Research on Engineering Practice Teaching Model Based on the Combination of Professional Practice and Creative Training

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Abstract: In view of the problems existing in the reform of high-level curriculum system and practical teaching of electrical information specialty in local agricultural universities, the article introduces the various ways adopted by electrical information specialty which aims at cultivating innovative talents. The paper fully embodies the educational and teaching ideas of "strengthening the foundation, broadening the orientation, paying attention to the combination and highlighting the characteristics". The practice teaching mode is explored in the form of cultivating students' innovative spirit and practical ability, and the practice teaching system of electrical information specialty is established.

1. Introduction

As we all know, with the rapid development of electrical information technology, the demand of the society for the quantity and quality of electrical information technology talents is getting higher and higher. It is very important to train high-quality electrical information professionals for the development of information technology itself. [1]At present, the scale of colleges and universities is expanding, the number of graduates is expanding sharply, while effective demand will not increase too much in the short term for improving the quality of talent cultivation. So we have some urgent problems to solve. For example how to train innovative talents of automation specialty, and how to do a good job in the employment of graduates. In order to do a good job in the employment of graduates, we should take various forms to cultivate students' innovative spirit and practical ability and so on. This paper explores the practical teaching mode and establishes the practical teaching system of electrical information specialty[2].

2. Characteristics of Practical Teaching in Electrical Information Specialty

It is not enough for students majoring in electrical information to rely solely on good theoretical knowledge in the classroom. Practical teaching links need be strengthened so that students can not only deepen their understanding of theoretical knowledge, but also cultivate practical skills. The experimental contents involve various key points, difficulties and highlights of theoretical teaching. In the form of experiment, the combination of verifying, designing, comprehensive and innovative experiments should be carried out to reduce the content of verifying experiments, and increase enlightening, interesting, practical, representative and designing experiments, we also need encourage students to carry out innovative experiments, put forward different requirements for students at different levels, and teach students in accordance with their aptitude. In addition, the students should participate in production practice, various scientific and technological innovation and competition activities. It is also an important practical teaching link to cultivate innovative ability[3,4].

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3. Reform of Curriculum System

3.1 Contents of Curriculum System Reform.

In the overall design of the curriculum system, we should adopt the combination of "platform" and "module" to realize the talent sharing and cultivation according to the common development of different students and the requirements of discipline characteristics. In addition, the specialty characteristics and innovation, the professional characteristics and individual requirements of talent cultivation, they also solve the gap of higher education to a certain extent. The interface between diameter and social division of labor can cultivate the ability of technology application and innovation. Graduates should have the characteristics of moderate basic theoretical knowledge, strong ability of technology application and certain ability of sustainable development.

3.2 Established the Professional Direction Module Curriculum.

Major module courses are offered according to the characteristics of each major, including major main courses and major elective courses, such as automatic control principles, process control and instrumentation, power electronics technology, computer control technology and other major courses. Digital signal processing, television technology, detection technology are offered by electronic information engineering major as major courses. Electrical engineering and automation and agricultural electrification and automation specialty set up motor and drive, power system relay protection, power system analysis, substation secondary circuit, detection technology, which belong to professional backbone courses in order to make students have a certain specialty. So every professional determine the direction of a few elective module, each elective module is a set of related courses for the students, each elective course module provides a set of related courses for students to choose[5].

3.3 Confirmation of Practical Experiment Course System.

The experimental practice course mainly includes course experiment, internship, graduation project (paper), and innovation activity and so on. It is an important aspect of the whole teaching activity. Its purpose is to cultivate and train students' knowledge application ability and innovation ability, and then improve the effect. The in-class experiment includes electrical technology experiment, electronic technology experiment and electronic testing technology experiment. These experiments are the key to cultivate students' learning interest and comprehensive quality. We can grasp the basic skills of circuit, electronic components, basic amplification circuit, and electronic testing technology and so on through these experiments. We also can deepen our understanding through perception and specific operation: the comprehensive experiment includes the principle and application of single chip computer experiments, EDA technology experiment, etc.

4. Exploration and Practice of Talent Training Model

4.1 Talent Training Model Integrating Teaching, Research and Production.

Practice includes understanding practice, teaching practice, production practice, graduation practice, etc. Practice should follow the frontier of technological development, strengthen school-enterprise alliance, establish joint laboratory between school and enterprise, and bring a win-win situation for school to train high-quality innovative talents and enterprise development. Practice links play a role in training students' engineering practice ability and innovation ability. Significantly, we have actively established an off-campus practice base for "production, education and research". For example, in combination with the characteristics of our specialty, we have established contacts with more than ten county power bureaus. And in addition, our college and Great Wall Automobile Co., Ltd. cooperate enable students to carry out graduation design in combination with engineering practice, so that students can get real engineering training and improve students'

ability. Then they can analyze and solve actual problems. It greatly improves students' employment competitiveness, and shorten students' adaptation time to practical work.

