



Whole Process and Integration Talent Training Mode for Electromechanical Students

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Abstract. In order to improve the quality of talent training for students majoring in mechanical and electrical engineering, whole process and integration talent training mode in mechanical and electrical engineering is proposed. Discuss the main contents of the mode through the establishment of expert steering committee, practical teaching system, practice bases inside and outside the school, collaborative training between schools and enterprises, and double qualified teachers, the school enterprise cooperation forum and innovation and entrepreneurship education. Several years' practices prove that the talent training effect of the mode is remarkable. The employment quality of students has been improved, the team of teachers has been improved, and lots of school enterprise cooperation platforms have been constructed.

Keywords: Integration of industry and education · Talent training · Whole process and integration · Electromechanical students

1 Introduction

In traditional education, teaching is teachers teach and students learn. Tao Xingzhi, the great educator of China, supplemented “Teaching” as early as 1925. He proposed the important thought of “combine teaching, learning and doing”. Doing is the core. One should teach and learn on the basis of doing. This important thought has been guiding Chinese education the importance of doing. Successful personnel training, students should have the ability of doing [1–3]. Around what to do, how to do, scholars at home and abroad did lots of research [4–6].

In October 2017, the report of the 19th Party Congress stated that integration between industry and education and cooperation between schools and enterprises. It points out the direction for Chinese education, instructs the student to do the things which the industry needs, uses the cutting-edge technology to do. The integration of industry and education training mode by the school and enterprise cooperation is completed by the two main personnel training. It can solve the problem that the quality and ability of talents do not accord with the needs of industry. The integration mode of enterprise and school is a new and efficient school-running mode. It is the key link to guarantee and improve the quality of professional education. It can improve the competitiveness of schools, schools and enterprises to achieve a win-win situation.

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2 Purpose and Significance

2.1 Mechanical and Electrical Professional Education Needs

Traditional mechanical and electrical professional education is often based on practical teaching materials. The investment in training students' practical ability is insufficient. The talent training mode is single. The teaching content is thin. The lack of actual engineering projects has become a limiting factor in personnel training.

The integration of enterprise and school can make educators deeply understand the needs of industry development. It can avoid the lag of imparting knowledge. Adjust the training plan in time. Set up a training base. Cultivate students' practical ability. Research projects with enterprises to improve the scientific research capacity of universities.

2.2 Students Employ Ability Needs

Traditional education leads that students do not have a detailed understanding of enterprise position. Students do not have a complete career development plan. Students lack work experience when they are employed. In the integration of industry and education mode, students go into the enterprise. Students can better understand the job requirements. They can make their own career development plans. Students accumulate a certain amount of enterprise work experience before employment. Improve the competitiveness of students when they apply for jobs.

3 Concept of the Deep Integration of Industry and Education

3.1 The Major of Mechanical and Electrical

The mechanical and Electrical Majors Include Mechanical Engineering, mechanical and electronic engineering, industrial design, industrial engineering, vehicle engineering, intelligent manufacturing engineering, etc., and Automation, electrical engineering and its automation, measurement and control technology and instruments under the Institute of Electrical and Electronic Engineering.

Construct a platform for the deep integration of school-enterprise cooperation in personnel training. Guide students to make use of cross-disciplinary knowledge and practical skills. It is of great significance to improve students' ability to solve complex engineering problems.

3.2 The Whole Process and Integration

The whole process: refers to the entire process of personnel training, mainly including the teaching process, practice process, quality development ability training process. In the personnel training process, make a detailed and in-depth study of each process. Infuse the integration ideas into the whole process.

Integration: Integration of teaching, learning and doing. Combine the teaching of the educator with learning and doing of the students. Emphasize the combination of theory and practice. The connotation is the combination of work and study and the unity

of knowledge and practice. Integrated curriculum development follows the principle of “three-link”. “Three-link” means professional set-up links with industrial needs, Course content links with professional standards, teaching process links with production process. Ensure the quality of training compound application talents through the system guarantee process, the teacher ability training process, the training plan formulation process, the classroom teaching link, the practice teaching link, the quality development link and so on.

3.3 Deep Integration of Industry and Education

As one of the main ways of training applied talents, the integration of industry and education is the essential feature of colleges and universities serving the local economy and industry development. Production can be understood as industry and production. Industry mainly refers to the social division of labor and the development of productive forces formed on the basis of a relatively stable industry and sector. Production is the process of practice. Teaching also has the double meanings of educational content and teaching activity. Integration means cooperation. The integration of industry and education mainly refers to carrying out educational and teaching activities in production practice. Promote the development of production through educational and teaching activities. Realize the perfect combination of theory and practice in the process of personnel training.

4 Main Content of the Mode

According to the national demand for mechanical and electrical talents training, this paper constructs the training mode of “whole process and integration”. During the whole process of talents training, school should be deeply integrated with enterprises. The talents could have the ability which connects with the industry. They can get creative projects, papers and so on so that they can better meet the needs of society. Through the feedback from graduates and employers, this training mode forms a closed loop. School can constantly modifies the system, platform, training and various teaching links, so that this training mode can be well developed. As shown in Fig. 1.

