

Interdisciplinary Talent Training Mode for Electronic Information Engineering Majors

Jinlong Hu*, Peng Wang

Harbin Huade College, Harbin, Heilongjiang Province, China.



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Abstract

The rapid development of today's society and economy has put forward higher requirements for the number of interdisciplinary talents. In order to cultivate more interdisciplinary talents, colleges and universities need to focus on improving the training mode of talents, and analyze the current talent training from multiple perspectives, problems and develop targeted solutions. My country started late in the cultivation of interdisciplinary talents. Therefore, this paper analyzes the mode of cultivation of interdisciplinary talents in China and the United States, and takes the major of electronic information engineering as an example to discuss the path of cultivation mode of interdisciplinary talents. This paper discusses the construction path of interdisciplinary talent training mode for electronic information engineering majors from five perspectives, including curriculum goal setting, management mechanism construction, talent training curriculum system, practical training innovation platform construction, and student quality expansion system construction.

Keywords

Electronic Information Engineering, Interdisciplinary, Talent Training

1. Introduction

Electronic information engineering is a discipline that uses modern computer technology to control and process information. In the current information age, society has put forward higher requirements for electronic information engineering professionals. In order to shorten the gap between our universities and foreign universities, we should actively explore and study the interdisciplinary talent cultivation strategy, formulate targeted talent cultivation programs, innovate talent cultivation mechanism, and improve the development level of our universities. In this way, we can promote the construction of interdisciplinary talent cultivation mode of electronic information engineering, which is of great practical significance to cultivate innovative talents in the new era.

2. Overview of interdisciplinary talent model

Innovation and improvement of talent cultivation mode is an important way to promote teaching reform, and it is also the key to determine the quality of talent cultivation in higher education institutions. With the development of the times, higher education institutions need to pay attention to the innovation of talent cultivation mode, reform the mechanism of talent cultivation and improve the quality of talent cultivation. Under the background of rapid development of science and technology and economic system, the active transformation of talents cultivation is realized. Electronic information engineering is a modern and comprehensive engineering major that integrates information technology, computer technology, communication technology and modern electronic technology, and its application is strong and the major covers a wide range. In the actual teaching, the cross-pollination of knowledge of various subjects has very obvious comprehensive characteristics. To build an interdisciplinary talent cultivation mode, it is necessary to determine the characteristics of engineering majors, carry out the construction of engineering majors and establish engineering majors with institutional characteristics [1].

With the development and popularization of information technology, Internet technology is more and more deeply applied in people's daily life, and the demand for information technology talents in various industries in the market is increasing, and at the same time, higher requirements are put forward for the quality of information technology talents. Nowadays, the development of modern electronic information industry requires talents with innovative spirit, theoretical knowledge and skills of two or more disciplines, the ability to integrate multidisciplinary knowledge, innovation of existing knowledge and technology, and strong hands-on practical ability, which puts forward higher requirements for the cultivation of engineering professionals. In view of the current requirements of the electronic information industry for electronic information engineering professionals, institutions need to clarify their own talent training orientation and explore the interdisciplinary talent training mode with multidisciplinary knowledge and professional skills.

3. The construction of interdisciplinary talent training model in China and the United States

The concept of interdisciplinary talents cultivation originates from the general education in American higher education, and interdisciplinary talents cultivation is not only about simply learning the knowledge of different professional fields and putting them together, but also about learning a systematic and hierarchical standardized curriculum, integrating the multidisciplinary knowledge and mastering the learned multidisciplinary knowledge in a higher level. The new interdisciplinary disciplines are emerging. Nowadays, a large number of new interdisciplinary disciplines are emerging, and some institutions of higher education have also opened some marginal disciplines, which are increasingly interconnected. It is not enough to master only one discipline to become a new era of composite talents, which determines that higher education institutions need to make innovations and improvements in talent training mode, and reflect the cross-cutting and comprehensive characteristics of various disciplines. Nowadays, higher education needs to realize the perfect integration of science and art, technology and humanities, which is not only a sign of progress of modern universities, but also a new requirement for higher education in the new era.

3.1. Overview of interdisciplinary talent cultivation mode in China

In the 1950s, China carried out the research of interdisciplinary education. And the exploration of interdisciplinary talent cultivation model is mainly concentrated in the Interdisciplinary Social Science Research Center of Zhejiang University, Shanghai Interdisciplinary Research Center of Chinese Academy of Sciences, Yuanpei College of Peking University and the interdisciplinary talent cultivation program of Wuhan University, etc. At present, there are five main interdisciplinary talent cultivation models in China. The first one is a composite major and minor with one discipline as the main major and another discipline as a minor. The second one is to master the basic theoretical knowledge of undergraduate disciplines specializing in different two fields. The third type is the multiple composite type with theoretical knowledge and basic methods and basic theories of three or more disciplines, and the final interdisciplinary and generalist talent cultivation mode with multidisciplinary access.

