

Knowledge Reorganization and Teaching Strategies of Principles of Electric Circuits under the Background of Golden Course Construction

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Abstract: The purpose of this article is to study how to restructure the knowledge of courses of electric circuit principles in the context of the construction of gold courses and to propose corresponding teaching strategies. By redefining course objectives and learning outcomes, identifying core knowledge points, and integrating practice and theory, we have explored how to better adapt to the needs of modern education. In terms of teaching strategies, this study emphasizes active learning, cooperative learning, the application of modern technologies and tools, and the support of personalized learning to improve students' learning effectiveness and interest.

Keywords: Gold course construction; Principles of Electric Circuits; Knowledge recombination; Teaching strategies

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Introduction

In the current field of higher education, the construction of gold courses (high-quality courses) has been paid more and more attention. The Golden course aims to improve the quality and teaching level of the course to better meet the learning needs of modern students. The course of electric circuit principles is one of the core courses in the engineering field. The improvement of its teaching quality and methods is very important for training engineering and technical personnel. In this context, the paper aims to explore the necessity and significance of restructuring the knowledge of circuit principles courses in the context of the construction of the gold course and proposing corresponding teaching strategies.

1. Background of Gold Course Construction

The concept and characteristics of gold courses (high-quality course) are the starting point of this study. Gold courses are a distinctive and high-quality course in higher education, which emphasizes the close integration of the cutting-edge and practicalness of teaching content and students' needs. The characteristics of gold courses include high-quality teaching resources, innovative educational methods, personalized learning processes, and the pursuit of evaluation and feedback on teaching outcomes. In the course of electric circuit principles, the application of gold courses is of great significance. Electric circuit principles are the fundamental course in the field of engineering. The teaching quality of it directly affects students' engineering ability and innovation potential. By integrating the concept of gold courses into Electric circuit principles courses, it can make the courses more attractive, challenging, and meet the needs of modern

engineering practice. It not only helps to enhance students' interest in learning, but also cultivates their problem-solving and innovation abilities.

However, the courses of electric circuit principles also face some challenges in the course of gold course construction. The traditional teaching of circuit principle often focuses on theoretical derivation and mathematical calculation, but lacks practical application and experiment, which makes it difficult to stimulate students' interest and motivation. The knowledge content of the courses of electric circuit principles are huge and varied, and students often feel confused and stressed. How to integrate these knowledge points organically and make them more concrete and practical is an urgent problem to be solved. Teachers need to adapt to new educational technologies and tools to support the construction of the courses of electric circuit principles under the golden courses. Although there are challenges, the construction of gold courses also brings great opportunities for courses of electric circuit principles. With the help of modern technology and online education platforms, personalization and flexibility of courses can be better achieved. The sharing of educational resources and interactive teaching also provide opportunities to improve the quality of courses.

2. Knowledge Reorganization of Courses of Electric Circuit Principles

2.1 Redefinition of course objectives and learning outcomes

The reorganization of the electric circuit principles course begins with the redefinition of the course objectives and learning outcomes. Under the construction of the golden courses, the courses are no longer only about implanting knowledge, but also about cultivating students' practical application ability and innovative thinking. Therefore, we need to re-examine the course objectives to clarify the core skills and knowledge that students are expected to have at the end of the course. These objectives should be aligned with modern engineering practices and market needs to ensure that graduates are able to enter the engineering field smoothly and succeed. It is also key that the redefinition of learning outcomes.

2.2 Determination of core knowledge points

The determination of the core knowledge points of courses of electric circuit principles is the key step of knowledge reorganization. Traditional courses often contain a great deal of knowledge. However, not all of it is of equal importance to a student's career development. Therefore, we need to identify the most critical and foundational knowledge points and ensure that students master these core concepts and skills by the end of the course. The determination of core knowledge points should take into account the needs of engineering practice and the learning burden of students. References to industry partnerships and professional certifications can help educators better understand the core knowledge engineers need in the field of electric circuit principles.

2.3 Integration of practice and theory

The knowledge reorganization of also needs to integrate theory and practice organically. Traditionally, the course of electric circuit principle focuses on the teaching of theoretical knowledge and neglects the cultivation of practical application. However, Gold Course Construction emphasizes practical education, so we need to redesign the curriculum so that students can apply their knowledge to real-world engineering problems. The integration of practice and theory can be achieved through experiments, case studies, project assignments, etc. These activities can help students combine abstract theoretical knowledge with practical situations and develop their problem-solving skills and practical experience in engineering.

