

Exploration and Reform of Helicopter Power Supply System Curriculum Based on Chinese OBE Teaching Mode

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Abstract. The OBE concept is result oriented education, focusing on whether students have obtained phased research results and enhancing their sense of learning acquisition. Once proposed, it has been deeply recognized by engineering researchers and widely studied. This teaching model is consistent with the ancient teaching philosophy of "unity of knowledge and action, and application of learning" in China. Exploring the design practice of professional courses based on the Chinese style OBE teaching mode, and exploring the helicopter power supply system course from the teaching mode, practical links, and evaluation assessment, in order to improve students' learning effectiveness and lay a solid foundation for future job qualifications.

1 introduction

With the continuous development of science and technology in our country, more attention is gradually being devoted to the reform and development of higher education in our country. When accepting teaching models and methods spread by the West, there may be a problem of "imitating others in the east". Therefore, we are looking for consistency between the OBE teaching model and traditional education concepts in China, and integrating it into the design of engineering professional courses, Promoting the effectiveness of course teaching and improving students' job skills has become an important research direction^[1]. The helicopter power supply system course, as a fundamental course for electrical related majors in aviation engineering, plays a connecting role. On the one hand, this course inherits the basic knowledge of the major, such as circuits, relay protection, etc; On the other hand, this course also lays the foundation for the future development of electrical engineering and its automation majors, such as comprehensive automation of power systems and smart grids. The traditional education model has become increasingly outdated in the flood of social development and cannot meet the needs of improving students' innovative and practical abilities. Therefore, it is particularly important to effectively improve teaching quality and adapt to the cultivation of contemporary comprehensive talents.

2 Analysis of the consistency between OBE teaching method and traditional Chinese education

OBE (Output Based Education), also known as result oriented education or goal oriented education, is an American scholar W G. Spady proposed the educational concept in his book "Results-based Teaching Management: From a Sociological Perspective" to improve the traditional "knowledge-based" education model, and defined it as "Results-based education means clearly focusing on and organizing everything in the education system, always teaching around tasks that all students can successfully complete at the end of their learning experience" ^[2]. It is an educational concept that is guided by expected outcome goals and reconstructs, implements, and evaluates teaching content. This indicates that teachers need to clarify what is important to students before organizing, implementing, and evaluating teaching, and ensure that this learning can ultimately be realized. This is to reverse design the teaching process based on learning outcomes^[3]. Although foreign scholars have different definitions of the OBE concept, each approach leads to the same goal. Its core is to emphasize that teaching should be reasonably designed around expected learning outcomes and optimize teaching activities, ensuring that students meet graduation requirements and master the comprehensive skills that should be possessed during employment. The main idea of the OBE concept is a method of planning and evaluating teaching. Managers, teachers, and students need to focus their attention and efforts on the expected educational outcomes, and reflect

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learning outcomes through individual student learning outcomes.

The concept of "student-centered" in OBE teaching is similar to the ancient Chinese concept of "teaching students according to their aptitude"^[4]. However, in ancient times, "talents" were usually individuals, while in modern times, "talents" are a certain number of groups. The consistency between the two teaching modes can be found at the source of Chinese education and Western education. The 'learning' of students is the core embodiment of 'student-centered', and the 'what students have learned' is the key ^[5]. The teacher's "teaching" is guidance, and the teacher's "teaching" is only a means. It can be seen that teachers have teaching methods and students have learning goals, which is very important. Indeed, OBE has standardized teaching design, and even "teaching methods" have standards, just like producing standard parts in the industrial era, with strong universality and international integration. Under OBE, students become tools and are also a reference teaching method. In the current environment where China is a major manufacturing country, the OBE teaching model conforms to the trend of development and is suitable for advocacy. Although Confucius said in the Analects of Confucius' "For Politics" that "a gentleman does not have weapons", it is not uncommon for them to become great weapons without weapons. In view of this, the author believes that the process of implementing OBE should be sinicized, integrated with traditional Chinese teaching concepts, reflect the foundation of Chinese traditional culture, demonstrate the confidence of excellent Chinese culture, and also be a better form of curriculum ideology.

