Research on the Teaching Platform of School-enterprise Cooperation to Co-construct Practical Training Base

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Abstract. School-enterprise cooperation to co-construct a practical training base can cultivate applied talents with high skills to adapt the modern enterprise needs, can make the school-enterprise the mutual benefit and win-win cooperation, but also can improve the professional level and skills of mixed teaching teams; Relying on the enterprise’s advantage, seeking accurately counterpart enterprises. On the base of school-enterprise cooperation to co-construct practical training bases, the "school in factory" mode is a kind of beneficial exploration. The city vocational college of Jiangsu and Nanjing Ningqing CNC Machine Tool Manufacturing Co., Ltd. co-constructed a practical training base. In the mechatronics technology major in the city vocational college of Jiangsu, the "school in factory" mode is attempted boldly, to make it more adaptable to the needs of the market for the applied talents of mechatronics professionals.

Introduction

With the development of social economy, the market has more and more demand for applied high skilled talents, the requirement is higher and higher, so as to requires higher education to cultivate more applied high skilled talents. To achieve this requirement, school-enterprise cooperation is the inevitable trend [1]. The school-enterprise cooperation to co-construct a training base and to build "school in factory" in it is the embodiment of deep cooperation between schools and enterprises, and it is an effective way of train applied high skilled talents.

The city vocational college of Jiangsu and Nanjing Ningqing CNC Machine Tool Manufacturing Co., Ltd. built cooperatively the training base, to explore the "school in factory" education mode, to establish the teaching platform of school-enterprise cooperation to co-construct practical training base and actively practice, achieved good results.

The Significance of School-enterprise Cooperation to Co-contract a Practical Training Base

School-enterprise cooperation is an important measure for higher vocational colleges to integrate with the market, improve the quality of education, and train targeted high skilled talents for the enterprise. The aim is to combine with the knowledge that the students learn in the school and the practice in the enterprise, and to let the school teachers' theory level and enterprise production equipment and technology to achieve complementary advantages, resource sharing, to improve the quality of skilled talents.

School-enterprise cooperation is based on the needs and development of higher vocational colleges and enterprises, and takes talents, technology and efficiency as the combination point to participate in the training process of applied talents. Both schools and enterprises make full use of two kinds of educational environment and educational resources, realize the organic combination of classroom teaching and enterprise practice, the organic combination of campus culture and enterprise culture, the organic combination of professional education and occupation education, to cultivate high skilled talents suitable for production, construction, service and management [2].

Based on the above analysis, the significance of school enterprise cooperation to co-contract practical training bases is mainly reflected in the following aspects:
That School-enterprises Cooperate to Co-construct Practical Training Bases Can Jointly Cultivate High Skilled Talents to Adapt to the Needs of Modern Enterprises

In the process of school-enterprise cooperation to co-construct training bases, the relationship between the two sides changed from loose to tight. Through close contact with enterprises, the school explored the "school in factory" mode, formulate the talents training scheme, curriculum system, teaching content and teaching methods in higher vocational colleges, so that the construction of the training base is effective and features [3]. This will play a positive role in promoting students' basic ability, professional ability, learning quality and skill level and so on, so as to jointly train high skilled talents to meet the needs of modern enterprises.

The School-enterprise Cooperation to Co-construct Training Bases Can Make Both Sides Mutual Benefit and Cooperation Win-win

For the school, it is responsible for the whole process of students' education and teaching. The "school in factory" mode is to make full use of training bases, share advanced and practical equipment, and train qualified and applied high skilled talents for enterprises. For the enterprises, co-constructing training bass can not only cultivate enterprise reserve talent pool, intelligence source, but also provide training sites or assistance equipment to schools. It will be a "win-win" process, whether to cultivate talents in higher vocational education, to create wealth and to publicize the image of the enterprise. [3].

The Cooperation to Co-construct Training Base Can Improve the Mixed Teaching Team of Business Level and Professional Skills

Mixed teaching team refers to a teaching team that the teachers in schools and technical backbone personnel in enterprise consist of. In the process of school-enterprise cooperation to co-construct training bases, the teachers in schools can learn practical skills in the "school in factory", to constantly enrich and improve their practice ability, at the same time, to jointly research product design and production plan together with enterprises, to help enterprises solve the problem; With school teachers together, the technical backbone personnel in the "school in factory" directly teach application skills, advanced manufacturing technology to the students, and discuss teaching how to serve the practical production, how to cultivate students' practical ability. So that business level and practical ability of teaching mixed team will continue to increase.

The Exploration and Practice of "School in Factory" Model

The Ideas of School-enterprise Cooperation to Co-construct Training Bases

Relying on the advantages of enterprises, finding the right counterparts, and exploring "school in factory" mode is a useful attempt. At the same time, using training bases and setting a mixed teaching team can improve the quality of teachers.

Relying on the Advantages of the Enterprise, Cooperating to Co-construct the Training Bases. Vocational education requires theoretical teaching to be “applicable, practical and sufficient”. Practice teaching should follow the process from simple to complex, from familiar to proficient[4]. This teaching process needs a lot of capital investment in a real career environment.

In the process of investigation, many mechanical and electrical industries and manufacturing enterprises are very willing to co-construct training bases with our school. The school can help enterprises publicize their products to form "no cost" advertisements, and enterprises can also sponsor or sell their products to meet the training requirements of the school, which is a win-win result.