2.4 Modularization and hierarchy of knowledge

Modularization and hierarchy of knowledge are the important principles of knowledge reorganization in electric circuit courses of electric circuit principles. Breaking down course content into modules, each containing a specific topic or skill, helps students better organize and understand knowledge. The modular design also makes the curriculum more flexible. Teachers can adjust and customize it according to students' needs and progress. The hierarchical design ensures that the knowledge system of the course is orderly and clear. Students can gradually build up an understanding of circuit principles from basic concepts to advanced knowledge.

3. Teaching strategies

3.1 Promotion of active and cooperative learning

Active learning and cooperative learning are indispensable teaching strategies in the courses of electric circuit principles under the construction of golden courses. Traditional classroom teaching is often passive with no students' active participation, while golden class construction emphasizes students' initiative and cooperation. Therefore, teachers should use a variety of interactive educational methods to encourage students to participate in discussions, problem solving, and group cooperation projects. Active and cooperative learning can be achieved through problem-driven teaching, case studies, group discussions, and project assignments.

3.2 Modern technology and tools

Techniques and tools play a key role in the electric Circuit Principles course. The construction of gold course emphasizes practical

application,so teachers should actively use modern tools such as computer-aided teaching,simulation software,virtual laboratory and online resources.These tools can help students better understand and analyze electric circuits,while improving the efficiency and interactivity of teaching.The use of modern technologies and tools can also provide a personalized learning experience.

3.3 Improvement of experimental teaching

Experimental teaching plays an important role in the course of electric circuit principle.Under the construction of gold courses,experimental teaching needs to pay more attention to practical application and problem solving.Teachers can design challenging experimental projects that require students to design,build,and test electric circuits,thereby to improve their hands-on skills and problem-solving abilities.Virtual laboratories and simulation tools can also be used to improve experimental teaching. These tools can provide a safer,more economical and diverse experimental experience while reducing the consumption of laboratory resources.It is particularly important for the large-scale courses under the construction of gold courses.

4. Implementation and evaluation

4.1 Curriculum design and textbook development

Curriculum design and textbook development are the starting point of implementing the construction of gold courses.Teachers need to design the structure and content of the course according to the redefined curriculum objectives and learning outcomes,as well as the identified core knowledge points.It includes defining syllabuses,writing textbooks,designing lab projects and classroom activities.The development of teaching materials also needs to take into account the application of modern technologies and tools. Teachers can integrate online resources,simulation software,and multimedia textbooks to support students'learning.

4.2 Practical application of teaching methods

The practical application teaching method is the core of the courses of electric circuit principles under the construction of gold courses.Teachers need to actively adopt active learning and cooperative learning strategies to guide students to actively participate in the curriculum.Improvements in laboratory teaching also need to ensure that students have the opportunity to conduct practical operations and solve problems solving.

4.3 Evaluation of student learning outcomes

The evaluation of students'learning achievements is an important part of the curriculum under the construction of golden courses. Assessments should be aligned with curriculum objectives and learning outcomes,and cover multiple aspects of knowledge,skills and attitudes.It can be done through tests,assignments,project evaluations,lab reports,and many other ways.Assessments should also focus on individualized learning for students.Teachers can provide assessment tasks of different difficulty and types according to students'learning progress and interests.It helps to stimulate students'learning motivation and improve the accuracy of assessment.

4.4 Feedback and improvement of educational outcomes

The feedback and improvement of educational outcomes is the key to the continuous improvement of the courses of electric circuit principles under the construction of gold courses.Teachers and educational institutions should collect student feedback,teaching effectiveness data and educational outcomes data,analyze and reflect on them.Based on feedback and data,teachers can adjust teaching methods,course content and assessment methods in time to continuously improve the quality of the course.It can be achieved through regular curriculum evaluations,educational research,and teacher training.

5. Conclusion

The knowledge reorganization and teaching strategy of electric circuit principle under the construction of gold courses have important practical significance and social value.It can not only improve the quality of education in the field of engineering and train more excellent engineers,but also help to promote the progress of science and technology and the development of society. Therefore,the courses of electric circuit principles under the construction of gold courses are an important topic worthy of in-depth study and practice.We expect that more educational institutions and educators will actively explore and apply these strategies in the future,so as to continuously improve the quality and influence of the courses of electric circuit principles.

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