



Teaching Reform and Research of Electrical Engineering and Electronics in the Context of New Engineering Career Swallow

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Abstract

New engineering is a strategic action for the reform of higher education in China, and it is the upgrading and development of traditional engineering majors. In the teaching process of the course, artificial intelligence and Internet of Things and other technologies are combined with interdisciplinary integration, so that students have a wider range of knowledge and more comprehensive abilities, adjust the training objectives to meet the needs of the industry in the new era, continuously improve the training objective system, deepen Industry-University-Research cooperation, improve practical teaching, adopt project system and group learning, provide more practical teaching content by online experimental simulation and electronic materials, and cultivate new engineering talents with higher comprehensive quality in the new era to adapt to the development of society.

Subject Areas

Educational Reform

Keywords

New Engineering, Electrical Engineering and Electronics, Teaching Reform, Discipline Integration

1. Introduction

The emergence of new engineering stems from the needs and development trends of the times. In order to support the service innovation-driven development and the national strategy, China has put forward a new engineering construction plan, aiming to cultivate diversified and innovative outstanding engineering and

scientific and technological talents. This initiative provides a new perspective and impetus for the reform and development of higher engineering education in China. New engineering is an initiative to cope with a new round of scientific and technological revolution and industrial transformation, and it is also a new direction for the reform of engineering education in the new era, and interdisciplinary integration is one of the characteristics of new engineering [1]. It is no longer limited to a specific subject area, but integrates and cross-applies the knowledge and technology of multiple disciplines. This interdisciplinary integration enables new engineering students to have a broader knowledge background and more comprehensive abilities. Another characteristic is the focus on the cultivation of innovation ability. The new engineering program emphasizes the cultivation of students' innovative thinking and practical ability, and encourages them to be able to put forward new ideas and methods when solving practical problems and challenges. Through innovative projects and hands-on activities, students are able to exercise their ability to innovate and contribute to the development of society and industry. The training goal of the new engineering department is to cultivate engineering talents with comprehensive quality. In addition to professional knowledge and technical skills, the new engineering program also focuses on cultivating students' teamwork skills, communication skills, and leadership skills. This comprehensive quality enables NE graduates to cope with challenges in a complex and dynamic real-world environment and have the potential to become future leaders [2] [3].

2. The Teaching Status of the Course “Electrical Engineering and Electronics”

Electronics courses play an important role in modern society because they provide students with the fundamentals to understand and apply electronic devices. However, there are some deficiencies in the current teaching situation. First of all, the teaching content of the electrotechnical electronics course is too theoretical. Although theoretical knowledge is essential for students to understand the basic principles of electronics, in practical applications, students need to master practical operation and problem-solving skills. Therefore, the teaching content should be more practical and applied, so that students can apply what they have learned to practical projects. Secondly, the teaching method of the electrotechnical and electronic course is more traditional. Traditional teaching methods mainly rely on the teacher's explanation and the student's passive acceptance. However, in the field of electronics, students need to deepen their understanding of knowledge through their own practice and experiments. Therefore, teaching methods should pay more attention to students' participation and interaction, such as through laboratory classes and group discussions, etc., to stimulate students' interest and motivation in learning. In addition, the teaching resources of the electrical and electronic courses are insufficient. The field of electrotechnology and electronics is developing rapidly, with new technologies and devices constantly

emerging. However, some schools lack the ability and conditions to update teaching resources, resulting in students not being able to keep abreast of the latest developments. Therefore, schools should strengthen cooperation with the industry and actively introduce the latest teaching equipment and resources to provide students with the best learning environment. In summary, there are some deficiencies in the teaching status of electrical and electronic courses. In order to improve the quality of teaching, we should pay attention to practical and applied teaching content, adopt more interactive and participatory teaching methods, and strengthen the updating and introduction of teaching resources. Only in this way can we better cultivate talents who can adapt to the development of electrical and electronic engineering [4].

3. The Significance of the Teaching Reform of the Course “Electrical Engineering and Electronics”

With the continuous progress of science and technology and the wide popularization of applications, electrical and electronic technology has become an indispensable part of modern society. Electronics is developing at a very fast pace, and new technologies and applications are constantly emerging. Traditional teaching methods are no longer able to meet the needs of students. By reforming the way we teach, we can better develop students’ ability to innovate and solve problems. By introducing more hands-on and project-based practices, students can better understand and apply what they have learned. The teaching reform of electrical and electronic engineering can improve the employability of students. The demand for electrical and electronic talents in modern society is very high. Through teaching reform, we can better cultivate students’ practical skills and teamwork spirit, making it easier for them to adapt to the work environment. In this way, students will be more competitive in the job market.

In addition, the teaching reform of electrical engineering and electronics can also promote scientific and technological innovation and social progress. Electronics is one of the important drivers of social development. By reforming teaching methods, we can cultivate more electrical and electronic talents and promote scientific and technological innovation and social progress. This will bring more development opportunities and economic growth to the society. Therefore, the pedagogical reform of the electrotechnical and electronic curriculum is very important for the development of students and society. By reforming teaching methods, we can better cultivate students’ innovation ability, improve their employability competitiveness, and promote scientific and technological innovation and social progress. Therefore, we should actively promote the teaching reform of electrical and electronic courses.

