

Reform and Practice of Electrical and Electronic Experiment Teaching

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Abstract: Electrical and electronic experiment teaching plays an important role in cultivating students in electrical majors. To this end, we must reform the traditional experimental teaching methods. Electric and electronic experiment teaching body Some measures to reform the teaching mode of soft experiment . real Practice results verify its effectiveness .

Keyword: Electrical and electronics; Teaching reform; Experimental teaching

Electrical and electronic technology (analog electronics and digital electronics) is the main technical basic course for all majors in electrical engineering. , It is a key course for systematic study of electrical courses for electrical students. . Can you master the circuit and electronic circuit in a solid way? Basic theory and analytical methods It will have a direct impact on students' follow-up courses and work in this field after their careers. ring. In the teaching of electrical and electronic technology courses, the teaching of electrical and electronic risks should play a major role , and the electrical and electronic experiments are "facing twenty one Century Electrician Electronics Series Course Teaching and course body In reform" Teaching reform task , also my school electrician and One of the teaching reform tasks of the teaching of electronic technology courses In a good experimental environment, students except Can get basic training and Cultivation of hands-on ability Should be trained in scientific research methods . Zhuang electrician experiment students should learn how to Interpersonal problems into a theoretical problem, and then how to apply theoretical knowledge to analyze independent circuits and electronic circuits, design meter Production , debugging, etc. In the course of the experiment, there will inevitably be many problems. , failed Students will face the reality Problematic use of theoretical knowledge for deep thinking , constantly correcting mistakes Until the final completion of the experimental task . Through such a real Teaching method , students not only consolidate theoretical knowledge And strengthen the ability to analyze and solve practical problems . to this end, It is necessary to reform the current traditional electrical and electronic experimental system and experimental teaching to achieve the above objectives. .

1. The problems existing in the traditional electrician and electronic experiment teaching

The teaching of electrical and electronic technology courses consists of two main forms: classroom teaching and experimental teaching and learning. The current teaching mode still requires students to set a fixed time, fixed point and definite content under the provisions of the teaching plan and syllabus. Learn in a fixed way. The following problems exist in such traditional experimental teaching:

1.1 Experimental teaching can only be completely dependent on classroom teaching

It requires students to complete the experiment of teacher's assigned content within a specified time, and most of the experiments must be carried out strictly according to the prescribed operation steps. And some experimental equipment, actual conditions, and even the connections between the instruments have been prepared in advance. When the students arrive at the lab on time, they can get the scheduled results as long as they do according to the rules. Because the contents of these experiments are designed by teachers, in each experiment,

The failures and problems that can occur have been eliminated in advance so that students can always complete the

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experiment within a specified time and get better results.

Obviously, this kind of experimental teaching is only a kind of operation training, and for many students, it has become a kind of "walk through".

The form of "field" can not improve students' ability to move and use theoretical knowledge to analyze and solve problems. For a long time, the phenomenon of "attaching importance to theory rather than experiment" has been widespread among students. The main reason is that the traditional experimental methods can not stimulate students' interest in learning. They thought there was little useful knowledge in the experiment. The experiment was just on the switch, looking at the data, and then writing an experiment report.

1.2 The traditional experimental course is carried out completely around the classroom theory and is in a passive position as a whole

The so-called experiment is only used to verify the theory, which loses the main function of experimental teaching. The task of experimental teaching is not only to verify theoretical knowledge, but also to train students to apply theoretical knowledge to analyze and solve practical problems. In experiments, its equipment, conditions, methods, procedures, and means should allow for a wide variety of choices, so that students' wisdom and talent can be fully exploited. In scientific research and innovation There is a process of "failure, success" in the process, so a good experiment should be able to provide students with the environment to find problems from failure and find the way to success, which will encourage students to think deeply. According to the theoretical knowledge, try to solve the problem, so as to provide conditions for the development of students' intelligence and creativity. Obviously, the traditional experimental teaching method can not meet this requirement.

With the expansion of the enrollment scale, the number of students is increasing day by day, but it is difficult to increase the number of experimental teachers in the laboratory, experimental equipment and experimental teachers, which brings great problems to the improvement of the quality of experimental teaching

At present, the teaching funds of the laboratory are insufficient, the types of experimental equipment are few, but the number of the same kind of equipment is more, and the number of the same kind of equipment is much idle, but it is not enough in class, and the utilization rate is very low. A good laboratory should have a wide range of equipment and an appropriate number of pieces, which is not only rich in content, but also easy to update.

Because of the above problems in the traditional experiments, it is difficult to adapt to the situation of electrical and electronic experimental teaching reform, so it is urgent to reform the experimental teaching system and methods to fully arouse the students' enthusiasm in the experiment. Cultivate students' ability to innovate.

