

Suggestions on the Reform of Student Centered Experimental Teaching

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Abstract

With the development of science and technology, it is more and more important to cultivate high-quality talents. As an important base for training high-quality talents, colleges and universities need to innovate in many aspects to meet the needs of rapid social development. In order to train high-tech talents, higher education must be reformed constantly. Based on the experience and problems in guiding the experiment course of computer composition and structure for many years, this paper puts forward some suggestions on the reform of experiment teaching centering on students.

Keywords

Experimental teaching, student centered, reform of education and teaching.

1. Introduction

The reform of education and teaching in Colleges and universities is not a simple improvement of the original education mode, it requires to carry out systematic reform, and the reform of various disciplines is an important part of it. Now each university has increased the teaching proportion of experiment course and practice course, and the reform of experiment teaching is gradually concerned. In order to complete a high-quality experimental course, the teacher is required to prepare not only the content, but also the simulation experimental teaching examples, understand the knowledge structure and theoretical knowledge of students. In the process of experiment teaching, we should complete the teaching idea of taking students as the center.

2. The Suggestions

The following suggestions can be referred to.

2.1. Truly Embody the Experimental Teaching with Teachers as the Leading and Students as the Center

In the teaching of experiment and practice courses, teachers often operate and teach in the classroom, and students listen passively and do as they listen. In this way, students can not personally experience the process of knowledge exploration, nor can they deepen the deep thinking of basic problems in the process of theoretical and experimental teaching, that is, they do not really reflect the central position of students and the leading role of teachers. Therefore, in the process of experimental teaching, teachers should constantly change teaching methods, seek various ways, make full use of multimedia teaching methods such as demonstration, image, voice, video, etc., fully mobilize students' initiative in learning, let them really participate in, make the teaching atmosphere active, so as to truly improve the experimental teaching effect. Especially for the simulation experiment, the teacher is responsible for introducing and guiding the necessary methods and steps, taking the students as the center to complete the experiment,

on the premise of not damaging the experimental instruments and equipment, giving enough room for students to make mistakes, so that they are not afraid of making mistakes. In the process of error correction, finding and solving problems is a process of ability cultivation and improvement.

2.2. Reasonable Selection of Teaching Content and Establishment of Simulation Experiment Teaching Examples

There are two factors to be considered in the selection of teaching contents: one is to select those teaching contents that are easy to be simulated by simulation software (such as ISE and MATLAB), so that the teaching structure can be optimized, the phenomenon is obvious and intuitive, and the students are easy to accept, so as to enhance their confidence in the principle of experiment composition and the use of simulation software. The second is to select those relatively abstract and difficult to understand content for simulation teaching. In the process of experimental course teaching, it is very difficult for teachers to explain all the system structure, circuit concept and circuit law clearly in language and words, and it is also difficult for students to imagine their specific situation. However, using simulation software can dynamically demonstrate the working process and the law of time sequence change of circuit, which makes the teaching difficulties, break through and resolve, and is conducive to students' difficulties in experimental course teaching point understanding and mastery.

2.3. Pay Equal Attention to Unified Teaching Mode and Hierarchical Teaching

In experiment and practice teaching, teachers should not only pay attention to the application of experimental equipment and simulation software, but also fully consider students' knowledge level, thinking level and acceptance ability. The experimental teaching should be based on the actual situation of the students, carefully analyze the current learning situation, knowledge structure and skill level of the students, fully consider the individual differences and interests of each student, and maximize the enthusiasm of each student, so that each student can absorb fresh knowledge and further improve their academic level and practical ability, this is called "preparing students". Do a good job of "preparing students". For students of different levels, scientifically set different teaching objectives. When assigning experimental tasks, you can list different levels of easy, medium and difficult topics, corresponding to basic knowledge, important knowledge and advanced knowledge, so that students can complete easy and medium-sized topics on the basis of selective completion of difficult topics according to their own situation. In this way, we can test the extent of all students' mastering the necessary knowledge, and at the same time, let the students who have spare efforts to explore the potential and further study and sublimate their own knowledge. In this way, starting from the students and teaching according to their aptitude, we can effectively solve a series of problems encountered in experimental teaching.

2.4. Experimental Teaching and Theoretical Teaching Should Be Carried Out in A Cross Way to Promote Each Other

At present, in terms of teaching arrangement, many experimental courses are separate from theoretical courses. Some experimental courses are arranged after the relevant theoretical courses are taught, which often brings some problems, such as: large time span, serious disconnection between theory and practice, fuzzy theoretical knowledge memory used in experiments; some theoretical knowledge, concepts and principles are obscure and difficult to understand, which cannot be directly displayed to students, and the learning effect is discounted. If the experimental teaching and theoretical knowledge teaching are carried out alternately, the effect of mutual promotion can be achieved. There are two forms for the intersection of theory and practice courses: one is that the experiment course is integrated into the teaching of theory course, and the experiment is carried out while the theoretical

knowledge is taught, which helps the students to understand the abstract knowledge, improve the learning efficiency and enhance the students' interest in learning. Of course, this requires higher hardware measures in the classroom of the school. The other is the teaching of theoretical knowledge and the experiment course. The course is carried out alternately, one or two theoretical courses and one experimental course are interspersed, which can not only ensure the teaching effect, but also reduce the requirements for the hardware facilities of the classroom. In this way, the theoretical knowledge taught in the classroom can be directly displayed in the experiment, which is convenient for understanding and memory. In turn, the use of theoretical knowledge in the experiment can help students learn how to use theoretical knowledge to solve practical problems and increase their interest in learning.

2.5. Pay Attention to the Cultivation of Students' Comprehensive Ability in Experimental Teaching

Looking back on the experience of taking the experiment course of computer composition principle every year, I found that some students who are good at using their brains and thinking actively have relatively high comprehensive ability and quality. The experimental course can reflect a student's comprehensive ability, and it is also an important way to improve the students' comprehensive ability. These comprehensive abilities include: practical ability, teamwork ability, innovation ability, independent learning ability, etc. Group tasks should be arranged in the experimental course, so that several students can complete a group of experimental tasks together, which can not only exercise their own practical ability, but also involve the ability of team cooperation between students, which is not possible for individual experimental tasks. The task of experimental course should be enlightening and open, and fully explore students' innovation ability and independent learning ability, which cannot be completed by simple repeated experimental tasks. The high-quality experiment task is the guarantee to promote the students' comprehensive ability, and the guidance method of the instructor is also very important. It is the key to make the students devote themselves to the experiment course and fully mobilize their learning autonomy and enthusiasm.

3. Conclusion

In summary, the student-centered experimental teaching is a direction of the future experimental curriculum reform, and the high-quality experimental teaching should change from preparing the course to preparing the students.

References

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