Research on the Cultivation of Innovative Talents in Computer Science under the Background of New Engineering

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Abstract. With the rapid economic development of our country, the new economy represented by new technologies, new formats, new models and new industries has put forward higher requirements for engineering science and technology talents, and it is urgent to speed up the reform and innovation of engineering education. Local colleges and universities actively respond to the call of the state and actively carry out the construction of new courses of computer specialty. On the basis of objectively analyzing the employment prospects and talent deficiencies of computer specialty, this paper puts forward the training measures of innovative talents of computer specialty under the background of new engineering construction, which has certain practical significance.

Keywords: new engineering course; computer specialty; training program; school-enterprise cooperation; teaching method.

1 Introduction

In recent years, the Ministry of Education has been actively promoting the construction of new engineering courses. When it comes to the construction of new engineering courses, the first thing that comes to mind is the "trilogy" of the Ministry of Education on the construction of new engineering courses: "Fudan Consensus" is the consensus on the construction of new engineering courses, "Tianda Action" is the action line for the construction of new engineering courses, and "Beijing Guide" is the guide for the construction of new engineering courses[1]. The Ministry of Education is making every effort to explore the formation of the Chinese model and Chinese experience that lead the global engineering education and help build a powerful country in higher education[2].

As the local colleges and universities that cultivate the largest number of engineering and technical talents, how to grasp the historical opportunity of the new engineering education reform as the traditional computer specialty with diversified employment

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fields[3]. How to carry out the reform of new engineering construction and practical engineering education of computer specialty, how to reconstruct the new mode of talent training of computer specialty, so as to respond to the new needs of the new economy and carry the mission of local colleges and universities are also facing great challenges[4]. Under the trend of new engineering course construction in China, it is particularly important to speed up the reform of talent training mode for industrial demand and update the knowledge system of engineering talents[5].

2 Computer professional job prospects

Computer specialty is a broad, technical field, its employment situation on the whole is more optimistic. At present, China's computer industry job market shows a rapid growth trend. In the fields of Internet, medical treatment and education, a large number of computer professionals are needed. Among them, software development, software testing, network engineering, information security and other IT industries are in great demand[6]. At the same time, with the rapid development of emerging technologies such as artificial intelligence, cloud computing and big data, the employment trend of computer specialties is also changing. These emerging fields provide a large number of employment opportunities and career development space for computer graduates.

3 The shortcomings of computer professionals

Although the employment situation of computer specialties is generally good, it is also necessary to see the challenges faced by fresh graduates. The IT industry is highly competitive and requires a high level of skills and experience, while emerging technologies are developing rapidly and require constant learning and updating of knowledge. In addition, the requirements of enterprises for computer graduates are constantly improving, and they need to have more practical experience and comprehensive quality[7]. There is also a strange phenomenon in the job market of computer specialties. "employment difficulties" meets "employment shortage". On the one hand, Internet companies and IT enterprises can not recruit suitable people, on the other hand, some graduates of computer specialties can not find jobs. The reason is that the computer graduates who can not find a job have the following characteristics:

3.1 Students' professional skills do not match the market demand

with the continuous updating of technology and changes in market demand, computer professionals need to constantly learn and update their skills. However, many colleges and universities often only focus on theoretical teaching, lack of practical experience and practical skills training, resulting in the lack of practical application ability of graduates, unable to meet the needs of enterprises.

3.2 Students lack practical experience

some computer graduates lack practical experience and cannot apply what they have learned to practical work. To change this situation, it is necessary for colleges and universities to strengthen practical teaching, strengthen cooperation with enterprises, and provide more practical opportunities and internship projects for students to improve their practical ability.

3.3 Students' comprehensive quality is not high

some computer graduates lack comprehensive qualities, such as communication ability, team cooperation ability, innovation ability and so on[8]. Some enterprises attach great importance to the comprehensive quality of students, and even think that these abilities are very important in the work, even more than computer skills, which leads to some students can not get these jobs, so local colleges and universities need to strengthen the training of these aspects in the process of training computer professionals.

