

Teaching Reform of Digital Circuit Course in Application-oriented Universities

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Abstract: As an important part of higher education, application-oriented universities undertake the mission and responsibility of cultivating application-oriented talents for the country. Facing the continuous improvement of talents requirements in the current information society, it is necessary to constantly improve and update the curriculum standards. Based on the teaching practice, this paper discusses the case design and classroom teaching implementation methods according to the characteristics of digital circuit course and the existing problems in current teaching.

Keywords: Application-oriented universities, Digital Circuit, Reform.

1. Introduction

Digital Circuit is a professional basic course for electronic information science and technology, communication engineering and other engineering majors, which has strong theoretical application and engineering practice. There are many kinds of devices involved in the teaching process and the speed of knowledge updating is fast. The teaching focuses on the basic knowledge of digital circuit as the basis, the basic skills of experiment as the bridge, comprehensive innovation for the purpose of training students to analyze and solve problems.

With the rapid development of electronic technology, digital circuit plays an increasingly important role in scientific research and practical application. On the one hand, the knowledge updating cycle is greatly shortened, and the digital devices are constantly changing, which makes the design method of digital system have revolutionary changes, and the enterprises in the electronic industry are also constantly improving the comprehensive quality requirements of employees. On the other hand, the teaching system and content of "Digital Circuit" course continue to expand, and the contradiction between more teaching content and less teaching hours becomes increasingly prominent.

In the current teaching of digital circuit, the teaching mode of "device before circuit, separation before integration, analysis after design, theory after experiment" is often adopted, which lacks the overall cognition of digital circuit curriculum system. In addition, most of the experimental contents are basic and verification experiments, which are all the same and out of touch with the personalized needs of future posts. Students are only passive listeners and receivers, leading to poor learning initiative. Obviously, the current teaching methods have not adapted to the needs of students' logical thinking ability and innovation ability.

Application-oriented universities are faced with the problem of not only teaching students well, but also cultivating talents in line with the needs of the society. In order to solve this problem, we must abandon the previous teaching mode and seek a new teaching method.

2. Teaching Reform Method

At present, there are many teaching modes adopted by various colleges and universities. This paper believes that project-based teaching is the most suitable teaching method for digital circuits. Project teaching, refers to the teaching activity through a complete project, the key is to design and develop certain tasks, provide more possibilities to let the students more independent organization itself, and active in the teaching process, the teaching process will target for the development of self-organization and their own responsibility, so that the students can not only constructive into the course, And enable them to participate in previous lesson plans; Its purpose is to combine theory and practice teaching organically in classroom teaching, fully explore students' creative potential and improve students' comprehensive ability and quality to solve practical problems.

Every control teaching model is set up centering on the students' learning, the teacher in a secondary position, outstanding is the teaching model of students' learning activity and the content of the learning is not the traditional subject system, but based on activities, comprehensive knowledge and skills in all the subjects, according to the demand of teaching target classification form to cultivate practical ability as the goal of the new curriculum structure.

3. Detailed Methods

At present, it is still in an experimental stage to carry out project-based teaching among undergraduates, with many problems to be discussed and studied, and various methods to implement it. According to many years of digital circuit teaching experience, there are several key points to pay attention to in the concrete implementation process.

3.1. Innovate Teaching Methods

Teaching method is directly reflected in the teaching level, innovation of teaching method is conducive to the realization of efficient teaching. First of all, the school should make a sound teaching plan, according to the curriculum standards and content of the year as a unit. Secondly, improve the teaching measures, including teaching quality assessment, teachers' ability assessment, teaching supervision and

management system. At the same time, in view of the requirements of "digital circuit" curriculum reform, teachers are urged to learn and improve themselves, and teachers are encouraged to make bold innovations based on the teaching syllabus, including setting up multimedia teaching, strengthening experimental teaching and trying open teaching.

3.2. Change the Teaching Concept

In order to change the teaching concept, we should change the wrong idea of "attaching importance to theory and neglecting practice" into the correct one of "attaching importance to theory and practice", and guide teachers and students to regard experimental teaching not only as a supplementary means of theoretical teaching, but as an important means of cultivating talents. Try every means to introduce the latest technology and knowledge into experimental classes, encourage students to master advanced technology and carry out innovative research.

3.3. Optimize Teaching Resources

Teaching resources, including hardware facilities, software facilities and teachers, are the key to consolidate teaching quality. Talent is the key factor to implement the open experiment well, so we should make efforts to build a high level of experimental teaching faculty.

The system of laboratory daily management and teaching work is separated. The laboratory is open all day long and the teachers are on the move. In the selection of instructors, rigorous academic attitude, high sense of responsibility, excellent professional quality and rich practical experience should be taken as assessment requirements, and strict checks should be made to provide reliable teaching guarantee for open experiments.

The open experiment has certain flexibility and variability, the experiment form is diversified, the experiment content is changing constantly, and the students' situation is also different, so the teaching material construction is a difficult point. The compilation of open experiment textbooks should introduce new knowledge, new technology, new devices and new methods to shorten the distance with practical engineering application as much as possible, and at the same time improve the readability and inclusiveness of textbooks to adapt to students of different majors and levels. Corresponding open experimental teaching materials of digital circuit can be compiled for students of different majors, such as communication teaching materials, automatic control teaching materials, electronic information teaching materials, etc. Experimental content that can reflect the characteristics and requirements of the major can be widely collected in their respective experimental teaching materials. Such targeted experimental teaching materials will reflect their due value in actual teaching work.

3.4. Strengthen Class Discussion

Classroom teaching and student self-study must be combined with classroom discussion. Class discussions should be planned and prepared, with each student taking questions for self-study and selectively discussing the questions for self-study. Volunteer speakers are identified for each discussion topic. Class discussions can be led by students (e.g., subject representatives), teachers and students participate in the discussion, and the teacher concludes the discussion. Under the careful guidance of teachers, students express their own views, challenge others' ideas, think independently, and conduct intellectual competition and knowledge exploration freely among classmates, while teachers are not afraid of their own views being challenged. In class discussion, teachers and students discuss academic issues together, creating a new parallel academic atmosphere. Through classroom discussion, teachers can receive teaching feedback information in time, and adjust and supplement the requirements of teaching content and self-study in time.

4. Conclusion

Influenced by many objective factors, there are still many practical problems in the teaching reform of "digital circuit" course design in applied universities, which hinder the pace of reform. With the deepening of teaching reform, it is necessary to formulate perfect measures for curriculum reform and carry out curriculum teaching evaluation.

Project-based teaching method is beneficial to digital circuit teaching reform, but it will also face some problems, it can not completely replace other teaching methods. But the combination of project teaching method with other methods and means plays a positive role in improving the teaching effect.

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