

Research on the Practice Teaching Reform and New Path of the Electrical Engineering Specialty of "School Enterprise Collaboration"

Chunhui Li^{1,*}, Haibin Fang¹, Wenjing Zhang¹, Chunyu Shao²

¹*School of Information and Control, Shenyang Institute of Technology, Fushun, Liaoning, 113122, China*

²*Liaoning Power Transmission and Transformation Engineering Co., Ltd., Shenyang, Liaoning, 100020, China*

**Corresponding author*

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Abstract: The electrical engineering research of "school enterprise cooperation" is a new learning mode, and also one of the practical learning methods that can best help students to improve the electrical engineering specialty, and can directly provide innovative engineering talents for enterprises. The mode of "school enterprise cooperation" has been widely used in colleges and universities, especially in the innovation of education. This education mode not only enables students to learn the basic knowledge on books, but also applies the practical problems encountered in enterprises to teaching, so that the school's education system interacts with the enterprise's education system, forming a set of advanced education concepts. The goal of school enterprise collaboration is to cultivate students' practical operation ability, application ability of professional knowledge, innovation ability and adaptability, and lay a good foundation for students to better adapt to the society.

The electrical automation technology specialty has a strong comprehensiveness. It contains a wide range of knowledge and rich content, including both strong current knowledge and weak current knowledge, as well as software and hardware design. Therefore, students need to master a variety of knowledge and skills, including electrical and electronic knowledge, computer technology related knowledge, etc., so that students not only have professional knowledge and skills in electrical engineering, but also have basic knowledge and basic skills in automation and information technology. Students should be trained to have a wide range of majors and strong adaptability. The train of thought is to "lay a solid foundation for students, strengthen their practical ability, stimulate their innovative spirit, and cultivate high-quality technical talents"; The main purpose of the construction of electrical automation technology specialty is to give priority to strong electricity, combine strong electricity with weak electricity, broaden students' theoretical basis, and highlight practical application. With the continuous innovation of industrial technology, new intelligent technology has made great progress; The highly information symmetrical, harmonious

and efficient social ecology based on Internet technology, cloud computing, the Internet of Things, big data, artificial intelligence and other ecosystems and systems is the application of "intelligence+".

1. The Situation and Main Problems before the Curriculum Reform

Problems in the internship arrangement of electrical automation technology:

(1) The school will cooperate with relevant enterprises to provide students with internship opportunities. In order to ensure the personal safety of students and the normal progress of enterprise production during the internship, the enterprise has simplified the product production process during the student internship. The students themselves do not have a thorough grasp of the basic professional knowledge and cannot fully understand the whole process of product production;

(2) The noise of various electrical and pneumatic equipment at the practice site makes it difficult for students to experience and record the whole process seriously;

(3) There is no record of the whole process of students' practice. In addition, the students themselves do not attach importance to the practice and their attitude is not positive, which can not achieve the originally envisaged practice effect of the school.

2. Reform Measures to be Taken Against the above Problems

(1) School enterprise cooperation to comprehensively improve students' comprehensive quality

The education mode of school enterprise cooperation can cultivate the education mode of school enterprise cooperation, which can cultivate the compound talents with high practical ability, high application ability and innovative ability, and comprehensively improve the comprehensive quality of students. In the traditional teaching mode, students pay too much attention to the study of theoretical knowledge, pay attention to credits or certificates, and neglect the ability of practice and application of theoretical knowledge. Their thinking is too narrow; The school enterprise cooperation education model will make up for the shortcomings of traditional teaching. It emphasizes the combination of theory and practice, and trains students to verify theoretical knowledge in practice. It can not only apply the theoretical knowledge learned from books in practical teaching, but also train students to repeatedly ponder problems encountered in practice, and solve more practical problems through their own thinking [1-2].

(2) School enterprise cooperation mode promotes the development of a virtuous circle of students, schools and enterprises

As two independent individuals, the school and the enterprise have their own advantages. The school has rich talent reserve resources, while the enterprise has technical experts and advanced equipment. The combination of the two has realized complementary advantages and achieved a win-win situation. For students, their professional skills have been comprehensively improved. For schools, excellent graduates can create a good reputation for the school, Making the electrical engineering specialty more distinctive can bring professional talents to enterprises and promote the growth of economic benefits of enterprises. It can be seen that the school enterprise collaborative education model can promote the development of a virtuous circle of students, schools and enterprises [3].

