

Exploration of Teaching Reform of "High Voltage Technology" Course in Applied Undergraduate Colleges and Universities

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Abstract: "High voltage technology" course currently exists in the course teaching and vocational needs to be improved, a single teaching method can not attract the attention of students and other issues. In order to cultivate talents with undergraduate standards and vocational skills, a two-pronged reform of teaching content and teaching methods is proposed to achieve the purpose of cultivating qualified talents with both high theoretical level and practical ability in applied colleges and universities.

Keywords: high voltage technology, teaching reform, applied universities, blended learning

Introduction

The idea of the construction of the new engineering discipline clearly points out that it is necessary to shift from discipline-oriented to industry-demand oriented, and as an applied undergraduate college to achieve industry-demand oriented, we should take the reform of undergraduate curriculum as the starting point, introduce the new knowledge and methods of the industry into the teaching content, and at the same time, enrich the teaching methods and means, and innovate the teaching mode, so as to ensure that the students can obtain the new knowledge and methods with the greatest effectiveness, and to realize the optimal effect of the teaching oriented to the industry-demand.

"High voltage technology" is a compulsory course for electrical engineering and automation majors, which studies the dielectric insulation properties, electrical strength, high voltage test and over voltage protection and insulation problems. With the continuous improvement of voltage level, high voltage technology has become an important technology in the research and development, operation, maintenance and transformation of electrical equipment; at the same time, to engage in the work of electric power are required to use high voltage course related content^[1], so "high voltage technology" is a theoretical and practical professional courses.

1. Reflections on the content and methodology of teaching the course "High Voltage Technology"

At present, there are the following problems in the teaching of "high voltage technology" course:

1.1 The match between curriculum teaching and vocational needs needs to be improved

"High voltage technology" course has a wide range of knowledge, multidisciplinary cross-application characteristics, and at the same time has a strong theoretical characteristics. Teachers in the course teaching focus on professional knowledge and teaching, emphasizing the correctness and rigour of theoretical knowledge, ignoring the abstract nature of

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the interdisciplinary courses, the lack of rich engineering cases to assist students to deeply understand the knowledge taught, resulting in a lack of interest in learning "high voltage technology" course. At the same time too much attention to "high voltage technology" course knowledge of the comprehensiveness and completeness of the "high voltage technology" course in the practical application of high-frequency, hot content and course-related cutting-edge content has not been carried out in-depth research and discussion, resulting in the knowledge learned by the students and practice Contact is not close, the "high voltage technology" course teaching and social vocational demand is not quite consistent problem.

1.2 Single teaching method cannot attract students' attention

"High voltage technology" course content is rich, in the only hours to "high voltage technology" course content and ensure that students can use the classroom time to fully grasp the course content, relying on a single offline lectures is far from achieving the goal. At the same time, "high voltage technology" is a theory and practice is very close to the course, but in the current teaching process, due to the course related to the high test voltage level, safety hazards, expensive test equipment, etc., many colleges and universities have not opened the test course, and lead the students to go to the substation, the high-voltage equipment manufacturing enterprises to visit the opportunities There are only a few opportunities for students to visit substations and high-voltage equipment manufacturers. Under these conditions, students lack of experimental practice opportunities, unable to apply theoretical knowledge to experimental practice, weakening the understanding of theoretical knowledge, lack of "engineering practice and application of the problem ability" direct position^[2].

2. Reform of the teaching content of the course "High Voltage Technology".

2.1 Teaching content design and implementation of courses oriented to occupational needs

Based on the vocational demand of "high voltage technology" course, the teaching content is re-selected and the syllabus is updated. Focusing on the specific practical application of the content of the course "High Voltage Technology", focusing the teaching content on the cultivation of students' practical ability, firmly grasping the high-frequency application of theoretical knowledge and experimental content after employment, updating the teaching content by carefully selecting the content of the lectures, reasonably optimizing the mode of lectures and the sequence of lectures, and sorting out and optimizing the teaching content. The syllabus of "High Voltage Technology" is updated by carefully selecting lectures, rationally optimizing the lectures and time sequence, and combing and optimizing the teaching contents. In the classroom teaching to improve students' practical ability for the purpose of integrating into the actual engineering or laboratory application cases, the obscure abstract theoretical knowledge combined with specific engineering cases, simplify the derivation of the relevant formulae, for the application of the more frequent theoretical knowledge focus on, repeat the explanation to enhance students' theoretical knowledge level.