4. The Design and Implementation of the Education Reform of “Electrical Engineering and Electronics”

The pedagogical reform of the electrotechnical and electronic curriculum is es-

essential to cultivate students' innovation ability and practical ability. In order to adapt to the rapidly evolving field of science and technology and to develop innovative students, we need to take a series of steps and methods.

First, we need to redesign the curriculum and teaching methods. Traditional electronics courses tend to focus on the imparting of theoretical knowledge and ignore the importance of practical operation. Therefore, we can introduce more practical cases and projects for students to learn and apply what they have learned in real hands. At the same time, we can also introduce new teaching methods, such as group cooperative learning and problem-based learning, to stimulate students' interest and initiative in learning. The pedagogical reform of the electrotechnical and electronic courses is expected to increase students' interest and participation in learning. By introducing more innovative and hands-on teaching methods, such as experimental practice and project-based learning, students will be able to participate more actively in the curriculum. This positive attitude towards learning will help improve students' learning outcomes and academic performance.

Second, we need to provide better teaching and learning resources and facilities. Electrical engineering and electronics is a very practical subject, and students need to have enough experimental equipment and materials to carry out practical operations. Therefore, the university should increase investment in laboratories and provide advanced experimental equipment and resources to meet the needs of modern electrical and electronic engineering. At the same time, we can also use the Internet and multimedia technology to provide students with richer learning resources, such as online experiment simulations and e-books. We can introduce more hands-on teaching content. Students truly understand the principles and applications through hands-on practice. Therefore, we can add lab courses and project practice to allow students to design, build and debug electronic products by themselves. This not only increases students' interest, but also improves their hands-on and problem-solving skills [5].

In addition, we should strengthen teacher training and professional development. Teachers are the key factor in teaching reform and play a leading role in the teaching reform of electrical and electronic courses. They need to have solid professional knowledge and teaching skills and be able to accurately grasp the objectives and requirements of the course. Teachers should constantly update their knowledge and keep abreast of the latest technological developments and integrate them into the curriculum, so schools should organize relevant training courses to improve teachers' teaching skills. At the same time, schools can also encourage teachers to participate in subject research and teaching innovation to improve their professional development. Teachers should also pay attention to cultivating students' innovation ability and practical ability, and stimulate students' interest and motivation in learning through project practice. Teachers also need to update their teaching content and teaching methods. Knowledge in the field of electromechanics is updated quickly, and teachers need to keep abreast of the latest technologies and trends and incorporate them into their curriculum.

In addition, teachers should adopt a variety of teaching methods, such as explanations, experiments, case studies, etc., to stimulate students' interest in learning and cultivate their innovative thinking skills [6].

Finally, we can also work with industry companies to carry out practical teaching activities. Electronics is a fast-growing field, and working with industry companies allows students to better understand the needs and trends of the industry. By working with businesses, students can participate in real-world engineering projects, improving their practical skills and innovation.

In conclusion, a series of steps and methods are required to carry out the teaching reform of the electrotechnical and electronic science curriculum. The reform of the electrical and electronic curriculum should focus on practical teaching, personalized teaching and cooperation with industry. By redesigning course content and teaching methods, providing better teaching resources and facilities, enhancing teacher training and professional development, and collaborating with industry enterprises, we can better cultivate students' innovative and practical abilities. This will lay a solid foundation for their future development and cultivate more innovative and practical talents in electrical and electronic engineering and electronics [7].

5. Summary

In the process of teaching reform of electrical and electronic courses, teachers and students need to work together to do a good job in the following aspects. First, teachers and students work closely together to develop the objectives of the course and the teaching plan. Teachers should design teaching content and methods according to the actual situation and needs of students. Secondly, teachers and students actively explore and apply new teaching methods and technologies, such as online teaching platforms and virtual laboratories. These new teaching methods and technologies can help teachers' better guide students to learn and improve student learning. Finally, regularly evaluate and reflect on the teaching effect, and adjust the teaching strategies and methods in a timely manner.

The reform of the electrical and electronic curriculum is to adapt to the changing technological environment and to develop students' practical skills. In modern society, the development of electrical and electronic science is changing with each passing day, and traditional teaching methods can no longer meet the needs of students. Therefore, we need to carry out a series of educational reforms to improve the quality of teaching and cultivate students' innovation ability.

The teaching reform of the electrical and electronic course will bring about the improvement of students' interest in learning, the cultivation of practical application ability, and the improvement of innovative thinking and problem-solving ability. This will provide a better educational environment and opportunities for cultivating electrical and electronic talents who meet the needs of social development. Finally, schools and teachers should focus on assessment and feedback. Through regular assessment and feedback, you can understand the student's learn-

ing situation and teaching effectiveness, and make adjustments and improvements accordingly based on the assessment results. This will provide a better educational environment and opportunities for cultivating electrical and electronic talents who meet the needs of social development.

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Conflicts of Interest

The authors declare no conflicts of interest.

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