A Study on the Training System of Fire Protection Engineering Professionals

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Abstract. At present, the industrial revolution is developing rapidly, new technologies, new industries and new business forms are emerging one after another. The development of emerging industries requires a large number of outstanding engineering talents. Emerging engineering education is the reform direction of China engineering education based on national strategic development and international competition situation. According to the requirement of emerging engineering education, this paper is based on the Henan Polytechnic University of fire protection engineering, and the training objectives and requirements have been determined. The education reform measures are proposed in three aspects: Strengthen the practice link, improve the curriculum system and improve the ability of scientific research and innovation. This paper will provide reference for the construction and development of fire protection engineering, constantly improving the quality of talent training to better adapt to the requirements of national economic development.

Introduction

At present, scientific and technological revolution is accelerating, and competition among countries is becoming more intense. In order to address these challenges, China has proposed and implemented a series of major national strategies such as “Made in China 2025”. The Ministry of Education actively promoted the construction of emerging engineering education, put forward urgent requirements for higher engineering education, and also marked the beginning of a new stage in the reform of higher engineering education with the theme of emerging engineering education [1].

In order to ensure the implementation of the national strategy and the smooth development of the technological revolution and industrial transformation, the country's security requirements for the industry are getting higher, and the society puts higher requirement on fire protection engineering professionals.

Training Objectives of Fire Protection Engineering Professionals

Fire protection engineering is a comprehensive subject which studies the law of fire occurrence and development as well as fire prevention and control. The first major of fire protection engineering in China was set up by the technical college of the people's armed police force in 1985. In July 1998, the ministry of education promulgated the catalogue of undergraduate majors and professional introduction of ordinary colleges and universities, which allowed local colleges and universities to set up fire protection engineering majors [2].

Problems Existing in the Traditional Personnel Training Mode of Fire Protection Engineering

Henan Polytechnic University, is the only 20 won the approval of the ministry of education and the ministry of public security, is the national fire protection engineering construction committee, deputy director of the unit, with a state key laboratory and 8 provincial scientific research platform,
is in the leading position in the domestic, with high social influence. Although the department is currently dedicated to the cultivation of applied talents and has achieved certain results, there are still some problems in the training of professional talents, especially in the context of emerging engineering education, these problems are particularly prominent.

**Too Much Emphasis on Theoretical Teaching**

As a cross and comprehensive subject, fire protection engineering includes the natural sciences such as architecture, mechanics and chemistry, as well as the social and humanistic sciences such as management, law and economics. It is a major in multidisciplinary cross-application, and it needs to integrate the knowledge of various disciplines in practical engineering applications. Due to the large content of professional courses and the difficulty of the course, a large amount of theoretical analysis is involved. Therefore, in the allocation of teaching time, it takes more time in theoretical teaching, and less time in practical teaching. In addition, as a newly added subject, the resources of practical teaching are weak, and the construction of practice base is weak, which to some extent limits the development of fire protection engineering specialty[3]. However, fire protection engineering requires students to have strong practical ability. In the training mode of fire protection engineering major, if too much attention is paid to theoretical teaching and the practical teaching is weakened, students will need more time to practice after graduation to adapt to work.

**The Textbook was not Updated in Time**

At present, the training of fire protection engineering professionals is based on the materials compiled by the Fire Engineering Series Planning Textbook Review Committee, but this set of teaching materials has many shortcomings. First of all, the update is not timely. The national standards and industrial standards related to the fire protection engineering and the fire protection industry are closely linked. These national standards and industrial standards are often accompanied by the development and update of fire control technology. There are also new updates and innovations in fire protection technology, such as "smart fire protection" in "Internet accelerated speed" applications. These textbooks have not been updated in time, which will lead students to work after graduation and be out of touch with social needs. Secondly, the relevant knowledge points of this set of teaching materials are repeated, and the same knowledge points may be repeated in different professional courses, which wastes teaching time and affects teaching efficiency.

