Reform of the Training Mode of Automobile Manufacturing Professionals under the Background of High-quality Economic Development

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Abstract: In order to solve the current shortage of technical and technical talents in the automobile manufacturing industry under the background of high-quality economic development, this article takes the automotive manufacturing and assembly technology specialty as an example to analyze and research the current situation of the cultivation of technical and technical talents in Shandong Province. Based on the integration of industry and education, school-enterprise cooperation, in-depth exploration in talent training models, talent training approaches and methods; The establishment and improvement of school-enterprise cooperation dual main education system and mechanism to ensure the smooth development of technical and skilled personnel training; Innovate the talent cultivation mode of "the integration of production and education and the coupling of posts and courses" to meet the demand of enterprises for high-quality technical talents; explore the "five-stage, six-link" of talent training approach to ensure the quality of talent training.

1. Introduction

General Secretary Xi Jinping pointed out in the report of the 19th National Congress of the Communist Party of China: China's economy has shifted from a stage of high-speed growth to a stage of high-quality development, and is now in the crucial period of transforming the development mode, optimizing the economic structure and transforming the growth drivers. Building a modern economic system is an urgent requirement for crossing the threshold and a strategic goal for China's development. High quality development, talent is the key, high quality development needs high quality talent, high quality development puts forward higher requirements for talent training.

2. The necessity of cultivating high-quality technical and skilled personnel in the context of high-quality economic development

2.1 Adapt to the needs of the development trend of modern vocational education

As a type of higher education in China, higher vocational education plays a very important role in promoting social development, technological innovation, and improving the quality of the labor force [1]. In Shandong province for the further implement the series of major strategic decisions of the CPC Central Committee and the State Council to accelerate the development of modern vocational education and the spirit of the State Council's Decision on Accelerating the Development of Modern Vocational Education (issued by the State Council [2014] No. 19). This article will study the current situation and countermeasures of the cultivation of technical and skilled personnel in Shandong Province in accordance with the positioning of “based on industry, rooted enterprises, build platforms, and win-win cooperation” to meet the needs of the development trend of modern vocational education.

2.2 Optimize the allocation of teaching resources to meet the professional needs for the cultivation of high-quality technical and skilled talents

Optimize the allocation of teaching resources, ensure the sustainable development of the profession, and meet the needs of the profession for the cultivation of high-quality technical and

skilled talents. Teaching conditions play an important role in directly improving teaching means and methods, comprehensively creating an educational and teaching environment, and improving the quality of talent training. With the rapid development of our province's economy, the cultivation of high-quality technical and skilled talents is increasingly dependent on the teaching conditions with production technology as the connotation, especially for the automobile manufacturing industry, which has a high level of equipment technology and automation, it is impossible for schools to purchase equipment that matches the enterprise. On the one hand, it leads to a vicious circle of "poor schooling conditions for the major of automobile manufacturing and assembly technology → difficult to improve the quality of teachers and students → difficult employment for students → unsatisfactory enrollment of schools → insufficient funding for schools"; On the other hand, it also hinders the development of automobile manufacturing and assembly technology, and hinders the cultivation of high-quality technical and skilled talents.

3. Teaching reform ideas

The 19th CPC National Congress pointed out the development direction of vocational education under the background of high-quality economic development: deepening the integration of production and education and school-enterprise cooperation [2]. This article takes the automotive manufacturing and assembly technology specialty as an example to analyze and research the current situation of the cultivation of technical and technical talents in Shandong, based on the integration of industry and education, school-enterprise cooperation, and in-depth exploration in talent training models, talent training means and methods, etc. Countermeasures to meet the needs of the development trend of modern vocational education, to train more high-quality technical and skilled personnel, with a view to improving the outstanding problems of insufficient number and low quality of professional and technical talents in automobile manufacturing.

4. Analysis of the status quo of the cultivation of high-quality technical and skilled talents

4.1 Employment Analysis

The survey found that the major employment positions of the graduates of the automobile manufacturing and assembly technology major are the welding and final assembly (factory inspection) job groups of automobile plants. Initial employment: front-line technical staff for production of vehicle assembly, vehicle inspection, and body welding (quality inspector, equipment operator, equipment maintainer, equipment manager, etc.). Target position: front-line production management and technical management personnel (Technologist, technician, team leader, section chief, workshop director, etc) for vehicle assembly, vehicle inspection, body stamping, body welding, painting control, etc.

4.2 Analysis of enrollment colleges and training status

At present, the major of automobile manufacturing and assembly technology does not belong to the key majors developed by various colleges and universities and the popular major of enrollment. There are about 170 vocational colleges offering the major in the country, and there are only ten colleges in 75 vocational colleges offering the major in Shandong Province. The establishment of this major, for which the vocational colleges have different positioning, generally can be divided into two major categories: automotive front market and after market. However, limited to the shortage of teaching resources, most of the courses offered are basic courses for automotive majors.

