

Exploration and Practice of Training Mode for Valve Major under Deep Integration of Production and Education

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Abstract

Deepening the integration of production and education is an important way for the development of higher education. The problems existing in the training of valve specialty in local higher vocational colleges is analyzed. The practical exploration of the integration mode of production and education in valve major of Wenzhou Polytechnic is conducted, and the practical effect is presented in this paper. Finally, suggestions and measurements are proposed to ensure the sustainable development of the integration of production and education.

Keywords

Valve major; Integration of production and education; Training mode; Exploration and practice.

1. Background and Significance

Pump and valve manufacturing industry is one of the key pillar industries in Wenzhou, and it is the primary responsibility of higher vocational colleges to train urgently needed talents for local industries. Since the establishment of valve design and manufacturing major in 2010, our college has transported more than 500 college graduates for Wenzhou pump and valve enterprises. As a result, valve design and manufacturing major of Wenzhou Polytechnic has a high social reputation in the pump and valve industry. In the face of the growing demands for high-quality technical talents in the pump and valve industry, it is of great significance to explore and practice how to realize the deep integration of professional talents training and industry in order to better serve the local industrial development in Wenzhou and improve the quality of talent training.

Based on the study of the construction and development of valve major in our college in recent years, together with the investigation of valve enterprises and graduates, it is found that in the deep connotation construction of the specialty, the valve major development is still facing bottleneck problems. For example, the training program of professional talents has been revised several times, but it is still difficult for graduates to directly start their internship in enterprises, and enterprises often still need to spend more energy on pre-job professional and technical skills training. In the aspect of teaching reform and teaching content, our major teachers have also made a variety of explorations, visited key enterprises for many times, and repeatedly solicited the opinions of experts from the professional steering committee, however there are still some courses that are difficult to connect with the actual work of enterprises. In practice teaching, our major pays more attention to the integration of theory teaching and practice teaching. the school training room is established through the cooperation between school and enterprise, and opened to teachers and students. It has achieved certain effects, but it is still quite different from the working situation of the enterprise. In order to seek a new breakthrough in professional personnel training, the exploration and practice of the talent training mode of deep integration of production and education based on the valve industry is proposed in this paper.

2. The connotation of Modern Apprenticeship

Modern apprenticeship is a professional talent training mode developed in western countries after World War II. It combines theoretical learning with practical training closely and focuses on cultivating students' practical skills. The modern apprenticeship was formally put forward in our country in 2011. At present, many higher vocational colleges explore the modern apprenticeship with Chinese characteristics on the basis of learning from foreign modern apprenticeship education ideas. Its essence is based on the in-depth cooperation between schools and enterprises, adopting the learning mode of work study alternation, highlighting the method of "learning by doing and teaching by doing", paying attention to the dual cultivation of theory and skills. School teachers and enterprise masters participate in the whole teaching process together. In the real working environment, practical teaching cultivates vocational skills in the form of "master leading apprentice", which promoting the establishment of professional identity and realizing the integration of production and education, school enterprise collaborative education. The connotation of modern apprenticeship talent training mode is shown in Figure 1.

Figure 1. The comparison between traditional apprenticeship and modern apprenticeship

Differences \ Type	Traditional apprenticeship	Modern apprenticeship
School running subject and teaching subject	Enterprise	Schools and businesses
Scale	Smaller	Bigger
Qualification	Non academic education	Including academic education and non academic education
Identity	Apprentice	Apprentice and student
Wage	Non	Low wages
Learning objectives	Skilled workers	High quality skilled personnel
Learning place	Production line	Production line and school
Learning content	Practice operation	Practical operation and theoretical knowledge
Learning style	Work	Work study alternation
Learning time	Indeterminate	Relatively fixed
Assessment	Master worker, Industry Association	Teacher, master worker and education sector

3. Practical Exploration

(1) In the second semester of the freshman year, our teachers select the students with good comprehensive quality (valve or mechanism majors) for the enterprise among the willing students, and consider the area where the enterprise is located, so as to recommend the students who are in the same area or intend to work in this area for a long time. The recommended students will be interviewed by the enterprises, and finally the "employment seedlings" will be determined. There are about 3-5 students in an enterprise, and the enterprise Instructor (Master) is determined. At present, among the pump and valve enterprises with deep qualification in Oubei and Longwan, there are nearly 10 in-depth cooperation with our valve specialty.

