

Research on the Teaching Reform of “Display Design” Course Based on the CDIO Concept*

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Abstract—As a compulsory course for major exhibition planning and management, the course of "Display Design" is an important course for cultivating students' professional theoretical knowledge and basic skills for exhibitions. This article attempts to apply the idea of the CDIO teaching method to the "Design and Display" course of the major of exhibition planning and management. It explores ways of combining teaching methods, teaching content, teamwork interaction, and teaching evaluation of the process to enhance the practice teaching of the convention and exhibition major.

Keywords: *CDIO, “Display Design” course, educational reform*

I. INTRODUCTION

As a compulsory course for major exhibition planning and management, the course of "Display Design" is an important course for cultivating students' professional theoretical knowledge and basic skills for exhibitions. Meanwhile, it is also a professional core course that trains students' innovative ability and practical operation ability. It focuses on the integration of theory and practice, and cultivates students' overall creative ability and detailed expression ability.

The idea of the CDIO teaching method applied to the "Display Design" course of the exhibition planning and management major is an effective way to enhance the practice teaching mode of the exhibition major. The curriculum emphasizes the cultivation of students' comprehensive practice and innovative ability, and encourages students to change their previous learning status, hence to do active learning and experience learning. The course focuses on the cultivation of communication skills and teamwork awareness. It established a connection between professional courses and practical work, and perfectly combined the theory and practice to cultivate practical and innovative conference and exhibition professionals in higher vocational education in the new period.

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II. CDIO

CDIO is an engineering education concept put forward by four well-known international universities including the Massachusetts Institute of Technology and the Royal Swedish Institute of Technology with four years of research and practice. CDIO is the acronym of Conceive, Design, Implement, and Operate, which stands for the entire life cycle of industrial products, services and systems from conception to operation to exhaustion, presenting the entire process of human activities to solve practical problems. CDIO is the response of two major elementary questions - "What kind of knowledge, ability and attitude should students have after graduation" ("What is it") and "How can education ensure that students learn these knowledge, ability and attitude" ("How to do") better. The response can be summarized in one sentence, which is "understand how to conceive, design, implement, operate complex, high value-added products, processes and systems in a modern, cooperative engineering environment, and become mature and responsible people". This is the gist of the CDIO, and it provides a mechanism and path for the construction of the training program for higher vocational exhibition talents.

The CDIO education concept is an engineering education method for life cycle of products, processes and systems. The engineering education concept represented by CDIO is the latest research result of international engineering education today. It emphasizes the systematic teaching goals and outlines and the teaching evaluation standards. CDIO advocates that the teaching of the course can closely link to the transfer of theoretical knowledge and the internal connection of individual comprehensive ability development, and it emphasizes relying on practical projects, gradually realizes the balanced improvement of students' personal professional academic ability, learning ability, teamwork ability, etc. by comprehensive training, and advocates guiding students to obtain practical and theoretical learning with a proactive learning attitude. And according to this, the integrated curriculum teaching design is carried out scientifically and reasonably.

III. CONVENTION AND EXHIBITION PLANNING AND MANAGEMENT OF "DISPLAY DESIGN" COURSE

"Display Design" course is a comprehensive course, which covers the areas of space planning and design, visual communication, product design, environmental design, exhibition prop design, visual image design and other areas. Nowadays, various display activities develop rapidly with the progress of social civilization. It has become an important medium for human economic communication and information transmission. Display design not only needs to solve technical problems at the material level, but also needs to pay attention to the relationship between people and exhibits, people and the environment, and the environment and the exhibits. It is a curriculum integrated with art and has comprehensive characteristics. The convention and exhibition planning and management majors in the majority of higher vocational colleges are basically following the traditional teaching mode when teaching the course of "Display Design". The theory and practice teaching are disconnected, which restricts the cultivation of students' initiative, creativity, and cooperation. In teaching, the theory and methods are often empty talk, failing to achieve an organic combination with practical design and application. The current problems are as follows.

At first, the teaching methods and models lack flexibility and practicability. Traditional teaching methods and models are monotonous, and the teaching of knowledge is mostly based on cramming. The theory and practice are carried out separately. As a result, students feel dull in theory classes because of the lack of practical application of theoretical knowledge. The lack of knowledge in theory class cause students cannot systematically and comprehensively master the main operation points of operation skills.

Secondly, the teaching content is in short of creativity and diversity. The teaching content of the display design theory and method course is mainly in the form of PPT or textbook chapters. The teaching content is traditional, lacking the explanation of the cutting-edge dynamics and theoretical related practice cases of display design.

Next, the process of learning lacks self-motivation and cooperation. In the teaching of traditional theoretical courses, the one-way teaching mode of teachers unilaterally exporting the knowledge is usually used, and students are often in a passive position, and are easy to form the inertia of thinking of one-way receiving knowledge, which lacks the self-motivation of learning. Such stereotype is not conducive to the cultivation of students' autonomous learning ability and teamwork ability. It can also affect the cultivation of students' practical ability and innovative thinking.

Lastly, the course evaluation and appraisal criteria have insufficient systematization and scientificity. Examination and assessment methods for "Display Design" courses are mostly in the form of end-of-course display schemes. The assessment form is single and unilaterally faces students only. This is not conducive to the evaluation and improvement of teachers' teaching work and the comprehensive evaluation of students' learning conditions. It also does not meet the

evaluation standards of modern engineering education and cannot effectively run the teaching management mechanism.

