Research on the Reform of Electrical Basic Course in Building Electric and Intelligence Specialty under the Background of Professional Certification

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Abstract. Based on the engineering education professional certification, this paper analyses the importance and particularity of the electrical basic course of building electrical and intelligent specialty, and puts forward some suggestions for the reform of the electrical basic course. Based on the certification of engineering education specialty, this paper analyses the importance and particularity of the electrical basic course of building electrical and intelligent specialty, and puts forward some suggestions for the reform of the electrical basic course. Suggestions include the establishment of electrics basic course group, the revision of teaching syllabus, the innovation and improvement of curriculum system, the renewal of teaching content, the transformation of teaching concepts, the improvement of teaching methods and means, the strengthening of practice, the improvement of students' practical ability and the improvement of assessment methods.

Introduction

Since the Nineteenth National Congress of the CPC, economic development has been changing rapidly, and higher requirements have been put forward for the training of high-level engineering and technical personnel. All along, the total number of engineers and technicians trained in China ranks among the top in the world, but qualified engineers and technicians are not ahead in the world. In 2016, China formally became the 18th member of the Washington Agreement. The Washington Agreement is one of the most influential agreements in the international mutual recognition agreements for engineering education. It is of great significance to join it in order to improve the global recognition of Engineering Education in China. According to the Regulations of the National Committee of Experts on Engineering Education Professional Certification, the objectives of engineering education professional certification in China are: to construct the quality monitoring system of Engineering Education in China, to promote the reform of Engineering Education in China, to further improve the quality of Engineering education; to establish the professional certification system of engineering education linked with the system of registered engineers; It is necessary to establish a linkage mechanism between engineering education and business circles, enhance the adaptability of engineering education personnel training to industrial development, promote international mutual recognition of Engineering Education in China and enhance international competitiveness. Engineering education professional certification emphasizes student-centered, results-oriented concept, and continuously promotes the improvement of education quality through quality monitoring and feedback mechanism.

During his recent visit to Northeast China General Secretary Xi pointed out that in order to promote the revitalization of Northeast China, we need to reform and innovate. Building Electricity and Intelligence Specialty as a new specialty, the related technologies involved are developing with the rise of intelligent buildings in the late 20th century. Under the background of civil engineering, it is an electrical specialty to study the generation, transmission, conversion, control and utilization of electric energy based on buildings. It needs to be realized by the cooperation of equipment automatic control, communication technology, computer network, microelectronic information technology and
so on. Therefore, the basic course of electricity occupies a pivotal position in the curriculum system of building electrical and intelligent specialty, and it is also an important inspection index for the certification of engineering education specialty of many electrical specialties. But unlike the traditional electrical specialty (such as electrical engineering), it is also different from other electrical related and non-electrical specialties. The teaching of electrical basic course for building electrical and intelligent specialty should emphasize not only the theoretical basis, but also the practical teaching, and also the background of civil engineering. This provides an opportunity for the reform of electrical basic course, and also puts forward higher requirements.

As for the professional certification of Engineering education, foreign research was first published in 1998. Thereafter, articles introducing the accreditation of Engineering Education in Britain, the United States, Canada and other countries have been published in some well-known journals. Japan, Russia and other countries have also carried out research. These foreign studies mainly focus on the basic introduction of professional certification, such as certification organizations, institutions, standards and other macro aspects. With China's accession to the Washington Agreement, the professional certification of engineering education has gradually developed. So far, the research on engineering education professional certification in China is still insufficient. Building Electricity and Intelligence Specialty as a new specialty, there is little research on its professional certification, and the research on the basic electrical courses in this specialty under the background of professional certification is even less.

Establishing the Curriculum Group of Basic Electrical Courses

Building Electricity and Intelligence is an electrical specialty under the background of civil engineering. Its electrical basic course should emphasize both the electrical basis and the civil background. The basic courses of electricity include circuit theory, electronic technology, the principle and application of single-chip computer, automatic control principle, motor and drive foundation, etc. There are differences and connections between these courses. Through the establishment of the basic courses group of electronics, these courses can achieve mutual integration, mutual cohesion, mutual penetration, deletion of duplicate content, improve the efficiency of curriculum implementation, and combine their own professional characteristics, according to the current employment situation development, actively adjust the teaching content, carry out teaching reform, in order to better meet the needs of the market and achieve the goal of personnel training. Guided by market demand, we should clarify the theoretical knowledge and engineering application ability objectives.

