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Abstract

As a tool course, CAD graphic design in engineering is assisting other professional courses to achieve professional training goals. According to the characteristics and existing problems of CAD graphic design, this paper puts forward some constructive measures to connect the course with practice application and improve the students' learning enthusiasm. The proposed measures include: teaching method combining theory with practice, teaching mode containing "teaching" and "learning" content, the matched evaluation mechanism guiding correctly students to learn.

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1. Introduction

With the fast development of mould industry, mould design has the basic requirement of high-efficiency and precision. Researchers mainly rely on traditional technology of experience and skills to design and manufacture molds. This method cannot meet the requirements of modern mold design and manufacturing. With the intelligentization of the manufacturing industry era，CAD software has been exploited and wildly applied in the many industry fields. The application of CAD technology in the mold design and processing has become the inevitable trend of mold development.[1] However, the existing teaching mold only adopt theoretical teaching, (Power Point) PPT teaching model and single appraisal mechanism, which cause the courses to divorce from reality and kill students' learning enthusiasm. Therefore, to obtain a better teaching effect and improve the students' learning interest, CAD course should combine the course theory and practice application. In the paper, we will discuss the existing teaching mode of the CAD course and propose a series of teaching reformation to achieve the goal of modern engineering education reform.

2 The problems existing in traditional course teaching

2.1 Pure theoretical teaching

In the traditional teaching model, the "teaching" and "learning" content of the CAD course are mutually independent. The teachers only impart pure theoretical knowledge in the class and rarely put the theory into practice. Most of the theoretical content is only the predecessors' experience. In addition, the

students generally reflect that the theory is difficult to understand and the curriculum practicality is not strong for the existing teaching situation. Therefore, their learning interest is hard to be motivated.

To some degree, these both prejudice against teaching objects of generating the innovative thinking. Solving practical engineering problems is the prerequisite of the existence of CAD course. Pure theoretical teaching is easy to cause the theory to divorce from reality, and not conducive to cultivate high-quality talents in the field of engineering application.

2.2 The improper teaching method

CAD graphic design course covers all kinds of operational approaches for implementing graphic design.[2][3] For students, the information amount is massive and difficult to be consolidated and digested immediately. The existing teaching method used in the classes is usually PPT teaching model. In the PPT teaching, the knowledge was expressed only by graphic and text structure, which easily can accepted by students and their interests easily run away slowly. Therefore, the teachers for CAD graphic design course should adopt more proper teaching methods for knowledge instruction.

2.3 The unreasonable appraisal mechanism for course teaching

Nowadays, the appraisal mechanism of evaluating the learning effect of the CAD graphic design course is single[4][5]. The appraisal mechanism is generally based on the writing papers in the test. This evaluation model is liable to cause students pursue the test score one-sidedly. They will only pay attention to the CAD content on the book and do not care the detail graphic design with CAD software. Therefore, the students ignore the practical application and forget the knowledge in the end, which goes against the original intention of CAD course.

3. Reform measures

3.1 Teaching method combining theory with practice

Under the new teaching environment, the class hours are constantly compressed and the practice session becomes less. It is difficult for students to master CAD courses systematically. The teaching method of CAD theory course should mainly focus on combining theory with practice which can enlighten students to think more deeply about CAD theory and develops students' logical thinking ability in this field. In addition, this course should also provide some CAD application example in this professional field for expanding the students' vision. Therefore, computer practical is an important part of learning CAD and the key for truly mastering the application of CAD software and programming.

3.2 Teaching mode reformation

The teaching mode reformation is one of the important contents for the current high education reformation. In the traditional PPT teaching model for CAD graphic design, only the "teaching" content of CAD course is reflected. However, the "learning" content for students witch is the most important in the teaching process is not implement. Therefore, the "teaching" and "learning" content of the CAD course is detached. To some degree, these both prejudice against teaching objects of generating the innovative

thinking. As one of the courses for strong engineering practices, CAD course should not only focus on indoctrinating the theoretical knowledge, but also cultivating students' ability to solve practical engineering problems. To motivate students' learning enthusiasm of the CAD and master the operational capacity, it is important to change the teaching mode of the CAD course from the traditional teaching mode to combining "teaching" and "learning" mode. In the proposed teaching mode, the role of teachers is more reflected in guiding, organizing the discussion and inspiring students' innovative thinking. At the same time, more time in the course will be spent on students' "learning", not the "teaching".

3.3 The matched evaluation mechanism

Any teaching reformation must have a matched evaluation mechanism which can overcome the blindness of students' study and enhance the scientificity of teachers' teaching. The final grade of the practical course should consist of two parts: practice and theory. At the same time, the practice grade are even more than that of the theory. Therefore, the teachers will reserve some time for students' practical operation in the classes. Moreover, the students are willing to spend time in CAD application, which is the ultimate course purpose.

Conclusion

CAD graphic design course is a very important instrumental course in engineering specialty, which can combine with a large number of engineering courses to serve the professional training goal. At present, the problems existing in course teaching include pure theoretical teaching, improper teaching method and the unreasonable appraisal mechanism. To solve these problems, a series of specific measures are put forward for guaranteeing the students' interest in learning and enhancing the course application.

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