

Teaching Reform Strategy of Mechanical Specialty Based on Informatization

Ai Cuirong

Hubei Three Gorges Polytechnic, Yichang, Hubei, China

Keywords: promotion of information technology; Mechanical major; Course teaching; reform

Abstract: As the society pays more and more attention to education, especially in the information environment, the demand for relevant professionals is higher and higher. Therefore, we should pay more attention to the cultivation of relevant professionals. In the wave of informatization, the curriculum teaching reform of some mechanical majors is particularly important, because informatization is a partial replacement for human work, improves the production efficiency of enterprises and realizes higher precision management. This paper discusses the teaching research and practice of mechanical specialty under the information environment, and puts forward some reasonable suggestions.

1. Introduction

Introduce information technology into the teaching of mechanical courses, carry out diversified and diversified teaching for the knowledge of mechanical courses by means of information teaching, build a practical teaching platform for students, and create a high-quality teaching environment for students, so as to improve students' learning enthusiasm and efficiency. Use information technology to reform teaching links, realize information-based teaching evaluation, build a reasonable teaching model, run information technology through the whole teaching process, and improve the teaching effect under the information environment. Information based teaching methods such as micro class, Mu class and flipped class change the teaching environment according to students' learning characteristics, and adopt teaching means such as task driven, group teaching, integration of theory and practice, situational teaching and so on to stimulate students' learning initiative and enthusiasm, so as to improve the learning effect. Furthermore, promoting classroom teaching reform with information technology can integrate informatization into professional curriculum evaluation system, build Developmental Classroom and gradually optimize the practical teaching level of mechanical specialty

2. Importance of information-based teaching of Mechanical Courses

The main contents of mechanical courses include mechanical design and production site technology management, basic mechanical CAD / CAM ability, design and manufacturing, debugging process tooling, etc. These courses are highly operational and practical. In the teaching process, students are required to observe the structure of mechanical parts on the basis of mastering solid theoretical knowledge and consolidate theoretical knowledge again in practice. With the development of modern machinery, there are many practical mechanical design software in the market, including photo shop, Solidworks, engineer, etc. In order to meet the needs of social development, the mechanical design software is introduced into the teaching. The introduction of these software into the teaching of mechanical courses can not only arouse students' curiosity and stimulate their interest in class, but also enhance students' practical operation and observation ability, which is conducive to the cultivation of logical thinking ability.

2.1 Improving teaching quality

The traditional teaching methods of mechanical courses emphasize theory rather than practice, and pay more attention to the teaching of knowledge. In information teaching, teachers not only let students understand the software operation steps through the use of SolidWorks software and

classroom operation, but also let students observe the whole process of mechanical parts design and realize the comprehensive observation of mechanical parts, Finally, let the students practice. This combination of theory and practice can not only effectively improve students' enthusiasm and attention in class, but also help students master and understand knowledge and better apply it in practice. In addition, the mechanical parts drawn by SolidWorks software are easy to store and copy. If students have doubts about a design step in class, they can copy the sample back to study. It can be seen that information-based teaching in mechanical course teaching can maximize the utilization of teaching resources and enable students to better absorb, understand and master the whole process of mechanical manufacturing design.

2.2 Practical training

For mechanical students, the future employment career is more operational. Therefore, in teaching, teachers should combine basic theoretical knowledge with practical operation to improve students' practical operation ability. In teaching, teachers use mechanical design software such as photo shop, SolidWorks and engineer to make students more intuitively understand the connection design structure and design proportion of mechanical parts. In the design process, once again consolidate the basic theoretical knowledge. Students can further deepen their understanding of the design process of mechanical parts by observing the design process of mechanical parts.

2.3 Achieving teaching objectives

The teaching quality of mechanical courses directly affects students' mastery of knowledge, the cultivation of practical operation ability and the level of comprehensive quality. In teaching, teachers take students' employment as the guidance, flexibly use a variety of mechanical design software through information-based teaching means, so that students can better intuitively understand the mechanical design process, so as to improve the comprehensive quality level, cultivate talents needed by the society and promote the development of the mechanical industry.