Revising the Curriculum Syllabus, Innovating and Perfecting the Curriculum System and Renewing the Teaching Content

Combining closely with the training requirements of professional certification, taking the output as the guidance, adopting the backward way to follow up the new technological changes, new industrial trends and new market demands, we regard enterprises, society and students as equal subjects, teach students in accordance with their aptitude according to their needs, and compile curriculum syllabus that effectively meets the requirements of students' development. The content of the course should keep pace with the social development, the frontier of science and technology, closely integrate the whole engineering practice, teach useful and up-to-date knowledge to students, and avoid teaching outdated knowledge. At present, the revitalization of undergraduate education has been raised to the core task of the reform and development of higher education in the new era. In order to create a standard golden course, it is necessary to update the teaching content so as to make the course deep, difficult and challenging.
Changing Teaching Concepts and Improving Teaching Methods and Means

Guided by the requirements of professional certification, student-centered, guided by engineering problems[1], closely combined with market demand, we should change the teaching concept of teacher-centered, improve students' learning initiative, and make students the main part of the teaching process. Improve the production of teaching PPT, carry out intelligent teaching such as mixed teaching mixed teaching[2], give full play to the important role of the Internet in interaction with students, and improve teaching methods and means with a variety of teaching modes. Fully realize the interaction with students, so that each student can participate in classroom teaching, feel that they are the master of the classroom. At the same time, teachers should constantly update their educational concepts, innovate teaching methods and keep up with the forefront of science and technology. Teachers should pay more attention to classroom teaching, which is the most important task for teachers. So we should prepare lessons carefully. Create golden lessons and eliminate water lessons.

Strengthen Practice and Improve Students' Practical Ability

Professional certification is a new concept of innovative, comprehensive and full-cycle engineering education for the training of traditional engineering and technical personnel. Build a practice platform, change the original "classroom teaching as the main, experimental teaching as the supplement" teaching mode, and establish a new teaching mode in which experimental teaching plays an important role. Moreover, we should reduce the number of validation experiments, increase the number of comprehensive experiments and design experiments[3,4], and strengthen students' understanding of knowledge points through students' independent thinking and hands-on practice. Encourage students to carry out innovative experiments, so that there are perceptual applications in theoretical learning, perceptual applications include theoretical knowledge, stimulate interest in learning, encourage students to participate in scientific and technological activities, and constantly improve their innovation ability.

For the internship process, we should work out the teaching syllabus together with the enterprise experts, so that students can understand the social needs of the specialty more fully in the process of internship, and avoid making the internship become a visit.

Perfecting the Examination Method

Assessment methods will greatly affect students' attitudes towards the curriculum. In the final examination paper-based assessment mode, students can cope with the examination as long as they review it suddenly at the end of the term, which will make it difficult for students to attach importance to the process of class. Change the traditional way of examination in the form of examination papers[5], improve the proportion of design-based homework or design-based experiment in the course assessment, and cultivate students' innovative consciousness and practical ability. Through strengthening and improving the process of assessment and evaluation, students are guided to attach importance to the classroom, overcome the idea of idle life, stimulate students' enthusiasm for active learning, and enhance their sense of achievement and self-confidence in learning.

Summary

With China's accession to the Washington Agreement, the research on professional certification has been carried out continuously, but there are few studies on professional certification of building electrical and intelligent. This paper studies the reform of electrical basic course in building electrical and intellectualized specialty, and puts forward several suggestions, including the establishment of electrical basic course group, the revision of professional curriculum outline, the innovation and improvement of curriculum system, the renewal of teaching content, the change of teaching concepts,
the improvement of teaching methods and means, the strengthening of practical teaching, the improvement of students' practical ability and the improvement of assessment methods and so on. The research results of this paper can provide reference for the construction of electrical basic courses of building electricity and intelligence specialty in applied universities.

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References