3 The inherent requirements of professional courses under the guidance of results

The research report of the US Labor Unemployment Skills Commission emphasizes three basic skills (subject skills, thinking skills, and personal traits) as well as five basic abilities (ability to master resources, organize, plan, and integrate, interpersonal skills, ability to work with others, ability to obtain and use information, ability to understand complex relationships through system concepts, and ability to use different technologies to assist in work) The importance of is divided into technical knowledge, human-machine relationship knowledge, and problem-solving knowledge^[6]. The central concept of competency based curriculum design is twofold. Firstly, the ability to demonstrate is the true ability, and having knowledge and attitude without performance results is not valuable. Secondly, proficient learning is feasible, as most people can comprehend most things with good teaching and sufficient time.

Based on the above analysis, it can be seen that the goal oriented curriculum features specific and clear learning objectives, gradual learning process, emphasis on feedback, and a combination of practical work and paper and pencil tests to achieve proficiency standards. From the perspective of curriculum design, specific

analysis can be conducted from three dimensions: knowledge, ability, and quality.

The dimension of knowledge is mainly carried out according to the inherent logic of knowledge, following the rules of knowledge, comprehension, application, analysis, synthesis, and evaluation, from low to high, from basic to applied, from macro to micro, and from abstract to concrete.

Ability dimension, using tasks as a carrier, involves learning about work processes, work methods, techniques, tools, and related interactive patterns in work scenarios during the completion of tasks. The quality dimension defines the scope and boundaries of quality from low difficulty to high difficulty, and quality cultivation is carried out based on the order of cognitive, action, method, and emotional enhancement.

4 Problems in Teaching the Course of Helicopter Power Supply System

The teaching of the power supply course not only covers the teaching of basic theoretical knowledge, but also includes the requirements for operational practice. In this course, students are required to master the relevant characteristics of the course, and also have the ability to solve professional problems in practical work, and cultivate their innovation ability. Through the teaching investigation and research of the electrical equipment and factory power supply course in our school, The following issues were found in this course:

4.1 Traditional teaching mode, lacking in excellence

For any course, it is necessary to clarify the teaching positioning, including the requirements and intensity of the city of course requirements, the nature and form of course offerings, the practical aspects of the course, the corresponding class hours and status of the course. After clarifying the course positioning, it is necessary to further confirm the course teaching objectives. The course teaching objectives specify the learning outcomes that students should achieve through course learning, and are also the standards for the quality and output of course teaching under the OBE concept.

At present, the power supply curriculum still follows the traditional teaching mode and still does not break away from the traditional teaching relationship - teachers are speaking, students are listening ^[7]. The teacher directly imparts the taught content to students, and transmits knowledge through a combination of electronic courseware and blackboard writing, which has the disadvantage of lacking updated and convenient teaching methods. There is a lack of interaction between students and teachers, and in most scenarios, there is still a sense of distance between teachers and students, which cannot make students personally experience the warmth and fulfillment brought by learning professional knowledge.

4.2 The practical process is single and detached from reality

Focusing on practical teaching and combining with confirmatory experiments, students can easily operate and simulate actual basic electrical models in the school laboratory according to the experimental instructions. However, under this hands-on operation, the experimental course appears too monotonous: in most cases, students only need to follow the diagram to complete the validation of a course experiment to obtain experimental results, Although the establishment of experimental courses can enhance students' impression and understanding of basic knowledge, due to the limitations of experimental supporting materials, it can also to some extent constrain students' open and innovative thinking and thirst for knowledge, which cannot effectively improve their ability to research and solve professional related problems.

4.3 The assessment is determined by one stroke, with a focus on generalizing the overall situation

The assessment form is still mainly based on traditional written exams, and teachers evaluate students based on the degree to which the content filled in by students' memory of knowledge points fits the standard answers. Although this traditional written exam assessment form can help students strengthen their understanding and impression of professional knowledge structure to a certain extent, But it is impossible to test whether students understand the professional knowledge they have learned and their ability to solve practical professional problems^[8].