(3) Schools and enterprises are more suitable for problem discovery and research

Enterprises can give students more opportunities to participate in practice, which can not only broaden their horizons, but also enrich their professional knowledge, so that they can walk in the forefront of the industry, which is conducive to students' exploration and research on the problems existing in electrical engineering, and more conducive to stimulating students' innovation spirit. For enterprises, professional talents can promote the further research and development of existing

technologies, improve the professional level of the entire technical team, and provide first-class technical services for enterprises in the same industry.

3. Main Aspects of Teaching Reform

The Engineering Practice Teaching Strategy of "School Enterprise Cooperation" for Electrical Engineering Specialty

(1) Implement the joint teaching of school teachers and enterprise technicians

In order to better implement the teaching mode of school enterprise collaboration and allow students to obtain more comprehensive learning opportunities, professional teachers of the school and professional technicians of the enterprise must work together to teach. During the period of school, students can be taught on campus by their tutors, mainly teaching some basic courses. Teachers on campus should strictly assess students on campus. When practical training or practical classes are held, technicians from enterprises will teach, mainly focusing on the research of scientific research projects or the guidance of electrical engineering practice, and also assessing them in practice[4].

(2) Schools and enterprises use their respective advantages to coordinate education

Schools and enterprises are two different education systems. Each education system has its own way of education. Schools and enterprises should make good use of their own educational advantages and conditions to avoid their own shortcomings and communicate with each other. The school can establish a training base, which is the result of joint discussion between the school and the enterprise, so that every student can have the opportunity to participate in the training at any time, and also verify and train the professional knowledge they have learned in school, so as to better improve the professionalism of students.

(3) Strengthen the management of students

If you want to strengthen the management of students, you must want to strengthen the management of students. You must have an effective management system. In the process of joint management of schools and enterprises, students' daily living standards, assessment of academic performance, professional practical operation ability, etc. should be considered by both sides. Schools and enterprises should discuss these issues together to establish corresponding management systems, To regulate and manage some of the students' bad behavior, and better promote the school enterprise cooperation in the education model[5].

(4) Improve students' engineering practice level

4. Reform of Practice Content

(1) The embodiment of modern instrument and equipment renewal and intellectualization

1) Build an intelligent electrical training and teaching center, which is composed of electronic product assembly training room, intelligent power distribution training room, intelligent control comprehensive training room, and integrated intelligent energy innovation practice base, forming a complete electrical intelligent training and teaching system.

2) Comprehensive Virtual Simulation Experiment

In order to solve the problem of high cost and complex structure of modern electrical experimental equipment, virtual simulation technology is used to combine virtual simulation with traditional software and hardware. Multisim is mainly used for circuit simulation. It is applicable to the design of board level analog/digital circuit boards. Through the use of Multisim, the working principle of the designed circuit can be clearly displayed. Multisim simplifies simulation analysis to make it more suitable for electronics education. Proteus can realize schematic layout, circuit simulation, code debugging and peripheral circuit simulation analysis. It can realize various color

experiment functions, such as traditional circuit analysis, analog circuit, digital circuit and other experiments, and can also analyze embedded system experiments.

3) The above software and simulation experiment platform can be used to realize the power virtual simulation experiment combining software and hardware. Teachers can maintain and experiment the typical experiment library according to the teaching plan, and correct the experiment report on the platform.

4) Pay attention to feedback and correct immediately. Teachers should consciously broaden and deepen their questions and students' answers every time, gradually introduce students into the focus of the teaching content, and modify the teaching plan according to the feedback, follow up and correct it in real time.

5. Conclusion

Under the education mode of school enterprise cooperation, some practical courses are too attached to the theoretical courses, the main purpose of which is to verify the theoretical knowledge on books, lacking comprehensiveness and systematicness, and not focusing on the effectiveness of practical courses, which is not conducive to the improvement of students' practical ability. Therefore, in the case of school enterprise cooperation, it is not only necessary to cultivate students' mastery of basic knowledge, but also to implement it through the enterprise's physical projects, and then master their professional skills in practical operation. For example, during the freshman year, we mainly focused on the curriculum experiment and the assessment of curriculum design. During this period, we can provide students with learning resources through enterprise projects to cultivate students with high majors and high levels; During the sophomore year, the actual combat of the project can be carried out. The actual combat content should all come from the problems encountered in the production of the enterprise. Reform the original training base, establish a training base focusing on improving students' engineering ability, and improve students' ability of continuous cognition, exploration, experiment, design, implementation and innovation at different levels.

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