Different interdisciplinary talent cultivation modes provide more opportunities for college students to choose and achieve good educational effects. However, the current interdisciplinary talent cultivation mode has a small scale proportion, and because of the late exploration, the concept and method are relatively single. The education concept of single discipline still has some influence on some colleges and universities. Many colleges and universities do not know the necessity and importance of interdisciplinary talents cultivation sufficiently, and the integrality of course content and advanced course concept cannot be guaranteed. In addition, the interdisciplinary curriculum is not scientific enough, and the integration of multidisciplinary knowledge is not achieved, and the communication between faculties and departments is also less, and teachers are relatively independent, which makes it difficult for our interdisciplinary talent

cultivation mode to achieve practical effects [2].

3.2. Overview of interdisciplinary talent cultivation model in the United States

The American interdisciplinary talent cultivation model focuses on the penetration and combination of science and arts and science, and when formulating the interdisciplinary talent cultivation plan for major categories of majors, it will improve the teaching contents and reform the curriculum system in accordance with the goal of cultivating composite talents in disciplines. In the U.S., higher education emphasizes the comprehensiveness of discipline education and the perfection of its interdisciplinary curriculum, and has established a special committee of interdisciplinary departments in chemistry to recruit more interdisciplinary talents and promote the diversification of interdisciplinary talent cultivation mode. In some U.S. colleges and universities, students must choose to take specialized courses. Moreover, the interdisciplinary talent cultivation program in the U.S. is flexible and diverse, and the premise of theoretical courses is based on a continuous line of practical teaching.

Compared with the United States, the construction of interdisciplinary talent cultivation model in China started late, and there are some differences between the higher education system and the United States, so we cannot fully apply the construction method of interdisciplinary talent cultivation model of American universities to China. We need to combine the actual situation of higher education in our country and the characteristics of institutions to develop a targeted talent training model and improve the quality of talent training.

4. The construction of interdisciplinary talent training mode of electronic information engineering exploration path

With the continuous growth of social economy, the demand for interdisciplinary electronic information engineering talents from all walks of life is increasing day by day, and many colleges and universities break the barriers of disciplines and strive to improve the interdisciplinary talents training mode, so that it can develop in the direction of diversification and formalization. From the current development background, the construction of interdisciplinary talents cultivation mode has become a necessary path for the reform and development of colleges and universities. Institutions should explore the interdisciplinary talent cultivation mode based on multidisciplinary background structure by combining their actual situation and schooling characteristics, so that interdisciplinary talents in electronic information engineering in the new era can develop comprehensively while adapting to the diversified needs of the current society [3].

4.1. Formulating scientific interdisciplinary talents training objectives

The construction of interdisciplinary talents cultivation mode is a complex and systematic long-term educational project, and the formulation of scientific interdisciplinary talents cultivation objectives is an important prerequisite for higher education reform. As the disciplines become more and more integrated and diversified, and basic education is gradually abolishing the division of arts and science, continuing to leave the disciplinary barriers unattended will make it difficult to improve the cultivation effect of talents. Institutions need to combine electronic information professional theory and comprehensive quality education, realize the penetration of literature and science, science and technology, and create exclusive professional characteristics. This will enable the cultivated talents to have broad knowledge under general education, and at the same time have broad and solid professional theoretical foundation as well as strong innovation spirit and practical operation ability, so as to realize the cultivation of high quality interdisciplinary talents.

4.2. Construction of human-oriented talent cultivation management mechanism

Nowadays it is very difficult for many colleges and universities to realize joint participation according to different disciplines and faculties on the basis of talent cultivation units. Therefore, the school authorities should play their own leading role and establish two important institutions, the interdisciplinary teaching center and the interdisciplinary talent cultivation management center, within the institution. In the process of building the interdisciplinary talent cultivation model, it is necessary to follow the concept of people-oriented, aim at cultivating talents, integrate the disciplinary resources, and develop a perfect talent cultivation program and teaching management system. The two institutions should strengthen the cooperation and division of labor between various discipline groups to realize the cross-fertilization of multiple disciplines and complement each other. First of all, in terms of setting up professional courses for teaching, students need to be allowed to choose the direction of their own choice of major according to their interests. For example, students should be allowed to go through one or two semesters of public courses before carrying out the training of self-chosen professional direction and awarding degrees. Secondly, institutions should build a joint talent cultivation system with multiple disciplines, fields and instructors on the basis of human-centeredness to broaden the professional

caliber. Again, institutions need to realize the combination of science and technology and the penetration of arts and science, give full play to the advantages of the curriculum of the institutions in arts, engineering, science and management, and establish a perfect curriculum teaching management and evaluation mechanism. In addition, institutions need to strengthen the cooperation between schools and enterprises and establish long-term cooperation mechanisms with local enterprises, so as to establish interdisciplinary research and experimental bases, and establish on-campus practice bases with comprehensive cross-discipline. Finally, institutions need to cultivate a dual-teacher team according to the way of importing and going out, and build an interdisciplinary teaching and research team with advanced teaching concepts and strong practical skills to enhance the effect of interdisciplinary talent cultivation mode [4].

