all aspects of classroom teaching and learning. As a new teaching philosophy and learning style, design thinking has gradually become the focus of international education circles. Since 2005, Stanford University has been the first to launch a design thinking curriculum, and design thinking has been widely used in the field of education around the world and is deeply embedded in practical teaching and learning. Design thinking is frequently viewed as a concept, technique, and approach to drive and organise students' practise when the purpose of educational application directly affects students. According to the results of the available international research, there are notable distinctions between various research philosophies that support the development of students' practical job abilities, as well as a specific level of penetration and integration in the classroom. We developed a special disciplinary distribution based on the content analysis of the domestic and international literature, and the details are in table 1 (Peng & Wang, 2021).

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**Table 1** Design thinking acts on students' disciplinary distribution.  
(Date based on Peng)

According to Table 1, teaching practices based on design thinking at the higher education level, both in China and abroad, focus mainly on art and design classes, interdisciplinary thematic design and innovation and entrepreneurship education. Therefore, it is necessary to offer corresponding courses in the field of art and design to cultivate students' design thinking. At the same time, Think-Maps was established as an alternate and supplementary method of teaching and learning in design school. In this method, the importance of teaching and transferring domain knowledge in connection to design thinking is made apparent (Oxman, 2004).

## **METHODOLOGY**

Product Design is one of courses being delivered as part of the Art and Crafts major in Shandong Vocational and Technical University (SWUT) in China. A semester long program was developed for and delivered simultaneously delivered in SWUT in Semester 2, 2022. As part of quality assurance, a faculty meeting was held prior to the start of the course, with two faculty members teaching the course, each leading a class (n1=25) (n2=19), to discuss the teaching content to further develop the course for the second semester of 2022 and as a basis for subsequent course development. The course consisted of 72 hours, with 36 theory hours and 36 practical hours. n1 is a traditional lecture mode, where the instructor talks about theoretical knowledge and ends up with assignments as student output. n2 use design competition as a tool, where the instructor teaches the theoretical knowledge and then gives the students practical assignments based on the NCDA Awards topics, with participation in a design competition as the final output.

In teaching practice, three dimensions are used as the basis for evaluating the impact of the design competition course model on design thinking: the output of students' works, the questionnaire survey of students' effect on design thinking through design competitions, and teachers' teaching evaluation. Through the studies of Blizzard, Royalty, Liedtka, Brown, and Holloway, Xiehong Fu and Yingjie Gao compiled a questionnaire containing 31 measures in 7 dimensions. These seven dimensions include problem-oriented, people-oriented, cooperation, optimism, visualization, abductive reasoning, and innovation (Fu, 2020). This research will use this questionnaire to survey on the students.

## **DISCUSSION**

From the output of the students' work, students in n1 preferred to work individually, with only a few students choosing to work in teams, while students in n2 worked in teams of 3-4 members. Clearly, the design process was more complete for n2 students (figure 2), and the design competition had a clear motivational effect on the students due to their clearer goals, and the students were more directed in designing their final work and three of n2 students won awards in the competition, which increased the students' confidence in their future designs.



*Figure 2 two groups of n2 students' design process*

From the students' questionnaires, the difference between n1 and n2 was not significant in the dimensions of people-oriented and optimism. However, in problem-oriented, visualization, and abductive reasoning, n2 has a slight advantage. In cooperation and innovation, n2 had a significant advantage. Therefore, students' training in design thinking through participation in design competition courses is effective. In the teacher teaching evaluation, the two groups of students evaluated the teachers separately through the school teacher evaluation system, and the difference in quantitative evaluation between the 2 teachers was not significant.

## CONCLUSION

It is found that college students who have participated in design competition have a higher level of design thinking traits than those who have not. Courses with design competition can significantly improve the design thinking traits of college students, especially the two dimensions of cooperation and innovation. The emergence of design competitions has significantly advanced design education, particularly in the development of creative thinking and practical skill, and design competitions have a remarkable superiority. We propose using design competitions as a curriculum teaching carrier to establish a set of teaching methods suitable for the cultivation of innovative ability in design majors through the analysis of design competitions in design disciplines in domestic and foreign universities. By integrating the innovative thinking of design competitions into the teaching activities of design students, it not only expands the classroom content of design education, but also injects new vitality into students' competition ideas, thus stimulating their positive and innovative thinking and enabling them to systematically apply their learned knowledge and skills to successfully complete design projects. At the same time, the design competition plays a good role in promoting design teaching through the design competition. In order to improve the efficiency of innovative thinking and practical ability training in the design classroom, as well as to stimulate students' interest in professional learning, design competitions can be introduced into design classroom education in order to explore a long-term stable and reasonable educational mechanism.

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