Exploration on the Cultivation of Electronic Science and Technology Talents under the Background of Engineering Education Professional Certification

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Abstract: The new professional certification standards put forward new requirements for the training of engineering professionals. The electronic information engineering major of the school takes the engineering education professional certification as an opportunity to explore the talent training model reform from the seven aspects of the certification standards.

1. Introduction

According to the certification results published by the China Professional Certification Association, by 2016, a total of 576 majors across the country have passed the certification. For example, the electrical engineering major of Shenyang University of Technology passed the four-year reform and passed the professional certification in 2015. The professional certification work of other universities has also achieved many research results. However, until 2016, only 10 colleges and universities had passed the certification of electronic information engineering. The talent training model of electronic information engineering in most colleges still has many shortcomings and needs to be solved. Therefore, it is very necessary to reform the training mode of electronic information engineering professionals at this stage.

2. The core content and role of engineering education professional certification

The core content of engineering education professional certification includes two aspects: First, the qualification assessment. The corresponding institutions and departments set the minimum standards for a certain profession, and then use the minimum standards for the development of professional assessment of the quality of education in colleges and universities to determine whether the profession is qualified. The second is professional rectification. Through continuous self-evaluation, expert review and other certification measures to encourage and promote professional improvement work that does not meet the "professional certification" standards, improve quality. Therefore, the role of engineering education professional certification is mainly reflected in the education department and the students participating in the certification. For the education sector, especially colleges and universities, it is possible to target the national standards setted by professional organizations in the formulation and implementation of teaching plans, so that their teachings can be externally recognized. For students who participate in professional certification, if the student has been trained in the profession, he said that the knowledge of learning can meet the basic requirements for professional career change. Therefore, the engineering education profession aims to serve enterprises and transport talents for enterprises, so they should cultivate talents based on enterprises.

3. Main issues in the training of electronic information engineering professionals

After nearly 10 years of rapid development in China's higher education, the achievements are obvious to all. The number of universities and the number of people receiving higher education have reached an unprecedented level in history. The education of universities has shifted from the past “fine education” to “mass education”. The development of electronic information engineering in Chongqing University of Technology has been developing for 20 years and has achieved many

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achievements, but we must also see various shortcomings in the process of talent cultivation.

In recent years, many colleges and universities in China are keen to expand the number of students and increase the scale of teaching. Once the hot industry emerges, everyone will flock to the hot profession. For example, the electronic information engineering profession is such a profession. In 1996, the global IT industry was booming, and the demand for IT talents was strong. The electronic information engineering profession belongs to the combination of computer and electronics majors. The professional threshold is low. Most professional experiments and designs can be performed on computers. carry out. Therefore, various types of colleges and universities in the country have begun to fight for such a profession. The biggest consequence of blindly running a hot profession is that it makes employment difficult, especially when the industry is down. However, this kind of employment is not simply a "difficult employment", but a "structural" employment difficulty. It is not an oversupply of talents in the industry, but a shortage of low-end, low-level talents and a shortage of professionals who can meet the requirements of social and economic development. insufficient supply.

Most of the professional courses in the electronic information engineering profession are information courses, and much of the knowledge is almost ever-changing. For example, the "Microcomputer Principles" course, from the early Z80 single board machine to the C51 series of single-chip microcomputers, to the 86 series, ARM series, etc., almost every one or two years of knowledge has been updated, not to mention many communication courses. From GSM, GPRS to 3G, 4G, etc. However, most colleges and universities do not really follow the principle of improving the overall quality of talents, scientific norms, and adapting to the actual conditions. There is a lack of scientific and rationality in the curriculum, and the comparison between “study by people” and “closed doors” serious. The talents that ultimately cause social needs are not cultivated by the university; the talents cultivated by the university are not needed by the society. This has caused a serious disconnect between talent training and social needs.

When the enrollment of the early electronic information engineering profession was large, the electronic information engineering profession quickly introduced many teachers due to the rapid expansion of enrollment. However, due to too many new teachers, the quality of teachers cannot be guaranteed. Many teachers are graduate students and doctoral students. They go directly from school to school. Most of them only have theoretical knowledge and no practical work experience. This is also an important reason for the decline of students' ability. However, when the enrollment scale was reduced, the teachers were idle again, and some teachers even did not have a class for one semester.