4.1 Three Platforms and Four Modules for Practical Teaching

The talent training plan revolves around the application-oriented talent training goal, strengthens the practice teaching. Through school-enterprise integration and cooperation education, strengthen students’ practical ability training. In practice teaching, pay attention to the training of students’ practical ability. The three platforms include the basic skills training platform, the comprehensive ability training platform and the innovation ability training platform. The four modules refer to the professional practice module, the professional practice module, the research experiment module and the innovation practice module.

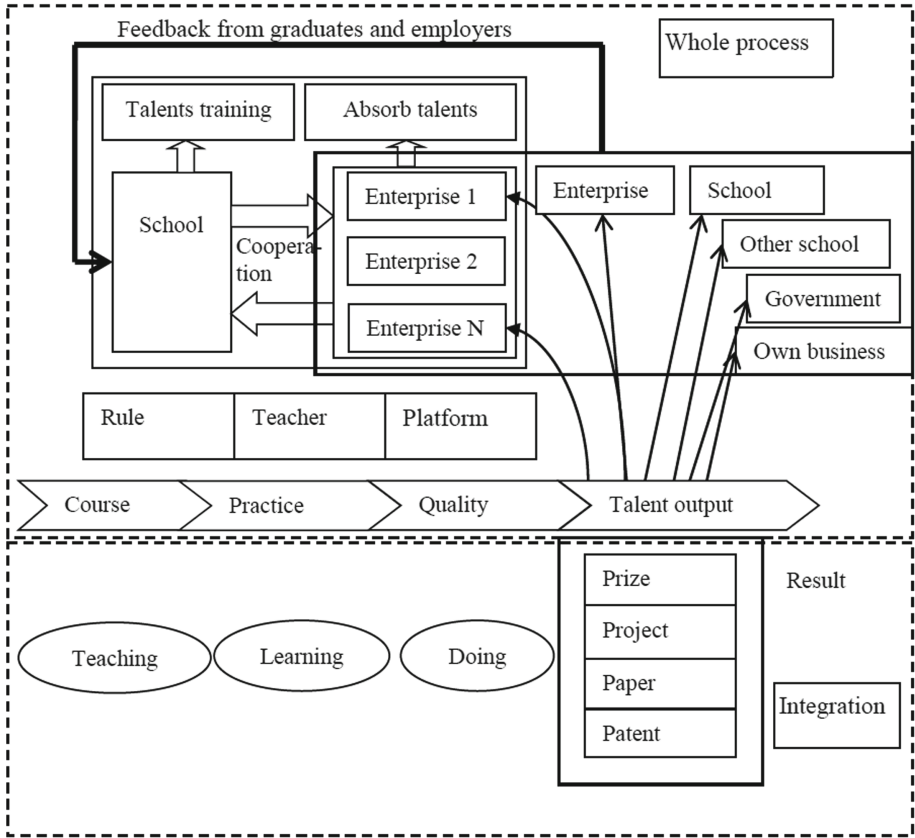


Fig. 1. Whole process and integration talent training mode

4.2 Construction of Practice Base Inside and Outside the School

Establish 35 practice bases for students from enterprises and institutions. Senior students should go to the practice bases of cooperative enterprises for enterprise-based training and professional quality training. Students are transformed to staff through familiar with the enterprise management, project implementation process, participating in project development.

4.3 Deep Cooperation Between Schools and Enterprises of the Joint Training System

Based on the three main bodies of schools, cooperative enterprises and employment units, schools and enterprises work together to formulate talent training plan, carry out talent training together, develop teaching resources together and carry out teaching supervision together, implementing a joint training system of the curriculum system, including the public capacity platform, the professional foundation capacity platform, the extracurricular innovation capacity platform, the professional orientation education platform and

the employment-oriented practice platform, to ensure that personnel training down to the earth.

5 Application Effect

5.1 High Quality of Talents

In the past five years, the mode of school-enterprise cooperation has covered five majors. There are 1548 students in the five subjects. The annual employment rate of students is above 95%. Compile a survey of graduates in the past five years; nearly 55% of graduates are working in state-owned enterprises. 29% of graduates are working in private enterprises. 7% of graduates are working in foreign-funded enterprises. 3% of them are working in scientific research and design institute. 20% of the graduates have high salary in their area. The employers reflect that the graduates of this major generally have a solid foundation of theory, a wealth of expertise and strong practical ability.

5.2 A Team of High-Level Teachers

There are 51 full-time teachers. 40 teachers have engineering background. It's about 78.4% of the total number of teachers.

5.3 High-Quality School-Enterprise Cooperation Training Platform

After five years, several platforms have been constructed. There is a national experimental teaching demonstration centre for engineering training. There are three provincial practical teaching demonstration centres, including mechanical engineering experimental teaching centre, mechanical and electronic engineering experimental teaching centre, and university students' scientific and technological innovation practice base. On the basis of strengthening the construction of the practice base in the school, a stable cooperative relationship with several enterprises has been formed.

6 Conclusions

To improve the quality of talent training for students majoring in mechanical and electrical engineering, propose the whole process and integration talent training mode of deep integration of production and education in mechanical and electrical engineering. Establish a professional teaching steering committee. This mode constructs three platforms and four modules for practical teaching. Electromechanical major constructs practice base inside and outside the school. This major cooperates with enterprises deeply to train the talents.

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