**Ignore the Cultivation of Scientific Research and Innovation Ability**

Fire protection engineering is a subject with strong theoretical. Teachers pay attention to students' understanding and application of knowledge in the class, and rarely put forward higher requirements for students' innovation ability. In the assessment of student's coursework, the teacher pays too much attention to the final scores, and the proportion of classroom grades and experimental grades is small. Moreover, the experiments in the experimental class are mostly confirmatory experiments, which will make students lack of innovative consciousness. In particular, more and more students choose to continue their studies after graduating from college. This will affect students' thinking and innovation in the future. In addition, in the context of the emerging engineering education, it is necessary to support the development of service innovation, and the innovation ability of engineering students is indispensable.

**Education Reform of Fire Protection Engineering Major under the Background of "Emerging Engineering Education"**

According to the existing problems in the training model of fire protection engineering professionals and the application of talents in the context of "emerging engineering education", the education reform measures are proposed in three aspects: Strengthen the practice link, improve the curriculum system and improve the ability of scientific research and innovation.
Strengthen the Practice Link

Fire protection engineering is a subject closely related to engineering practice. In order to achieve good teaching results, it is necessary to strengthen the practice links in the construction of the curriculum system, and guide students to connect with the reality in the study of professional courses, and enhance students' ability to solve practical problems in engineering [4]. From the current teaching system, it is necessary to add more practice bases outside the school. In addition, it is necessary to improve the professional quality of professional teachers to strengthen the construction of teachers. The personnel training mode should be oriented to the needs of enterprises and implement the teaching concept of emerging engineering education. Only with the support of the knowledge points of the textbook and the connection with engineering practice, can students apply what they have learned to practice, truly master the knowledge, and cultivate applied talents of fire protection engineering specialty under the background of emerging engineering education.

Improve the Curriculum System

In view of the backwardness and untimely update of teaching materials, teachers can combine with the latest national standards and industrial standards related to the fire protection industry, give a focused explanation in class, and make a special PPT for these revised parts, so that students can review after class. In addition, each specialized course can intersperse with the latest developments of current fire control technologies in the teaching class. For example, in the course of automatic fire alarm, the content of "smart fire protection" solutions that integrate with "Internet accelerated speed". At present, fire management is mainly carried out by manpower. High labor cost is one of the main factors affecting the economic benefits of enterprises. "Smart fire protection" can effectively reduce labor costs and ensure fire safety of enterprises. Modern fire control mainly relies on the management mode of informatization and networking, which is an inevitable trend of modern fire protection development. Fire protection engineering discipline education should follow the trend to keep up with the pace of The Times. The explanation and application of these new technologies are also required by the training objective of applied talents under the background of "emerging engineering education ". Only by keeping pace with The Times can they be seamlessly connected with future jobs.

Improve the Ability of Scientific Research and Innovation

To improve students' ability of scientific research and innovation, we need to guide the three basic points of innovation, creativity and entrepreneurship, increase support for various types of scientific and technological innovation activities and academic competitions, and encourage students to participate in competitions such as college students' innovation and entrepreneurship competitions and energy conservation and emission reduction competitions; In addition, we need to focus on cultivating practical ability, aiming at and strengthening the undergraduate graduation design, improving the quality of undergraduate graduation design; encouraging and supporting students to enter the research team of the college as soon as possible [5]. Students lack basic scientific research knowledge in the undergraduate stage. Therefore, it is necessary for students to understand the method, content and process of scientific research work, learn how to select scientific topics and collect relevant literature, and how to conduct experimental design with scientific methods and thinking mode. We can specifically increase innovative experimental contents. The setting of experimental contents should be combined with scientific research, practical application of engineering and the focus of relevant research institutes. In addition, the project of scientific research should be considered so that students can learn to independently consult relevant literature and materials and design innovative experiments according to the requirements.

Summary

The construction of emerging engineering education is an inevitable requirement for the reform and development of higher engineering education in China. On the basis of clarifying the training
objectives of fire protection engineering professionals and the problems existing in the traditional talent training mode, we strengthen the practice teaching link, improve the curriculum system and improve the research and innovation ability. We will strive to cultivate high-quality composite innovative talents with collaborative innovation capabilities, and provide talent intellectual support for the country to respond to the scientific and technological revolution and industrial transformation.

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