SIEMENS (Shanghai) Industrial Automation and Driving Technology Group, Nanjing Ningqing CNC Machine Tool Manufacturing Co., Ltd., Nanjing Huaxing NC Technology Co. Ltd. and so on co-construct training bases of our school.
Finding the Right Enterprise and to Explore the "School in Factory" Model. Co-constructing training bases, exploring "school in factory" mode can further improve the function of the school training bases, perfect the hardware facilities, optimize the resources allocation to prominently enhance the comprehensive training ability and greatly reduce the training cost[5]; at the same time, for cultivating the students applied skills, improving students' practical ability and occupation accomplishment is extremely important.

According to the training objectives and direction, our mechatronics technology major and Nanjing Ningqing CNC Machine Tool Co., Ltd explored the "school in factory" mode.

The Using Training Bases and Setting a Mixed Teaching Team Can Improve the Quality of Teachers. The object of training in higher vocational colleges is applied talents facing the first line of production. Teachers' rich practical teaching experience and skillful practical ability are the direct guarantee for improving students' practical skills, [6]. Therefore, improving the quality of training teaching not only need advanced instruments, production equipment, but also need high quality training instructors. The using training bases and setting a mixed teaching team can improve the quality of teachers.

The Exploration and Practice of "School in Factory" Model

In order to carry out the talent cultivation idea of "learning and doing in one, multi certificate integration" and the training specifications of the precise and appropriate basic knowledge, concise professional skills, rich practice, the city vocational college of Jiangsu and Nanjing Ningqing CNC Machine Tool Manufacturing Co., Ltd. co-constructed a practical training base. In the mechatronics technology specialty, they boldly tried "school in factory" mode to make it more suitable for the market's need.

Nanjing Ningqing CNC Machine Tool Manufacturing Co., Ltd is a private technology enterprise that specializes in the development, production and sale of CNC machine tools and has a modern R & D manufacturing base. In recent years, development speed of this enterprise is fast, and There is a continuous investment in new products. Some students of mechatronics technology major in the city vocational college of Jiangsu choose CNC technology direction and do internships in the enterprise; Nanjing Ningqing CNC Machine Tool Manufacturing Co., Ltd. has encountered real puzzles in the development, such as new employees have low comprehensive quality and old employees job hopping is frequent. For this reason, the enterprise is eager to cooperate with higher vocational colleges to quickly train and select a group of students who identify with the company's culture and ideas and have strong practical working ability. It can provide strong human resources guarantee for the rapid development of enterprises.

The Joint Revision of the Training Program for Mechatronics Technology Specialty by the Two Sides of the School and Enterprise. We should not only keep the continuity and seriousness of the original talent training program, but also adapt to the new conditions, and strengthen the practicality. Take the way of course replacement: The 3 specialized courses in the original plan were reorganized to form the 21 micro courses related to the job practice, and the school and enterprise teachers jointly carry out the teaching. At the same time, the company provided 8 technical positions for cross training to all students. A two-way choice is available for students' employment, and Ningqing can select some excellent students.

The School and Enterprise Jointly Formulate the Practice Training Curriculum and Class Schedule of the Practical Training. According to the cultivate goals of mechatronics technology major, after repeatedly discussing and researching, the school and enterprise jointly formulate the practice training curriculum and class schedule of the practical training[7].

The practice training curriculum include 8 technical post courses: spindle box assembly, whole machine assembly, screw rod, oil way installation, optical machine, scraping and research, whole machine assembly, cable electroplate making, whole machine electrical installation, system debugging and so on.
**Practice of "School in Factory" Model.** In order to protect the interests of the two sides, the school and enterprise jointly sign training agreement on school-enterprise cooperation and the safety insurance of the students.

The school chooses the teachers in the full vigour of life, the enterprise chooses technical staffs having high theoretical level and rich experience to form a mixed teaching team.

The two sides carry out the training of talents in accordance with the joint revision of the training program and the curriculum schedule. In the course of training, the teaching process is formulated in accordance with the production process of the enterprise, and the content of the teaching is designed according to the product of the enterprise. There are 8 posts, each student must carry on the rotation practice.

The two sides jointly assess the quality of the students' training. Since it is the "school in factory", All of it are evaluated according to the appraisal system of the enterprise. However, according to the characteristics of the school, both sides of the school and enterprise have jointly formulated the process assessment table. The examination contents include: theoretical assessment, operation assessment, work report assessment and work performance assessment.

In order to help enterprises solve practical problems, the students' graduation design is combined with the actual learning and work situation of "school in factory", so that students can find suitable topics in practice and help solve problems encountered in production practice.

Since the "School of factory" mode has been operated, the students have really experienced the real work process and have received good results. Many students can independently install and debug the numerical control system, and some students have participated in the installation and commissioning of the exported CNC machine tools. Some of the graduation designs have solved the practical problems of the enterprises.

**Conclusion**

Practice has proved that the teaching platform of which schools-enterprises jointly co-construct training bases, establish "school in factory" mode is very characteristic. The training effect is good, so that schools, enterprises and students are satisfied.

School aspects: School understood the needs of the enterprise and adjust the teaching content in time. In order to adapt to "school in factory" mode and meet the requirements of talents for enterprises, the both sides made necessary amendments on the basis of the original mechatronics professional training program to meet the training needs of talents. At the same time, "school in factory" mode has effectively improved the level of teachers' business and professional skills. In addition, the cost of running school is greatly reduced.

Enterprise aspects: Enterprise has selected a group of trainees who agree with the company's culture and ideas and have stronger practical working ability, so as to further provide powerful human resources protection for the rapid development of enterprises. At the same time, it also propagandize its own products and corporate image.

Student aspects: Students have learnt much knowledge and many skills, and found satisfying job. In the work, they can give play to their own potential, for the future work lay a good foundation for the development.

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