

Research on Modular Teaching Mode of Electrical Engineering Course Guided by OBE

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Abstract

Electrical engineering course is a theoretical subject, the teaching mode of the course is always theoretical, but the understanding of equipment application knowledge is only theoretical, so it is difficult for students to understand and master. This teaching reform is a concrete research on the result-oriented and modularized teaching model.

Keywords

OBE; Electrical Engineering; Teaching Reform.

1. Introduction

Because some electrical equipment is larger, it is difficult to see in daily life, so even if the use of multimedia teaching, it can not deepen students' impression of the internal structure of electrical appliances. At the same time, due to the high cost of high-voltage electrical equipment and the high voltage level, at present, in the major universities and colleges in China, even the key universities and colleges, students are still unable to use the actual products for practical training or experimental operation, even for some electrical equipment manufacturers, also can not complete the test task of high-voltage electrical equipment, need to designated National Test Center for testing. At the same time, the traditional teaching mode not only makes the students unable to grasp its main content, but also makes the course content out of line with the production practice of the enterprise.

2. Details of the Reform

Based on the concept of OBE, this paper studies the teaching reform of the course of electrical engineering from three aspects: optimizing the teaching content, reforming the teaching method and establishing the evaluation system. Below from these three aspects to elaborate in detail.

2.1. Optimizing the Teaching Content

In order to improve the teaching quality and efficiency, optimizing the teaching content is one of the ways, which includes carefully selecting and organizing the teaching content, enhancing the intensity of the teaching content, carrying out the principle of teaching intuition and paying attention to application. The basic principle of electrical equipment is chosen as the main content, and each part is explained and accepted independently in the form of modularization. Each module has a small task. The teacher instructs the students to do the calculation and design, so that the students can fully understand the theoretical content of the module in the process of completing the task, and the function of the module in the whole design process of electrical equipment is known.

The electric apparatus module includes electric apparatus heating and electric power module, electric contact and arc theory module, electromagnetic mechanism theory module, low-voltage apparatus module and high-voltage apparatus module, take the enterprise actual demand as the goal, strengthens the design difficulty and the breadth, lets the student's ability

approach the enterprise demand; in the Teaching Process Joins the multimedia teaching and so on Auxiliary Way, enhances the intuitiveness; the modular study pays more attention to the application, take the actual enterprise case as the main line, divides the concrete case into several parts, thus carries on the modularization explanation and the study.

2.2. Reform of Teaching Methods

We should change the traditional teaching methods, pay attention to the use of advanced teaching methods and means, and actively and rationally use the modern education technology, methods and means such as modularization, network and multimedia. Increase the amount of information in classroom teaching, improve teaching efficiency, make classroom teaching visualization, concretization, more easily accepted by students. Using "Modular"teaching method, "Rain classroom"teaching method, "Group discussion"teaching method, "Case analysis"teaching method, self-study teaching method.

According to the technical parameters in the enterprise's current production task book, the calculation of each parameter of electrical equipment must first meet the requirements of the state standards and relevant technical standards and the requirements of users, at the same time, it should have better technical and economic index (the content of optimization design) , follow the principle of enterprise design, optimize the design of products.

First of all, the typical case is transformed into the learning case list of the course, and the course content system with the goal of practical application is constructed.

Then, take product design and development as the main line, design task book as the goal, including the practice knowledge and the theory knowledge and so on content, will study the task modularization, the curriculum content arrangement revolves the study task to complete but launches. All modules of the course include:

- (1) heating and electric power of electrical appliances
- (2) electric contact and arc theory
- (3) theory of electromagnetic mechanism
- (4) low voltage electrical appliances
- (5) high voltage electrical appliances

Based on the concept of OBE, this paper analyzes the existing problems in practice teaching, and studies the reform of practice teaching. At the same time, we should cultivate students'scientific and rigorous learning attitude, serious and serious scientific work style, self-regulated learning ability, team work ability and communication ability, etc. . We should also cultivate students'self-discipline and To achieve the professional goals and emotional goals of the training requirements, training the professional quality of students, professional development and application-oriented personnel training to make contributions. The Learning Process for each module includes the following:

1. Information Phase

Teachers issue learning tasks and put forward learning requirements; students consult according to teaching objectives and situation settings. For example, the objective parameters of the task can be analyzed through the knowledge taught by the teachers, through example demonstration, data search, network and other ways to obtain information, through understanding of different characteristics and design considerations, to provide methods for specific design.

2.decision stage

Students will discuss in small groups with the leader of the group, calculate the basic data or the applicable structural form according to the functional requirements, and finally select the appropriate parameters or structure by discussing various feasible schemes, data analysis and

calculation, the teacher is only responsible to propose the revision opinion to the student's plan, but does not interfere in the student's plan determination.

3. planning phase

According to the actual task demand, make the work plan, determine the work step, carry on the Personnel Division of Labor, arrange the work task.

4. implementation phase

The whole implementation phase is student-oriented and teacher-assisted. First, the teacher carries on the equipment function and the working principle explanation, and the scene design request electrical equipment, carries on the demonstration. Then students design, the teacher of the student's design process for individual or tour guidance, problems can be explained while operating. In the process of implementation, students make it in small groups, which cultivate students' Team Spirit, exercise students' ability of cooperation, and make students learn with each other, so as to improve students' comprehensive quality.

5. inspection phase

First, the students conduct self-examination, and attached to the signature of the self-examination personnel, and then by the instructor to check again, until qualified.

6. evaluation phase

Evaluation Stage data is the assessment stage of the whole work process and results, including the actual operation skills and theoretical knowledge of the assessment.

2.3. Establishment of an Evaluation System

The former single written examination mode was changed to theory written examination, oral examination, project design, work display, defense and other forms, to evaluate students' performance by comprehensive ability, and to realize the transformation from traditional examination-oriented education to liberal education. Assessment process to each module as an assessment point, each of the five modules of assessment scores in a certain proportion into the total score.

3. Reform Goals

This course will enrich the content, strengthen the conformity with the practical application, re-integrate the course content with the practical work case, and implement the "OBE-oriented modularization" teaching.

The course adopts "Three-stage Progressive Teaching" (product design, type selection, Verification and optimization) .

In the first stage, through the actual product design, students can experience the specific process of production design and the product development process, so that they can master the basic knowledge of electrical engineering in the process of completing the study task.

The second stage is on the basis of theoretical design, feel the actual design process, for specific equipment, one by one type selection, so that students personally involved in the work process, experience the selection process of enterprise products;

The third stage is the product validation and optimization stage, so that students have a better understanding of the process and focus of product optimization, deepen the knowledge of theoretical courses, and fully grasp the enterprise production and development process of electrical appliances, learn how to write project documents, write project closing reports, etc. .

4. Key Issues to be Addressed

The reform of the course content aims to solve the following problems: (1) the difficult problem of the course to understand and accept; (2) the practical problem of the applied technology; (3)

the problem of the course to improve the interest of the course to solve the problem of the course to improve the interest of the students; (4) to effectively improve the problem of some students' coping style of learning, which does not attach importance to their normal study and accumulation, but relies solely on the surprise study at the end of the term to pass the examination; (5) to exercise students' practical and practical abilities, it improves students' skill level, consolidates theoretical knowledge, and makes students gain a sense of achievement by completing project tasks.

5. Conclusion

This course focuses on the development of students' engineering thinking. In the past professional courses, most of the engineering problems were refined by the teachers, and then combined with theoretical knowledge, through this reform, we will train the students' ability to refine engineering problems, introduce abstract theory into the teaching in class, stimulate students' interest in learning, and gradually improve their own professional knowledge and practical ability.

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