3. The feasibility of information-based teaching reform of mechanical courses

3.1 The trend of professional curriculum reform is obvious

At present, the curriculum content and setting of mechanical specialty mainly adopt two forms. One is to imitate the curriculum setting of colleges and universities and delete the curriculum according to the resources in the school. The teaching characteristics of mechanical specialty curriculum in various colleges and universities are not obvious, and the phenomenon of homogenization is becoming more and more prominent; Second, it focuses on the traditional curriculum. After fine-tuning, it directly opens the curriculum again, and does not update the curriculum according to the needs of social development, resulting in an increasing gap between learning and application, which is difficult to meet the needs of talents in the industry. Most colleges and universities have a large number of curriculum theories. With the increasingly obvious demand for Applied Talents in the industry, colleges and universities have invested more and more in practical operation ability. They take the practical curriculum as the focus of the mechanical specialty to carry out the reform of curriculum professional content, but the treatment of theory and practical curriculum has not been closely coordinated. Therefore, the mechanical specialty curriculum is in urgent need of new teaching basis, Promote the reform of professional courses and teaching to ensure the high quality of the curriculum system.

3.2 Excellent information-based teaching foundation

The course of mechanical specialty is a science and engineering specialty. In the setting of professional course content and the reform structure of curriculum system, there are many computer courses and courses involving computer software operation, such as CAD. The introduction of information technology in the teaching of professional courses is not abrupt. According to the existing curriculum system, teaching resources and the use of information technology, the requirements of information teaching can be met on the basis of multimedia teaching equipment,

computer software and computer equipment. Moreover, the current professional curriculum reform is to adjust the talent training mode around students' professional quality and comprehensive professional ability. The verification of students and curriculum teaching evaluation are basically carried out on paper papers. The evaluation takes the score as the final result, ignoring the efforts and skills paid by students in the learning process. One-sided evaluation is not conducive to students' growth.

4. Requirements for information-based teaching reform of Mechanical Courses

4.1 Clarify the purpose of information-based teaching reform

The application of information-based teaching in mechanical courses relies on computer software technology and multimedia technology to provide students with sufficient learning aids. Software tools are used as students' design aids and learning tools. Teachers can build a curriculum resource database through information technology to facilitate students to download materials and share curriculum resources independently, Give play to the advantages of information-based teaching and improve students' ability to operate graphics software such as AutoCAD and SolidWorks. After class, students consolidate their learning ability through the learning of course videos and course resources. For example, through the learning of teaching videos, students can master the production principle of molds. Information-based teaching still pays attention to the preciseness of teaching. In teaching, there are high requirements for teachers' ability and quality. Information-based teaching is a teaching tool. Under the background of curriculum reform, many teachers regard information-based teaching as a new teaching method, blindly adopt odd and even numbers of information-based teaching, and ignore the combination of professional theory and practical skills. Therefore, in the curriculum reform of mechanical specialty, teachers need to clarify the role of information teaching, make rational use of information technology according to students' development goals and students' subjective role, and build a teaching model combining professional knowledge and practical operation skills.

4.2 Improve the effect of teaching evaluation

As a new teaching method, information-based teaching needs scientific teaching evaluation basis to promote its revision and improvement. Therefore, in order to promote the development of curriculum, we must innovate the evaluation method, improve the evaluation indicators and improve the motivation of the evaluated. In the information-based teaching reform of machinery specialty, the evaluation should focus on multi-dimensional and diversification. The open evaluation and developmental evaluation based on information network can promote the improvement of students' learning ability and the cultivation of innovative spirit, and can change the inertia of students' "cramming for the feet temporarily" or simply "learning from" others to complete the course task. Attaching importance to students' evaluation and teachers' evaluation of students, developing teachers' teaching evaluation into learning evaluation, and increasing the evaluation of learning resources can effectively promote students to participate in the evaluation system, improve students' ability to judge the quality of learning materials, and promote students to form lifelong learning ability.

5. Problems in information-based teaching of Mechanical Courses

The introduction of information-based teaching in the teaching of mechanical courses can provide students with more teaching resources and improve the teaching quality, but it also increases the learning pressure for students. When they first came into contact with mechanical design software, students were full of curiosity and showed strong learning enthusiasm. However, with the deepening of teaching content, students' learning enthusiasm gradually disappears, and even fear psychology occurs, resulting in the low quality of information-based teaching of mechanical courses.

