Research on Innovative and Entrepreneurship Education in Electronics and Information Engineering

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Abstract. In this paper, we investigate the Innovative and Entrepreneurship Education in electronics and information engineering under the background of emerging engineering education. Firstly, the innovation and entrepreneurship education system of electronic information engineering, which is composed of general education, professional education and innovation and entrepreneurship practice, is researched. Secondly, the teaching method of innovation and entrepreneurship course in electronic information engineering is discussed. Then the organization of students to participate is studied in various discipline competitions. Finally the cooperation of schools and enterprises is proposed. The results not only provides guidance for the students' innovation and entrepreneurship, but also helps to strengthen the close relationship between the development of higher education and local economic development.

Introduction

In an era of rapid technological advancement, as the new industrial revolution is approaching and the country is making strides towards the ranks of industrial powers, the emerging engineering education is was launched by the Ministry of Education is at the right time.

On February 18th, 2017, the Ministry of Education held a seminar on the development strategy of higher engineering education at Fudan University, indicating that the emerging engineering education is based on the New Economy. The New Economy urgently update and transform traditional engineering disciplines. Thus talents and professionals are the primary resource for developing and expanding the new economy, which relies on engineering education in the future.

Innovation is an essential part for leading and driving the development of industry and economy, which is the guarantee for the development of industry and the victory in the market competition. Innovation is the core capability for the professionals of industry, and entrepreneurial ability is the foundation for the formation and development of new industries.

Under the background of the construction of new engineering, how to train the professionals with innovation and practical abilities, is not only a new requirement for the development of innovation and entrepreneurship education in electronic information engineering, but also are important propositions worthy of further study. The ability of innovation and entrepreneurship is the primary capability requirement for electronic information engineering talents trained in the context of new engineering.

This paper studies the innovation and entrepreneurship education of electronic information engineering under the background of emerging engineering education, which provides guidance for the students to achieve self-employment. It also helps to strengthen the close relationship between the development of higher education and local economic development, which will promote the development of economy and social.
The Solutions

(1) Constructing an innovation and entrepreneurship education system, which consists of general education, professional education, innovation and entrepreneurship practice.

The innovation and entrepreneurship courses can be divided into three categories: general education courses, professional courses and practical courses, and optimize the innovation and entrepreneurship education content system including theory and practice. The general curriculum aims to train students to acquire skills that are valuable to all areas of learning, stimulating college students' interest in innovation and entrepreneurship. The professional courses focus on improving the innovation and entrepreneurship of college students, excavating and enriching the innovative and entrepreneurial education resources of various professional courses, strengthening innovation and entrepreneurship education in the process of imparting professional knowledge, and promoting the organic integration of professional education and innovation and entrepreneurship education. In terms of innovation and entrepreneurship practice, students can choose to design the professional frontier issues, the analysis report about professional hot issues, professional innovative design, application project design, professional-based various discipline competitions, academic lectures, professional paper, occupation qualification certificates, professional innovation and entrepreneurship training programs for all levels of college students.

(2) Enriching the teaching methods of electronic information engineering, and practicing the innovation and entrepreneurship curriculum development and curriculum teaching to improve the quality and teaching effect of classroom. We mainly study the application of hybrid teaching mode which is integrated the advantages of network teaching with traditional teaching mode [8-12].

① Hybrid teaching mode based on Rain Class[9]
Based on the hybrid teaching mode of the Rain Class, students can be provide with personalized learning time, space and teacher guidance. Students can have more time and opportunities to learn in the classroom through independent learning outside class.

② Hybrid teaching mode based on flipped classroom[10]
The flipped classroom connects pre-course learning (including online learning) with classroom learning, which changes the roles between teachers and students, and students achieve deep learning.

③ MOOC-based hybrid teaching mode[11]
The MOOC-based hybrid teaching mode consists of three levels: pre-analysis, learning activity design, and evaluation design. Students become the key of teaching under the guidance of teachers. This mode shows that the best teaching effect can be obtained.

④ Hybrid teaching mode based on PAD Class[12]
The PAD Class (Presentation-Assimilation-Discussion) mode is a new teaching mode based on interactive learning, which was first proposed by Professor Zhang Xuexin from Fudan University in 2013. This teaching mode combines traditional classroom teaching with discussion-based classroom teaching, which emphasizes the positive interaction between teachers and students, also between students and students, so that teachers and students can share their ideas. The students can arrange their own learning and achieve personalized internalization and absorption.

(3) Developing the students' entrepreneurial spirit and cultivating knowledge and skill via the activities of innovation and entrepreneurship training, academic competitions, skill competitions and business plan competitions.

The innovative entrepreneurship training and competitions are important components of the practical teaching process. They have a significant effect on the innovative thinking and creativity. In the course of the entrepreneurial competition, students who are willing to start a business can experience the challenges of entrepreneurial activities, find the entrepreneurial goals that they can play, and lay the foundation for future entrepreneurial practice.

(4) Strengthening school-enterprise cooperation, promoting industry-university-research, and establishing an innovation and entrepreneurship ecosystem.

① Promoting the commercialization of scientific and technological achievements based on inventions-creations.
The university is an important research place for high-tech research and development. The electronic information engineering pay more attention to cultivating interdisciplinary talents with innovative consciousness, innovative abilities and entrepreneurial skills. It is important to stimulate the vitality of innovation and entrepreneurship and promote the transformation and industrialization of scientific and technological achievement, then strengthen the integration of science and technology and economy, and link scientific and technological achievements with actual productivity.

2) Creating an innovative and entrepreneurial ecological environment based on the University-based Science Parks

As a link between universities and society and market, the University-based Science Parks has become an important platform for electronic information engineering students to develop innovative and entrepreneurial activities. The superior innovation environment and rich entrepreneurial resources have become an important platform for electronic information engineering students. The high-tech project of the University-based Science Parks, with its own characteristics and scientific and technological content, has played an irreplaceable role in the cultivation of innovation and entrepreneurship for electronic information engineering students. The University-based Science Parks serve as an integrated platform for production, studying and researching, and the entrepreneurial dreams of students will be cultivated as entrepreneurial seeds. Then they will be vigorously promoted to carry out scientific research training and engineering practice, and further strengthen the foundation of entrepreneurship.

Conclusion

Under the background of new engineering, the innovation and entrepreneurship education of electronic information engineering should consider the development trend of emerging industries and the demand of talents. We should also realize the advancement of teaching content and teaching methods, and integrate theory and practice. The hybrid teaching mode helps to improve the teaching quality and effect of innovative and entrepreneurial classroom. The research on innovation and entrepreneurship education of electronic information engineering follows the principles of combining theory with practice and opening school, which makes the teaching method, teaching process and innovation and entrepreneurship practice form a virtuous circle, and builds a discipline, professionalism and practicality. Innovative entrepreneurship education that meets the characteristics of application-oriented university electronic information engineering has a great impact on the reform and construction of talent training mode for new engineering related majors in application-oriented university.

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References