4.2 Strengthen the Feedback of Employment Work and Establish the Dynamic Control Mechanism of Teaching.

We should regularly carry out the follow-up survey of graduates' employment, and establish the archives of graduates' quality and employment. We also adjust the teaching plan flexibly and timely every year according to various feedback information of employment work so as to make the students meet the needs of employing units at the same time. We should also carry out the employment intention of students in schools. To investigate and analyze the actual needs of the society for professional talents, we should adjust the teaching work in time according to the needs of the society for talents, change part of the teaching plan, add temporary courses such as "Project New Technologies" and "Information New Technologies Lectures", as well as the application of DSP and the development of embedded system. The short-term training can meet students' career needs.

4.3 Building a Competition Platform to Promote Learning.

In the school, a platform for discipline competition has been set up to form a multi-disciplinary competition team. In the competition team, the participating students form a team ladder. The junior students join the competition early. It is not important whether they can get a place in the competition. The main thing is to learn in the competition and grow up in the competition. The participants of many competition events form a "pyramid" structure. They can provide a stage to show talent and wisdom to each team, also form a good competition atmosphere. At the same time, colleges and universities should actively organize all kinds of related competitions and competitions at the university level in accordance with their professional characteristics. [6] This reflects the teaching characteristics of engineering education which emphasizes the combination of theoretical knowledge and practice. The relationship between learning and games helps students change passive learning into active inquiry learning, and improves students' ability to use knowledge comprehensively and innovate. By introducing the contest mechanism, we can change "I want to learn" into "I want to learn". So it can solve the problem of students' lack of motivation for independent learning, and improve the innovative ability of College students. Through the process of training, students fully realize the importance of theoretical knowledge and practical ability to innovation, and give full play to the main role of students and the leading role of teachers in the process of knowledge acquisition. Through the production process of the entries and the integration of multi-course knowledge, students can master the formation of a diversified knowledge structure. Promoting the application of interdisciplinary knowledge can enhance the links between courses and courses, and improve students' innovative ability, practical ability and comprehensive ability to use knowledge. At the same time, students participating in the contest should be rewarded in all aspects. Their employment competitiveness can be significantly enhanced. They have won more opportunities and created more choices in the process of recommending postgraduates without examinations, postgraduate interviews or employment.

4.4 Integrate Teaching Resources and Keep Pace with Learning.

College students' innovation laboratories including electronic innovation laboratories, product design innovation laboratories and process production laboratories should be extensively constructed. In these innovative laboratories, laboratory resources are integrated to optimize the allocation of resources. Training and competition platforms are provided for well-known discipline competitions such as the National College Students Electronic Design Competition, the National College Students Industrial Design Competition, the National College Students Mechanical Innovative Design Competition and the National College Students Engineering Training Competition[7]. At the same time, through innovative laboratories to organize and carry out school-level scientific and technological innovation activities, to create conditions for students to carry out scientific and technological innovation and technological exchanges. By integrating innovative practical resources

such as innovative laboratories and creating space for all, improving team entry and management system, introducing enterprises, letting students go out and further strengthening the integration of production, competition, learning and research on the basis of existing conditions.

4.5 Guiding Students to Self-Employment, and Doing a Good Job in the Employment of Graduates.

The key to solving the problem of graduates' employment is to broaden the channels of employment. And we need let college students learn how to start their own businesses. For this purpose, teachers with rich experience in entrepreneurship can be employed to set up entrepreneurship training courses. In the teaching process, students should be helped to establish entrepreneurship awareness, cultivated entrepreneurship thinking and students' ability to use knowledge comprehensively. Strong sense of social responsibility encourage them to start a business by themself ,and we can provide conditions and facilities, actively guide students to participate in social practice activities, and help them find ways to find employment do a good job in the employment of graduates.

5. Conclusions

The ultimate goal of the reform is to cultivate high-quality talents with comprehensive technical and practical abilities for the society. The reform of the curriculum system must adapt to the new situation and requirements, adhere to the concept of knowledge-based and ability-based, and closely adapt to the needs of the talent market. The development of new subjects has increasingly become the focus of attention of colleges and universities. In order to realize the cultivation of compound innovative talents, it is necessary to start with the integration of learning and competition, and the construction of new curriculum[8]. So we can achieve the integration of disciplines, innovation and integration, promote the teaching reform in the new stage, and cultivate a large number of high-level talents with excellent professional quality and strong innovative ability.

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