4 Training measures for innovative talents of computer specialty

4.1 Optimize the talent training program of computer specialty

Under the background of new engineering course, the training goal of computer professionals should focus on cultivating students' comprehensive quality and innovative ability to adapt to the rapidly changing technical environment and market demand. Specifically, emphasis should be placed on cultivating students' knowledge and skills in computer thinking, algorithm design, system architecture, software engineering, network security and other aspects, while improving students' autonomous learning, teamwork, innovative thinking and other abilities. In terms of curriculum, attention should be paid to building a comprehensive curriculum system, including basic computer courses, professional core courses, practical courses and elective courses. Among them, basic computer courses should include principles of computer organization, operating system, database principles, etc. Professional core courses should include algorithm design, data structure, high-level language programming, computer network, software engineering, etc. Practical courses should include curriculum design, internship training, graduation design and other links, focusing on training students'practical and innovative abilities; Elective courses should be based on market demand and discipline frontiers, offering courses in artificial intelligence, big data, cloud computing and other fields, such as artificial intelligence, data mining, big data analysis, etc. In the design of curriculum system, attention should be paid to the cultivation of students' innovative and practical abilities, and innovative courses should be offered, such as innovative thinking training[9]. Strengthen interdisciplinary and integration, broaden students'horizons, and cultivate their comprehensive quality and innovative ability.

4.2 Reforming teaching means and methods

Under the background of new engineering course, the teaching method should be student-centered, aiming at cultivating students' ability and quality. With the development of science and technology, new teaching technologies are constantly emerging, such as virtual reality teaching, online teaching and so on. Teachers should actively use new technologies to provide students with more vivid and vivid learning experience, so as to improve students'interest and effect in learning. In the teaching process, heuristic teaching and project case based teaching methods are adopted to guide students to learn independently, think independently, and practice independently, so as to improve their comprehensive quality and innovative ability. In the teaching process, a positive, open, and interactive teaching atmosphere should be created, encouraging students to dare to question and try, and stimulating their innovative consciousness and creativity. Teachers, based on their own reality, introduce research projects for teaching, allowing students to understand the practical application value of the knowledge they have learned, and engaging excellent students in the development and implementation of projects, so as to improve students'interest and enthusiasm in learning, so as to improve students' practical ability and problem-solving ability. Guide students to study independently, cultivate their ability to think independently and solve problems, and at the same time, cultivate students'cooperative spirit and communication ability through group discussion and team learning.

4.3 Strengthen school-enterprise cooperation and build an innovative practice platform

Practice teaching is an important link in the training of computer professionals, which should focus on the cultivation of students' practical ability and problem-solving ability. In order to strengthen practical teaching, local universities should actively establish cooperation mechanism with enterprises to ensure the smooth progress of cooperation between the two sides. Both schools and enterprises should jointly formulate cooperation plans and implementation plans, clarify the timetable and tasks of cooperation, give full play to their respective advantages, and realize resource sharing and complementary advantages. As a university, it should provide resources such as high-end talents, scientific research achievements and teaching facilities. The enterprise is responsible for providing practical experience, technology and equipment and other resources, and the two sides cooperate with each other to achieve the goal of cooperation. The cooperation between universities and enterprises can better understand the market demand and industry dynamics, jointly formulate training programs, carry out practical teaching, and provide internship opportunities, so that students can better adapt to the needs of the industry. School-enterprise cooperation provides students with more internship opportunities and projects, enhances their practical experience, constantly promotes the integration of production, teaching and research, and cultivates innovative computer talents under the background of new engineering. Specifically, a perfect practical teaching system should be established, including experiments, curriculum design, practical training, graduation design and other links. At the same time,

attention should be paid to introducing enterprise-level projects and practice cases, so that students can have access to actual projects and problems in the learning process, and improve students' practical ability and problem-solving ability. Local colleges and universities provide innovative practice platform for students, and encourage students to conduct independent exploration and innovative entrepreneurship practice[10]. Establish open laboratories and innovative practice bases, provide necessary equipment and financial support, and encourage students to participate in various innovative and entrepreneurial activities and academic competitions to improve their innovative and practical abilities.

5 Conclusions

With the acceleration of innovation in emerging technologies such as big data, artificial intelligence, cloud computing and 5G, local colleges and universities should actively explore how to cultivate innovative talents of new engineering computer specialty, how to better promote invention, innovation and creation, and how to help achieve China's high-level scientific and technological self-reliance, so as to support industrial transformation and upgrading. In the context of the construction of new engineering courses, many problems in the training of computer professionals still need to be solved by the joint efforts of universities, enterprises and students. In addition to steadily promoting the above measures, the construction of computer specialty in local colleges and universities should also pay attention to the cultivation of students' comprehensive quality, knowledge updating and career planning education, so as to improve students' practical and innovative ability and comprehensive quality, and adapt to the changes of social needs and the development of high-tech.

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