IV. CDIO AND "DISPLAY DESIGN" COURSE

"Display Design" course is a comprehensive course, which covers the areas of space planning and design, visual communication, product design, environmental design, exhibition prop design, visual image design and other areas. Nowadays, various display activities develop rapidly with the progress of social civilization. It has become an important medium for human economic communication and information transmission. In the display industry, computer technology, Internet technology, multimedia technology and virtual reality technology are widely used. Display design is shifting to a comprehensive design integrating technology and art. The display design in the exhibition comprehensively utilizes the various senses of the participants, and uses various design elements to display product and service information to achieve the transfer of information such as products and services. Students are required to have strong practical abilities, master creative design methods, morphological expression capabilities, color matching, material application, and grasp the overall spatial scale process. The implementation process of the exhibition design course from concept design to operation evaluation is similar to that of engineering majors, emphasizing the organic combination of the curriculum knowledge system, and the guidance of theory and practice. Therefore, the CDIO practical teaching model can be applied to display design teaching.

A. *The diversity of teaching methods*

Applying the CDIO concept, the teaching method is flexible applied in accordance with each student's individual competence differences and interests. Through the integration of teaching and practice, the following reform of three teaching methods will finally realize — "question-oriented" seminar teaching method, situational teaching method of "learning while doing, doing while learning" and "learning to apply" case teaching method.

Students are encouraged to solve practical problems through specific analysis, and learn to practice while learning the theory, so as to cultivate students' habit of independent thinking and learning and practical ability to solve problems, and finally realize the application of the following three teaching methods.

1) *"Question-oriented" seminar teaching method*: This method aims at cultivating students' observational analysis and language expression skills, and guiding students to integrate theoretical knowledge to solve practical problems.

2) *Situational teaching method of "learning while doing, doing while learning"*: CDIO emphasizes the teaching concept of "learning while doing" and "doing while learning". The practice design and case explanation of display design methods and theoretical courses was introduced to use real exhibition design project tasks as the

carrier, and combine teaching, learning, and doing project teaching to guide students to have a deeper understanding and thoughts of theoretical application practice and finally connect the acquired theoretical knowledge with the specific practical design.

3) *"Learning to apply" case teaching method*: Case teaching is one of the indispensable teaching methods to demonstrate design courses. Compared with traditional teaching by teachers, case teaching puts students in an active position and guides multi-directional communication in the classroom, which is helpful for students understanding abstract concepts in landscape design theory and promoting their thinking and development of design theory and methods. Through the accumulation of excellent cases, students can further integrate theoretical knowledge, completely dig out their self-learning ability and knowledge application ability, and authentically realize "learning to apply."

B. The variety and innovation of teaching content

As a professional course, display design is clearly specified in the syllabus that in addition to teaching related teaching content in accordance with the requirements of the syllabus, teachers should also illustrate the current display industry cutting-edge information and the latest developments in the classroom. The information such as the interpretation of excellent display design cases at home and abroad, the latest conferences and concepts of display design associations, cross-penetration of related disciplines, etc., should also be illustrated. While maximizing the innovation and diversity of teaching content, the interest and love of design of students should be fully mobilized and gradually guide them to develop a long-term habit of paying attention to the dynamics of display design, and form a deep understanding of display design in the subtle influence of information on display design.

C. The operating model of team cooperation and interaction

The CDIO education model advocates that the classroom should take students as the main body, fully motivates students' initiative and cooperation in the learning procedures, and comprehensively exercises students' organization, overall planning ability, and team cooperation ability, so as to acquire design project cooperative synergy among team members. Convention and exhibition display design methods and the teaching of theoretical courses can be run in groups, which break through the traditional grouping mode. Each class adopts different grouping rules to randomly group and maximize the chances for communication among students. While grouping, the differences of students should be considered as much as possible. Each group in each class conducts thematic discussion of the class by conversational loop, and summarizes the speeches of each group member. And the self-selected leader of the group should make presentation and speech on behalf of the group. The unit mode of the thematic group can cultivate and enhance

students' team collaboration ability. During the learning process, team members have their own unique responsibilities. There are both divisions of work and collaboration, which promotes the collision of thinking among students. The exchanges discussions and their individual experiences sharing and learning will also help to broaden student's theoretical knowledge and practical experience, and stimulate students' initiative in learning.

D. The construction of procedural teaching appraisal system

Traditional assessment methods are mainly in written form, with emphasis on the results of the assessment, which has led some students to ignore the process of learning and blindly pursue the final assessment results. Therefore, a scientific and complete evaluation system is an important link to ensure the positive operation and development of display design curriculum reform. CDIO advocates reform of assessment methods based on "process evaluation". Therefore, teachers need to establish a process-oriented evaluation system that includes three aspects: classroom teaching assessment, practical teaching assessment, and final comprehensive assessment. The appraisal system should be process oriented, focusing on the theoretical learning and practical operation learning process and emphasizing the assessment of the comprehensive ability of students. In addition to the assessment of theoretical knowledge and practical operations, teachers should also focus on conducting multiple process assessments of students' learning attitudes, teamwork capabilities, and classroom activity.

V. CONCLUSION

The idea of the CDIO teaching method is applied to the "Display Design" course of the exhibition planning and management major. It is still in the experimental stage. It explores a combination of teaching methods, teaching content, teamwork interaction, and process teaching evaluation, which is an effective method for the enhancement of practice teaching effect of convention and exhibition majors. In the teaching of the major of exhibition planning and management, the study of the teaching reform of the "Display Design" course based on CDIO is an important way to achieve the goal of comprehensive exhibition talent training. Teachers must keep pace with the times, introduce advanced concepts into teaching, flexibly use multiple teaching methods and models, shift from previous "teacher-centered" to "student-centered", and guide students to participate in the entire process of learning. Teachers should also constantly update and improve teaching methods, optimize teaching modes, improve teaching content and curriculum assessment and evaluation system, and gradually improve the teaching effect and quality of exhibition design courses.

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