4. Reform ideas for the training mode of electronic information engineering professionals

The school's e-professional program is an enrollment in Shaanxi Province. The students are mainly from the provincial high school. According to the actual admission scores of the school and the family situation of the students, the award-winning system for attracting outstanding students should be established to strive for high-quality students. After the students enter the school, We should strengthen the awareness of service assistance, strengthen the construction of teachers and operational mechanisms in the areas of study guidance, career planning, employment guidance and psychological counseling, and effectively solve various difficulties during the school. The certification standards require that the training objectives of the talents include both the requirements for graduation and the ability and career development expectations of the students after five years of graduation. The training objectives of the school's electronic major should be in line with the actual situation of students' ability, especially the "demand" and "featured". The school is characterized by textile and clothing. The electronic information engineering profession should closely combine the characteristics of the school, and invite experts from the electronics and textile and apparel industries to participate in the training. During the training process, regular seminars will be held to invite students, parents, and entrepreneurs at different levels to participate in the conference. In this way, the training objectives will follow the development of the industry in a timely manner.

Graduation requirements are the knowledge and skills that students must master. It is a ruler to check the effectiveness of students' ability development. There are 12 graduation requirements in the certification standards, namely engineering knowledge, problem analysis, design/development solutions, research capabilities, use of modern tools, engineering and society, environment and sustainable development, professional norms, individuals and teams, communication, projects. Management, lifelong learning According to the guidance of these 12 items, the electronics major should conduct a large number of research and study, and develop graduation requirements with professional characteristics. Each graduation requirement sets the corresponding teaching activity group and reforms the existing transcript form. The new transcript should be clear. List the graduation requirements, the curriculum and practice training items, assessment methods, and feedback mechanisms for each requirement. The role of the new version of the transcript can first guide students to clear the learning tasks and business needs from the time of entering the school; secondly, it can provide the learning process and effect of the students during the school; it is also an important material for the continuous improvement of the school.

The current curriculum system of the major includes general education courses, professional basic courses, and professional elective courses. However, there are no credits for innovation and entrepreneurship education courses, scientific research practice and competitions, and the degree of cooperation between theoretical courses and practice links is not good Therefore, the reform of the curriculum system should aim at supporting the training of students' practical skills. The curriculum content and credit hours must be reformed according to the graduation requirements. Enterprises or industry experts should be invited to participate in the curriculum. The theoretical course should focus on the practical skills to set up the course group, and the instructors will be concentrated to discuss the content of the lectures, so that the course content will be connected to each other and the level will be progressive; the course group should aim at completing a certain technical study and unify the design time and credits. Finally, we must further increase the practical skills credits, and all forms of practice links (mainly in science and technology practice, supplemented by entertainment) are reflected in the form of credits, changing the status quo of students' examinations and practice.

The four-year study time of the students is very valuable. The professional should arrange the time according to the technical needs of the industry. It is necessary to put the students' superiority into the cultivation of practical skills, and give priority to designing the practical system (including the practice operation and the practice platform construction). An effective practice system must not only support the ability of students to develop their abilities, but also be able to timely adapt to changes in the development needs of the electronics industry. The reform focus should deeply integrate the practice system and the curriculum teaching system. The teaching focus of the theoretical curriculum should focus on broadening the breadth of professional knowledge, focusing on the professional knowledge that can be used in practical work; the practical operation should strengthen the training of professional skills The practice and operation reform is mainly for the course experiment, curriculum design, comprehensive experiment, graduation design and other aspects. The existing tofu block type short-term experiment class can be integrated according to the skill type. For example, the signal experiment class experiment class can be set up intensively, the class time is added, the separate experimental credits are set, and the technical project actually needed by the enterprise is introduced. Some demonstration experiments are set up for student work, and the special experiments are changed to applied experiments. Comprehensive experimentation and graduation design are operations that require a lot of time. The reform method is “emphasis on sustainability”. Taking graduation design as an example, it is currently open in the second semester of senior year. The actual situation is that most students have almost zero engineering design experience and weak theoretical knowledge in the first three and a half years. Students are always faced with time conflicts between their senior job search, postgraduate study, internship and graduation design. The reform idea is to combine the comprehensive experiment and the graduation design, design the technical research project with different professional research directions, set up the project instructor team, and ask the students to select at least one technical research project for

learning and development from the time of entering the school. The selection of these technical research projects must be based on the key technology settings required by the industry, and should be linked to the students' graduation thesis (design), college students' innovation and entrepreneurship projects, college student challenge cup competition, electronic design competition, robot design competition and other competitions. Students can participate in competitions and write graduation thesis with the results of research projects. By continuously utilizing the student's time, it is also possible to change the status of the graduation internship for only three weeks, thereby greatly improving the systemic and efficient learning of the students.

5. Conclusion

In the new form of electronic information engineering, we must closely follow the requirements of engineering education professional certification, and vigorously reform the existing education model. Talent training should be guided by the technical needs of the industry, and build a talent training model that supports the training objectives. We can strengthen the teaching quality monitoring and service guarantee system according to the industry's dynamic and timely adjustment system, so that graduates can effectively meet the needs of industry and social development and increase employment competitiveness.

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