

The Exploration Of Industry-University Cooperation For Communication Engineering Specialty In Application-Oriented Universities

Sun Qiaoyun^{1*}, Zhou Jiang², Zhang Shuguang¹, Wang Min¹, Zhang Yu¹

¹Department of Information, Beijing City University, Beijing, 100083, China

²Vehicle Institute, Beijing, 100120, China

email: sunqy@bcu.edu.cn

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Abstract. The characteristics of communication engineering specialty are more practical and engineering. To strengthen industry –university cooperation is an effective way to cultivate the applied undergraduate talents. On the basis of cooperative education experience and our own advantages, the teaching practices are explored to cultivate applied undergraduate talents. The objective is to explore how to use cooperative education into the teaching process of Communication Engineering Specialty in order to promote the applied talents cultivation. In addition, It is the preparation to deepen the teaching reform.

Introduction

In the form of economic globalization, cultivating innovative applied talents for the construction of socialist modernization has important strategic significance. The implementation of the cooperative education is an effective way to cultivate applied talents with high quality[1]. It becomes an important part of reform and development of colleges and universities. Cooperative education makes full use of two different education environment and resources of school and society which combines school education with the research and production practice. It can bridge the gap between school education and social demand problem fundamentally and enhance competitiveness and adaptability of college graduates.

Communication engineering is a specialty with strong engineering and practice. With the rapid development of communication technology industry and related manufacturing industry, the society puts forward higher requirements on the talent cultivation of communication engineering, which has brought new challenges to the teaching of communication engineering. The applied talent cultivation of communication engineering is not limited to the teaching of theoretical knowledge, but to cultivate their ability to apply theory to the engineering practice[2][3]. However, at present the phenomenon of emphasizing theory and neglecting practice still exists, which makes the students of communication engineering lack of practical training. It cannot adapt to the current development of the communications industry. Therefore, communication engineering specialty needs urgent reform of the practice teaching to strengthen industry-university cooperation, improve the quality of talent cultivation and enhance their social competence.

Practice Teaching With Industry-University Cooperation

Practice Teaching System. In the process of the cultivation of the students, we must stress the cultivation of students' engineering practice ability. But the specialized equipments are extremely expensive. And it is difficult to construct all of them within the campus. Therefore, we should strengthen the industry-university cooperation to make full use of the enterprise resources. Practice teaching system of communication engineering specialty is built based on industry-university cooperation, according to the analysis of the post and the ability demands.

Industry-university cooperation is throughout the four years undergraduate education. According to different grade level, practice teaching is divided into five levels with specialized interest training,

basic skill training, comprehensive skill training, practice innovation ability training and professional comprehensive ability training. Resource integration and optimization of industry-university cooperation is mainly based on the five levels. All of us promote the content updates and material construction of practice teaching. Finally, a link chain of practice training is formed to improve the students' project practice ability and innovation ability with introduction to specialty, training course experiment, course design, communication system training, communication comprehensive training, innovation and undertaking training, course contests, graduation design, enterprise training.

Teaching Methods And Means. In the process of teaching, projects and cases driven teaching pattern is implemented to make teaching approach "true" working condition in the communication equipment laboratory with enterprise equipment. Project driven course teaching is to allocate the project to the students under the guidance of the teacher. The students are responsible for the information collection, the scheme design, the project implementation and the final evaluation. The teacher will decompose the whole learning process and design each project teaching plan. The project refers to the enterprise operation management projects, consulting projects, teachers' scientific research project and other real projects. Case refers to Beijing local enterprise practice, including the classic case and local case, successful case and failure case to strengthen the teaching pertinence and practicability.

Graduation Design. Graduation design is a very important practical teaching link in colleges and universities. Through the graduation design, students can integratedly apply specialized knowledge to solve practical engineering problems. In the process of graduation design, the double tutorial system can be implemented. The graduation design should be instructed by both the school and enterprise mentors. On the one hand, school mentors can instruct students in theoretical knowledge and writing high quality design report. On the other hand, enterprise mentors can instruct students in practical production. This mode of graduation design can not only achieve the combination of theory and production practice, but also can improve the quality of graduation design and employment ability.

Guarantees For Industry-University Cooperation

Practice teaching base construction is the important guarantee of industry-university cooperation. On the one hand, communication engineering specialty should strengthen practice base construction for training students' practical ability within the campus. University and Industry need co-build school training base. For example, they can jointly build a lab or engineering research center, etc[2][4]. In the process of joint laboratory construction, they must not only strengthen the real communication equipment for the construction of the laboratory, but also must strengthen the building of opening laboratory. The real communication equipment in the laboratory must be consistent with the equipment which enterprise uses. The graduates who complete in-class practice teaching can satisfy the requirements of the enterprise. In open laboratory, we can organize the student to do professional competition, innovative training to train integrated and innovation ability of the students. On the other hand, to establish stable off-campus training practice base with large enterprises is essential, too. It can offer field work to make the students contact the real project. The real project can not only enhance the students' practical skills, but also enhance the students' professional quality.

Advantages, Problems And Countermeasures Of Industry-University Cooperation

Advantages. For colleges and universities, resource sharing with the enterprises is helpful for students to integrate theory with practice. It can also make university education more close to the actual market demand. In cooperative education, the teachers can use its own advantages and school hardware platform to discuss cooperation projects with the cooperative enterprises. Meanwhile, the students' practical ability can be improved by study a real project. For enterprises, the problem of shortage of human resources can be solved in the short term, and in the long run, professional

and technical personnel reserve can be achieved. Colleges and universities are the sources of innovation and the talent bases. They can provide enterprises with intellectual support and service to help enterprises to solve the actual problem in production.

Problems And Countermeasures Of Industry-University Cooperation. Industry-university cooperation inevitably will appear internship program conflicts with teaching plan. Aiming at the above problem, colleges and universities should adhere to the education idea of industry-university cooperation and adopt flexible teaching management. In the process of internship, there is a certain distance between the students' psychological orientation and the jobs which enterprises can provide. To solve this problem, on the one hand, the practical contents are decided by enterprise project directors and double-qualified teachers with rich practical experience. The common problems in production are written in the production internship instruction. Students can choose topic and formulate and implement the research plan through the cooperation with enterprises. It can not only consolidate the professional knowledge and improve the ability of practical application, but also further cultivate the students' specialized interest. On the other hand, the form of rotational internship can be adopted. This can make the students have an overall understanding about production process. So they can find their own expertise and choose suitable jobs by themselves. Meanwhile, Teachers should help students to recognize the importance of each post in the production process. Finally, the enterprises have not yet realized the importance of talents. And they are lack of intrinsic motivation to cultivate the talent together with the school. As for this problem, colleges and universities can play their own advantages to help enterprises solve the problems of technology, management, production and labor lack; Related teachers can often communicate with enterprises and make them feel that industry-university cooperation education is very important; The colleges and universities can build the school practice bases with the current network communication equipment to do theoretical knowledge training for enterprise employees.

Conclusion

The cooperative education is an effective way to cultivate applied innovative talents. In this paper, practice teaching system is constructed based on cooperative education. We also put forward specific measures of teaching method and graduation design considering industry-university cooperation. These measures conform to the specialty education objectives of communication engineering. In the external environment of rapid development of communication technology, they also greatly improve students' learning enthusiasm, initiative and creativity, and enhance the social competitiveness and adaptability.

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