2. A new system of electrician and electronic experiments with separate courses

With the development of science and technology, it is necessary to reform the experimental system of electrical and electronic technology courses in order to adapt to the training model and curriculum system of electric power majors in the 21st century. First of all, in order to improve the students' experimental skills, On the basis of preliminary understanding of electrical and electronic components and instruments, it is necessary to set up separate courses in the course of electrical and electronic technology, and to add teaching links of electrician and electronic practice, on the basis of preliminary understanding of electrical and electronic components and instruments, Electrical and electronic experiments are divided into three levels, five modules to be embodied. Orchid level is divided into basic type experiment, design type experiment, comprehensive type experiment. Diagram The main contents are as follows: 1. The teaching system structure of electrician and electronic experiment is given.

Basic compulsory experimental content completed in class, the implementation of one-person group, each experiment assessment score, part of the experimental teachers into the field assessment score.

The design experiment is required by the teacher, the laboratory provides certain reference material or lets the student find the data himself, the student designs the plan according to the request, carries on the experiment, makes the design result. This is a simulation process of scientific research, which makes students trained in the process of scien-

tific research work, so it has great attraction to students, and makes students initially try to carry out scientific research work independently. So that the enthusiasm of the students can be improved.

Comprehensive experiment is to take the conventional experiment in the traditional experiment teaching as the basic training content, and then gradually increase some design experiments and some new scientific research contents, thus paying attention to the basic training of students. It also strengthens the students' ability to analyze and resolve practical problems.

3. Open teaching method of electrician and electronic experiment

In the teaching of electrical and electronic experiments, the main purpose should always be to cultivate the students' scientific experimental ability, so that students can also learn the theoretical knowledge in the practical operation and in the observation, analysis and summary of the experimental process. Learn the ability to learn from practice. To achieve the above goal, the complete opening of electrical and electronic experiments is an effective way.

3.1 Students' experimental pinch can be fully mobilized

Open experiment can make students become the masters of experimental learning and change the current "passive" status. First, open time allows students to have relatively free learning time; second, open content, the laboratory should be equipped with more experimental items for students to choose. You can pick your own experiment.

3.2 Make full use of laboratory resources and equipment

Because of the openness of time and content, many students don't crowd into the lab at the same time, they don't do the same at the same time.

In this way, the difficulties of fewer experimental equipments and small laboratory space are overcome to a large extent, and some less advanced equipments are fully utilized.

3.3 Improving students' ability to think independently

In an open laboratory, students can design their own experimental scheme, design preparation conditions, and select parameters according to the object of the experiment. If the results of the experiment do not meet the requirements, or there are faults and errors, they will analyze and continue to improve until the task is completed. In this way, students' practical ability and the ability to analyze and solve practical problems can be cultivated and improved, and the dependence on teachers can be reduced.

3.4 Increased requirements for teachers

The teacher's role is not only in explaining and demonstrating, but also in guiding students to study independently, answering questions, correcting and evaluating errors. In this way, the teacher must be familiar with all the possible faults and problems in the experiment, so as to solve the students' doubts and correct them. The requirements for teachers to enhance business learning in order to meet the needs of open experimental teaching.

4. Scientific laboratory management system

Because of the reform of electrician and electronic experiment system, the opening of laboratory hours and the opening of contents, the difficulty of laboratory management has been greatly increased, and a higher requirement for laboratory management has been put forward. First of all, the laboratory must perfect the rules and regulations, establish the duties of the laboratory staff, establish the instrument equipment information card, and have a special person to manage it. Secondly, it is necessary to strengthen the role of teachers in experimental teaching. The participation of teachers in experimental work not only strengthens the strength of the laboratory, but also exercises the ability of combining theory with practice. Third, students' experimental results and The credit system can be combined in a flexible way, that is, the course of this semester, not necessarily must give the results of the experiment, can be placed in the next semester. By giving the credit to the experiment link, the student can repeat the experiment for many times, and finally the laboratory will assess the score, so that the classroom teaching and the experimental teaching are both inter-

related and independent of each other.

5. Concluding remarks

The reform of electrical and electronic experiment teaching system and experimental teaching method is an important part of the teaching reform of electrician and electronic technology course. To do this work well, the key is to give play to the subjective initiative of human being. In order to achieve satisfactory results, it is necessary to bring into play the positive aspects of teaching and learning, and according to the actual situation at present, according to the local conditions, to constantly explore and experiment. Foshan Institute of Science and Technology has carried out the above reform measures in the field of electrical and electronic inspection of Grade 19 (Grade 2001) Automation and Electronic Technology Specialty, and obtained satisfactory results.

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