

Research on Teaching Reform of “Electrical and Electronic Technology” Course Based on OBE Concept

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Abstract: The OBE teaching concept is “student-centered education”, and its core principles are “focus on output, expand opportunities, raise expectations, and reverse design”. Electrical and electronic technology is an important basic course for non-electrical engineering majors. Through analyzing the problems of traditional teaching, introducing the OBE teaching concept and proposing effective reform measures, the course teaching reform research is carried out.

Keywords: OBE teaching concept; Electrical and electronic technology; Teaching reform

1. Introduction

At present, most electrical and electronic technology courses are taught using traditional education concepts, but with the continuous development of the times, gradually exposed the problems of traditional education concepts in classroom teaching, such as: teaching knowledge without teaching methods, teaching knowledge without teaching people; classroom teaching is basically led by the test, the teacher’s teaching thinking is seriously confined in a narrow range. At the same time, the course knowledge volume is large, including a large number of formulas, “indoctrination” teaching method will lead to part of the students can not keep up with the progress of lectures, classroom teaching can not achieve the desired effect. Therefore, it is imperative to reform the teaching of electrical and electronic technology.

The OBE (Outcomes-Based Education) education concept requires a shift from the traditional “teacher-led” education model to a “student-led” education model, emphasizing student-centered and results-oriented education. The OBE teaching mode is introduced into the “Electrical and Electronic Technology” course, and the OBE teaching concept is introduced into the classroom teaching, emphasizing “student-centered” and giving full play to the students’ initiative. This article has practical significance for to improve the teaching quality of electrical and electronic technology courses and enhance the cultivation of innovative talents^[1].

2. Connotation of OBE education concept

The OBE teaching philosophy is “student-centered education”, which includes the following aspects: 1. Academic outcome orientation: OBE teaching philosophy believes that achieving concrete academic outcomes and developing students’ abilities is the ultimate goal of teaching, not just mastering textbook knowledge. 2. The OBE teaching philosophy emphasizes students’ active participation in the teaching process and gives students more autonomy in teaching design, classroom learning and homework assignment. 3. The OBE teaching philosophy believes that there are huge differences in talents among different students, and teaching should provide personalized guidance according to students’ different needs, abilities and actual situations. 5. Self-referential evaluation: The OBE teaching philosophy puts the evaluation criteria on students’ actual effects and results, and the evaluation methods should be closer to the evaluation methods of abilities and results with practical significance^[2].

The student-centered teaching and learning model of OBE focuses on developing students’ abilities, providing better learning outcomes, improving the quality of teaching and learning, and revealing the fundamental purpose of education.

3. The problems of teaching “Electrical and Electronic Technology” course

Electrical and electronic technology course is an important professional foundation course for non-electricity majors, and the current problems in teaching include the following aspects.

3.1 The content is too theoretical and lacks practical teaching

In practical application, students need to master not only theoretical knowledge, but also relevant skills and application techniques. Therefore, in the course teaching, more attention should be paid to practical teaching, so that students can really master the practical application skills^[3].

3.2 Backward teaching methods and means

The technology of electrical and electronic technology is constantly developing, and the course content and teaching methods needs to be constantly updated. However, some teachers may still stay in the traditional teaching methods and means, unable to adapt to the new technological environment and educational requirements, which will affect the learning effect of students.

3.3 Lack of interactivity and inspiration

Traditional electrical and electronic technology courses are taught in a single way, which can easily cause students' interest in learning to decrease and inefficiency. Therefore, we need to pay more attention to student participation and adopt heuristic teaching in the course design and teaching process, so that students can better master the subject knowledge and practical applications.

3.4 Insufficient consideration of students' personalities and interests

As students have different interests, learning abilities, and cognitive levels, we need to take into account their individuality in the course design and delivery, and give more attention to each student to help them give full play to their potential.

These problems need the attention of teachers and schools make concerted efforts to develop targeted teaching plans, encourage innovative teaching methods, and improve the quality and effectiveness of the teaching of electrical and electronic technology courses.

4. The teaching reform of “Electrical and Electronic Technology” based on OBE concept

4.1 Instructional design reform under OBE concept

We often say that good teaching design is half of the success of teaching, and the purpose of teaching design is to let students know what to learn, how to learn and how to learn. Traditional instructional design is passive learning, classroom teaching is centered on the teacher and the textbook, what students learn depends on the teacher. But the course design based on OBE concept is student active learning, student-centered, task-driven teaching, the teacher provides corresponding facilitation, overturning the traditional teaching concept centered on textbook and teacher, focusing on the output of learning outcomes, students can know what they should do and what they should learn. Take “Electrical and Electronic Technology” course as an example, it is a course with strong theoretical and practical aspects, and it is difficult to achieve the expected teaching effect by traditional “indoctrination” teaching, and it is easy to cause students' resentment. With the introduction of OBE education concept, teachers know clearly the final learning outcomes that students can achieve the learning process and after completion, and based on this, they can add corresponding teaching evaluation in every step of students' learning process, so as to ensure the expected teaching effect^[4].

4.2 Classroom reform under OBE concept

Take “Electrical and Electronic Technology” course DC motor as an example, set up a scene, a car can not start normally, after examination found that the car's starter motor is faulty and needs to be repaired, thus introducing the interest of students, and then the students will be grouped, each group is given two small DC motors, one good, one bad. The students were given two small DC motors, one good and one bad, which they could operate automatically after getting them, and find out the possible problems through observation and analysis, and finally verify their ideas through the teacher's explanation of their working principle and structure^[5].

In conclusion, through the guidance of OBE teaching concept, the teaching reform of electrical and electronic courses should pay more attention to practical teaching, personalized teaching and the ability improvement in order to achieve the ultimate goal of education - to help students develop.

4.3 Teaching evaluation reform under OBE concept

OBE teaching concept emphasizes students' learning outcomes and abilities rather than knowledge points and test scores traditionally. Therefore, in order to reform the current problems of the teaching evaluation system of electrical and electronic courses, this paper proposes to build a teaching quality evaluation system with learning objectives, learning process, learning results and learning feedback as the core. The focus of evaluation is shifted from teachers to students, and teaching quality is judged by students' learning outcomes, specifically by learning attitude and learning ability as the main judgment indexes, and the

evaluation results are reflected in teaching design and classroom teaching, thus forming a closed loop and a continuous assessment and evaluation^[6].

At the same time, teaching evaluation pays more attention to students' participation and reflection, encouraging students to participate in the course design and teaching process so that they can reflect and summarize their experiences and continuously improve their learning methods and abilities.

In addition, teaching evaluation needs to be more diversified and comprehensive, and various forms of evaluation methods are encouraged, such as verbal feedback, the work presentation, self-evaluation, and peer evaluation. These methods can provide a better understanding of students' real situation, as well as help students to better develop their own abilities and achievements^[7].

In conclusion, teaching evaluation under the OBE teaching philosophy needs to be student-centered, competency- and outcome-oriented, diverse and comprehensive, and designed to help students achieve personal development and success.

5. Conclusion

Electrical and electronic technology is a theoretical and practical course. This paper analyzes the problems of teaching electrical and electronic technology courses, introduces the OBE education concept, and puts forward corresponding countermeasures and suggestions from three aspects: teaching design reform, classroom teaching reform and teaching evaluation reform, to improve teaching quality and achieve better teaching results.

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