5.1 Not paying attention to information-based teaching means

In the information-based teaching of mechanical courses, it mainly uses information technology such as mechanical design software and multimedia to assist teaching. At the same time, teachers provide students with more channels of teaching resources by establishing a learning database of teaching resources, so that students can search for relevant knowledge in the learning database, so as to improve knowledge accumulation. However, in actual teaching, teachers show the whole process of mechanical design to students by operating mechanical design software, and then let students try to operate the software. In practice, many students blindly imitate the teacher's design and do not innovate on the basis of relevant theoretical knowledge. In long-term teaching, fixed thinking is gradually formed, which is not conducive to the cultivation of innovative thinking. In addition, teachers pay more attention to practical operation. Before practical operation, they simply play the mechanical parts to be designed through multimedia, and do not introduce the design principles and key points to students. They directly enter the design link, resulting in students' inability to really understand the design core.

5.2 Lack of relevance between theoretical knowledge and practical operation

The information-based teaching of mechanical courses should be carried out on the basis of basic theoretical knowledge. However, in actual teaching, teachers can not grasp the advantages of information technology and theoretical teaching, which leads to teachers paying too much attention to the importance of practical operation in teaching, relying too much on mechanical design software and ignoring theoretical teaching means, resulting in the poor combination of theoretical knowledge and practical operation, resulting in low teaching quality

6. Informatization teaching reform of mechanization courses

To improve the information-based teaching quality of mechanization courses, we should first innovate the teaching mode, enrich the teaching content and enhance students' interest in learning on the basis of making full use of information technology. In addition, by improving the teaching evaluation of information network platform, supervise teaching.

6.1 Pre school informatization

In the information-based teaching of mechanical courses, digital teaching plan is used to prepare lessons. Digital teaching plan is not only different from paper teaching plan, but also has high requirements for teachers' computer application and operation. In the whole teaching, we should first maintain the classroom information capacity, and then let students think deeply through the way from shallow to deep; Secondly, teachers flexibly use a variety of teaching means to show students materials, pictures and videos through multimedia to deepen students' understanding; Finally, teachers should have a strong subjective consciousness and try to select high-precision and representative mechanical manufacturing parts. In the face of complex mechanical parts, teachers use mechanical design software to establish three-dimensional models in class, and then explain the key steps to students for their understanding.

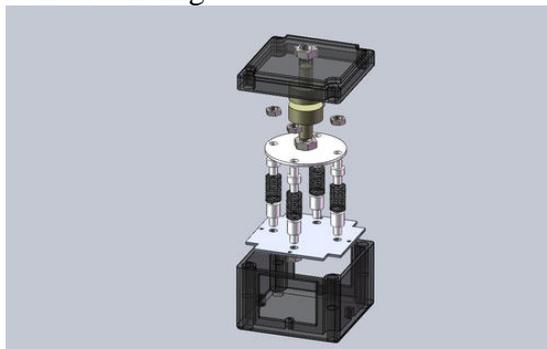


Figure 1 Three dimensional model established by mechanical design software

6.2 Informatization in Teaching

In the information-based teaching of mechanical courses, teachers combine multimedia with text, graphics and video. The emergence of multimedia technology enriches teaching means, provides convenience for teaching, and is conducive to students' better understanding of knowledge. In teaching, teachers list the key points and difficulties of this course through multimedia technology, so that students can understand the teaching focus. At the same time, teachers use multimedia technology to show students different angles and forms of mechanical parts to improve the visual effect.

6.3 Post teaching informatization

After teaching, feedback the teaching effect in time through the information network platform. Teachers establish an information network platform and upload relevant learning documents to the platform for students to consult. At the same time, students can also upload their works to the platform for students' reference. Promote the communication between teachers and students through the network platform, timely solve the problems of learning and teaching methods, and promote the common development of teachers and students.

7. Conclusion

The application of information-based teaching in the teaching of mechanical courses is a revolutionary breakthrough. With the continuous development of science and technology, teachers should constantly improve themselves and improve the teaching system, so as to impart the latest mechanical design concept to students and promote their development.

Acknowledgments

Effect of heat treatment process on intercrystalline corrosion and fatigue properties of 7A04 superhard aluminum alloy used in die (Project No. : A20-3-027)

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