5 Design of Helicopter Power Supply Course Based on Chinese OBE Teaching Mode

In response to the many problems existing in the course, we will explore and implement the teaching process of this course based on the concept of learning output in combination with the Chinese OBE teaching model. The specific reform measures are shown in the following figure1.

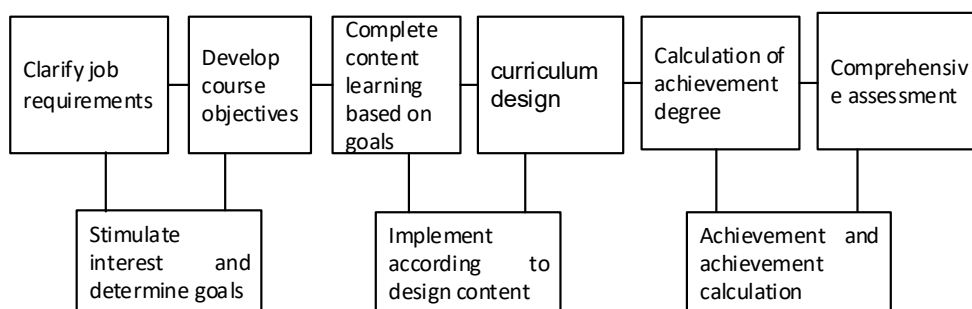


Fig.1. Design of Chinese OBE teaching mode

5.1 Modular processing of teaching content

Teachers should clearly establish student-centered teaching objectives and concretize them. Clarify the specific connection between building teaching objectives and students' career paths after graduation. Teachers teach courses with established teaching objectives, and divide the system into general knowledge and typical machine models for teaching. When teaching the general knowledge of the system, it is divided according to the common types of DC and AC in daily life, and the distribution and control protection are separately presented as independent modules for explanation. Then, typical model systems are used to integrate and analyze the modules, allowing students to have a clearer understanding of the connections between the modules and establish a system concept. At the same time, teachers should step into the students' classroom, constantly listen to their words, observe their expressions, actively interact with them, and thus more clearly understand their thoughts and thoughts. Introducing real-time professional information online courses from both domestic and foreign sources into the classroom through internet MOOCO resources; Add more extracurricular

knowledge such as new electrical research and advanced professional technology. This can stimulate students' interest and enthusiasm in participating in learning, while also stimulating their professional creativity and keeping the teaching process closely aligned with the teaching objectives.

5.2 Innovative experimental practice

Encourage students not to be confined to the school laboratory. They can focus on the power system during internships or observe the power system of independent devices around them during holidays. And in the practical stage, strive for more mobile phone skills for students, operate and maintain the actual installation. Can provide guidance lectures for electrical engineering personnel for students; You can also collaborate with advanced electrical industry manufacturers and visit and learn from them. In experimental practice, we always adhere to teaching objectives and aim to cultivate comprehensive talents, allowing students to independently choose research groups, encouraging students to communicate with each other, cooperate and cooperate to explore and complete experimental practice. This enables students to significantly improve their

communication and problem-solving abilities while possessing a solid foundation of professional knowledge. In addition, the traditional model of teachers explaining and operating experiments has evolved into an interactive model of dividing students into several learning groups, establishing group leaders, and then assigning experimental tasks to each member. In this way, each student can do it themselves, master professional skills, and also cultivate good social skills.

5.3 Rich and diverse evaluation methods

Breaking away from relying solely on traditional paper-based assessment and drawing on advanced educational concepts, the assessment method is divided into regular topics and the majority of the final exam volume, and then the final exam is divided into two parts: general basic knowledge and machine model knowledge. Encourage students to simulate their actual work in practical courses, and at the same time, combine the teaching objectives to provide students with several topics. Ultimately, the completion level of the research topic will be considered as a part of the assessment score. This evaluation method to some extent solves the problem of students only considering written knowledge, and helps students establish a professional knowledge system from theory to practice, from self-learning to mutual learning, And better guide students to become the required comprehensive professional talents.

6 Conclusion

Through continuous exploration by teachers and students in the Chinese OBE teaching model, in addition to teaching reforms, students are also continuously encouraged to participate in various professional subject competitions; Encourage students to publish academic papers in school and use these insights.

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