4.3. Create a curriculum system of interdisciplinary talents cultivation with both arts and science

The key to realize the cultivation goal of interdisciplinary talents training mode lies in whether the curriculum system is perfect. This will enable the cultivated talents to have a multi-disciplinary knowledge structure of electronic technology, computer network technology, information, electronics, control and management, etc., so that students can meet the requirements of the new era for talents.

On the one hand, institutions need to provide humanities and social science course modules for electronic information engineering majors, so that students can study both literature and science, and choose suitable elective majors under the guidance of instructors of different disciplines, so as to expand students' thinking field and cultivate their innovative spirit on the basis of cultivating students' professional knowledge and practical ability. On the other hand, institutions need to integrate professional basic courses and professional courses around the talent cultivation objectives of electronic information engineering majors, and divide them into multiple professional clusters to realize cross-connections between different courses and form a complete talent teaching class chain. Electronic information engineering majors should have information engineering class cluster, electronic technology education class cluster, information engineering class cluster, computer application class cluster and engineering management class cluster, etc. Finally, institutions need to adopt information technology, focus on the construction of high-quality courses, integrate engineering technology practice in the course content and optimize the course system. Integrate the teaching contents of multiple courses. At the same time, institutions need to improve the quality of engineering culture of students as the goal, open comprehensive courses of multiple disciplines, focus on learning to apply, cultivate students' knowledge application ability, and realize the unity of science education and humanities education [5].

Finally, institutions need to build a perfect curriculum thinking and government system, and teachers of electronic information engineering need to actively get in touch with teachers of thinking and government and make joint efforts to penetrate ideological and political education elements, so that talents can establish good ideological and moral qualities while learning professional knowledge, cultivate good professional and moral qualities of talents, and promote the improvement of comprehensive ability of talents.

4.4. Establishing a three-dimensional practical training innovation platform

Traditional higher education attaches importance to students' theoretical knowledge education and neglects students' practical hands-on ability, which cultivates leading to a great decline in students' core competitiveness in employment. To cultivate interdisciplinary electronic information engineering professionals, institutions need to balance practical teaching and theoretical teaching, so as to promote the enhancement of students' engineering practical ability and innovation ability and cultivate students' social and professional literacy.

First of all, institutions need to build an on-campus practice platform with reasonable layout, scientific structure and resource sharing, integrate existing experimental resources, build a basic experimental teaching platform, deepen teaching reform and improve the effect of experimental teaching on the basis of project-driven and engineering-integrated teaching concept. In order to ensure that students' comprehensive ability is improved, institutions need to reform the traditional course design, combine the syllabus of the course group to set the objectives and requirements of the course design, improve the quality of the course group design, and effectively improve students' practical operation ability.

Secondly, institutions need to join local enterprises to build off-campus training bases, combine the production and R&D of enterprise products, and create engineering training centers with the background of the establishment of system engineering. Institutions need to guide students to think and solve problems in the environment of engineering systems, cultivate students' engineering thinking, and enhance the effect of interdisciplinary professional talents training in electronic information engineering [6].

4.5. Improve the diversified quality development training system for students

Institutions need to take moral education as the educational goal, follow the principle of moral-oriented cultivation,

give play to the characteristics of interdisciplinary talent cultivation mode, and build a diversified student quality development training system. In addition to rich campus cultural activities, institutions also need to provide the necessary support for students to form various clubs to create a good campus environment. On the one hand, institutions need to take advantage of the resources of literature, history, art and sports disciplines on campus to help students carry out diversified extracurricular activities, such as debate competitions, cultural festivals, music activities, social practice activities, etc., to build a strong cultural atmosphere in which students can cultivate themselves and improve their overall quality. On the other hand, institutions can carry out academic and scientific activities in the context of broad categories of disciplines, such as academic lectures containing multiple disciplines such as culture, economics, politics, literature, art, etc., as well as disciplinary competitions and divisional forums, etc., to guide students' communication and promote their all-round development.

5. Conclusion.

To sum up, institutions need to combine the characteristics of professional disciplines, build a perfect interdisciplinary talent cultivation mode, enrich students' knowledge reserves, expand their thinking, promote the reform of teaching programs, highlight the important role of practical teaching, and cultivate engineering talents with diversified knowledge structures needed in the new era. Institutions need to deeply analyze the interdisciplinary talent cultivation mode, combine the actual situation of institutions and improve the teaching effect.

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