2.2 Development of experimental teaching aid for the course

Due to the high voltage level of the test equipment related to the course "high voltage technology", safety hazards, expensive test equipment and other reasons, many applied undergraduate colleges and universities have not opened the test course.^[3] To address this issue, contact the relevant enterprises to shoot "high voltage technology" test video for video teaching, on the one hand, play a test video teaching in the teaching process of guiding, assisting, on the other hand, by watching the enterprise workers on-site test, so that students can understand in advance of employment commonly used in some of the test methods, equipment operation, to strengthen the "high voltage technology" course, "high voltage technology" is the most common test equipment. Cultivation of practical ability in the application of "high voltage technology" course.

2.3 Construction and application of test question bank based on vocational needs

Taking the syllabus and content of the campus recruitment examination of the State Grid, which is the main employment unit of graduates, as the guidance, combining with the textbook of "High Voltage Technology", the test bank

of "High Voltage Technology" is compiled which is highly suited to the content of the campus recruitment examination.^[4] Combined with the course test bank to strengthen the key knowledge of the classroom test, test question bank can instantly check the mastery of the key knowledge of the students, regularly carry out the unit learning effect test, the final paper using the question bank random combination of the way the paper. The process control + final examination is used to strengthen the learning effect throughout the semester, improve students' theoretical knowledge, help students pass the vocational recruitment examination, and lay a good foundation for the practical application of "High Voltage Technology".

3. Reform of the teaching methods of the course "High Voltage Technology"

3.1 Online and offline hybrid teaching

In the prerequisite courses have been involved in the content and some relatively simple knowledge points, in advance of the relevant learning materials uploaded to the online platform and regularly released online learning tasks, through online learning to stimulate students to take the initiative to learn the enthusiasm, and for the offline teaching of difficult points to provide more time.^[5] Combined with the completion of online learning and students online learning in the difficult part of the offline content of real-time adjustments to the course, the focus of the course, the difficulty of the dissection and offline lectures during the launch of a detailed explanation. In order to enhance the participation of students in the offline course, the use of online platforms to summarize the issues that have been taught and the accompanying test, to help teachers grasp the students' understanding of the important and difficult knowledge in real time.

3.2 Teacher-student seminar teaching

In order to enhance the link between "high voltage technology" and engineering practice, so that students can meet the needs of power system technology in time after employment, set up a seminar teaching link in teaching, students take the initiative to learn "high voltage technology" cutting-edge, hot issues, and engineering for the actual "high voltage technology".^[6] The actual application of "high voltage technology" to report on the status of the discussion. Through the seminar teaching, enrich the "high voltage course" related knowledge, expand students' learning autonomy, the implementation of student-centred inspirational, cooperative, participatory teaching, on the one hand, students can fully accept the "high voltage technology" through independent learning, on the other hand, through the seminar teaching, students can fully accept the "high voltage technology" knowledge. On the one hand, students can fully accept the knowledge of "High Voltage Technology" through independent learning, and on the other hand, the innovative ability of students can be improved through seminar teaching, which is in line with the cultivation requirements of new engineering.

3.3 Reform of course assessment

The total assessment score of the course is changed from 20% for the process and 80% for the final to 40% for the process and 60% for the final. The reformed course assessment methods are classroom quizzes, homework, unit tests, online learning, seminars, final assessment, so that the "high voltage technology" course learning no longer becomes a "temporary" at the end of the course, but a continuous and stable long-term learning and exploration process.

4. Conclusion

The teaching reform of "High Voltage Technology" course for applied undergraduate colleges and universities, through the teaching content design and implementation of the course oriented to vocational needs, the development of experimental video teaching, the construction of the course test bank to meet the vocational needs; the use of on-line and off-line, seminar teaching, and other teaching methods, and reform of the assessment method to mobilize students' learning enthusiasm, enhance student participation, ensure learning sustainability, cultivate qualified personnel with high theoretical level and practical ability, and lay the foundation for future employment in related work. Students' learning enthusiasm, enhance students' participation, ensure the durability of learning, cultivate qualified talents with high theoretical level and practical ability, and lay a solid foundation for future related work.

Conflicts of interest

The author declares no conflicts of interest regarding the publication of this paper.

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