(2) According to the different enterprises, the "job seeker" is divided into several groups and arranged to participate in the auxiliary design task in the valve research and development Institute of the college. According to the class time of each student, set a fixed spare time to punch in the research and development institution to "go to work", and the person in charge of

the institution will uniformly allocate the "go to work tasks" of these students. In general, the assistant design work assigned to students should be combined with the valve product design of future employment enterprises, so as to prepare students for internship and employment in advance.

(3) During the semester, students are required to go to the enterprise for internship every Saturday, and the enterprise instructors arrange the work tasks. During the summer vacation, students are required to practice in the enterprise for 1-2 months, and the enterprise will arrange accommodation, and give students appropriate transportation and catering subsidies, so as to improve the enthusiasm of students. According to the performance of students, enterprises set up awards and bonuses for tutors and students to improve their work enthusiasm.

(4) Our professional teachers are required to participate in guiding the students' aided design work in R & D institutions and designing new products for enterprises. It is suggested that teachers help enterprises apply for related projects, participate in solving technical problems, and cooperate with enterprises in depth.

(5) Students' internship in the last semester is arranged in the corresponding enterprises. After the first two years of "running in", many students can achieve zero distance employment. Enterprises do not need pre employment training for students, thus greatly reducing the time and economic costs.

(6) We will also work with the Commission of economy and information and the skill appraisal center to take the lead in the industry qualification certification. The technical director of the cooperative enterprise is invited to form an expert group. The members of the expert group will work out questions and set up a question bank. The questions include theoretical knowledge questions and skills operation questions related to valve design, assembly and testing. The number of questions and the minimum score of passing the evaluation will be determined each time, and the students who pass the evaluation will be issued with certificates. In general, the evaluation is organized once a year, and the members of the expert group are responsible for the evaluation. The evaluation is not only for our college graduates, but also for all technical personnel in the pump and valve industry. The enterprise will give the selected graduates with certificates a higher level of salary.

4. Practical Effect

(1) The zero distance employment of graduates

From the beginning of the second semester of the first year, students are determined to be "employment seedlings" through two-way selection with enterprises. During the next two years of school study, they will take advantage of holidays, winter and summer holidays to practice in enterprises, master the technical skills required by the post, and achieve zero distance employment when they graduate.

(2) Improve employment stability

Enterprises assign instructors to students and guide them to practice in the form of master and apprentice. Students understand the corporate culture during the internship, and enterprises give certain material rewards to students who perform well in the internship. All these are conducive to cultivating students' feelings for enterprises and laying a good foundation for stable employment in the future.

(3) Improve students' salary and encourage them to study hard

If the students can pass the qualification examination of valve industry and get the certificate before graduation, the salary of the enterprise is higher than that of the ordinary students. This can encourage the students to actively participate in the valve studio to undertake tasks, and

strive to learn professional knowledge and skills. The enterprise saves the effort of training new employees, and both sides are better prepared for zero distance employment.

(4) Improving teachers' teaching and scientific research level

Teachers and enterprise technicians should strengthen cooperation and mutual learning to help enterprises solve technical problems and develop new products, so as to improve their teaching and scientific research level.

(5) Stable development of industry and regional economy

After the implementation of modern apprenticeship teaching mode, excellent and stable high-quality technical talents can be delivered to enterprises every year, which is conducive to the healthy development of enterprises and the stable development of Wenzhou pump and valve industry and regional economy.

5. Conclusion

Deepening the integration of industry and education is the need of the connotation development of higher education and the future reform of higher education. Local colleges and universities should seize the historical opportunity of deepening the integration of industry and education, have the courage to practice and explore, constantly improve the corresponding mechanism and mode in the development, and run in with the government and enterprises, so as to achieve the integration of industry and education with school-based characteristics.

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