5. Countermeasures for the cultivation of high-quality technical and skilled talents

5.1 Establishments of school-enterprise collaborative education system and mechanism

5.1.1 Study on the Leadership and Coordination Mechanism of School and Enterprise Work

The school and enterprise signed a cooperation agreement, clarified their responsibilities and division of labor, established a school-enterprise co-education cooperation committee, established a school-enterprise co-education schooling alliance, established a school-enterprise co-education work leading group, jointly established a project team, demonstrated a talent training plan, and established a school-enterprise work leadership and coordination mechanism.

5.1.2 Study on the Working Mechanism of School-enterprise Joint Enrollment and recruitment

Breakthrough the existing admissions system of Shandong Jiaotong Vocational College's automobile manufacturing and assembly technology major and the existing recruitment system of Beiqi Foton Motor Co., Ltd. Gatu Division, jointly determine the enrollment and recruitment plan, and solidify into the unit system of both parties, within the scope of national policy, to achieve joint enrollment and recruitment of automotive manufacturing and assembly technology students, and to ensure the sustainability of the system.

5.1.3 Research on improving and optimizing mechanism of teaching conditions

Strengthen resource sharing, co-construction of culture, make overall use of teaching resources such as training places in schools, public training centers and corporate internship positions in enterprises, and form a improving and optimizing mechanism for teaching conditions.Make overall planning and integration of training resources on campus, increase the existing practice base construction and management ability, and give full play to the functions and advantages of the existing training base facilities and equipment in order to improve the comprehensive service capabilities of the training bases. Based on professional management, establish and improve a set of training base management mechanism, implement standardized management, establish and improve various rules and regulations, and provide guarantee for the normal operation of the practice base. At the same time, make full use of social resources to carry out various forms of off-campus internships and practical training activities to strengthen the professional quality and vocational skills training of students.

5.1.4 Research on Teaching Quality Monitoring Management Mechanism

In accordance with the requirements of talent training programs and training goals, we will carry out double-subject education, formulate management methods, develop core courses, strengthen teaching management and process monitoring, and form a teaching quality monitoring and management mechanism.

Formulate master selection standards based on the level of industry and job skills, and clarify corporate master duties, incentives and assessment methods; establish flexible talent flow mechanism. Schools and enterprises jointly develop two-way job-placement exercise, horizontal joint technology research and development incentive system and assessment reward and punishment system; formulate multi-subject participation, multi-channel feedback, and multi-dimensional evaluation of teaching quality monitoring standards. Establish the apprentice assessment and evaluation mechanism with the participation of colleges, enterprises and third parties.

5.2 Explore the school-enterprise cooperation mode of "integration of industry and education and coupling of posts and courses"

Through strategic cooperation between schools and enterprises in such fields as training of high-quality technical and technical talents in automotive manufacturing and assembly technology majors, development of educational and scientific research projects, establishment and improvement of cooperative systems and mechanisms, and promotion of industrial-education integration Collaboration, school-enterprise collaborative design of talent training programs, joint development

of professional teaching standards, curriculum standards, quality control standards and corresponding implementation plans System [3-4]. Develop professional teaching content and teaching materials based on job content (incorporating national vocational qualification standards to achieve coupling of post and class)

5.3 Implement the teaching task of "five stages and six links"

In accordance with the law of progressive ability and the principle of thick foundation and strong skills, the school will deeply cultivate basic skills and basic literacy, focus on core positions outside the school, conduct project-based teaching with actual production tasks, and implement the five-stage and six-stage teaching tasks.

(1) Five-stage process:

The first stage: basic literacy and professional basic ability training. Through training, students should be equipped with the basic literacy requirements of professionals, and master the basic knowledge corresponding to the training objectives of the automobile manufacturing and assembly technology specialty, so as to lay a solid foundation for students.

The second stage: the core professional competence development of parts manufacturing inspection. The basic skills learning and training of parts manufacturing inspection are completed at the school, manufacturing inspection quality control and management are jointly organized by the school and the enterprise, and are completed at Beiqi Foton Motor Co., Ltd. Shandong Multi-functional Vehicle Factory.

The third stage: the core professional ability training of body welding (or complete vehicle assembly). The body welding (or complete vehicle assembly) basic skills learning and training are completed at the school. The body welding (or complete vehicle assembly) quality control and management are jointly organized by the school and the enterprise, and completed at the Beiqi Foton Motor Co., Ltd. Shandong Multifunctional Automobile Factory.

The fourth stage: the cultivation of professional development capabilities such as automated production line maintenance and debugging. Basic skills and knowledge such as automatic production line maintenance and debugging are learned at the school, and professional skills such as automatic production line maintenance and debugging are completed at Beiqi Foton Motor Co., Ltd. Shandong Multifunctional Vehicle Factory.

Through the second-, third-, and fourth-stage work-study alternations, the learning tasks for prospective employees identified in the training plan are completed.

The fifth stage: comprehensive professional post ability training and career development training. Students are trained to solve front-line difficult production problems, organize and coordinate, and manage production and technology capabilities through in-post practice, special practical training for core post production, professional skill appraisal, and management post probation

2) Six links:

During the enterprise learning process, after going through the six steps of "entry education → factory-level training → department training → group training → on-job / post transfer training → training of grassroots supervisors", the enterprise realizes the transformation from student to prospective employee to employee.

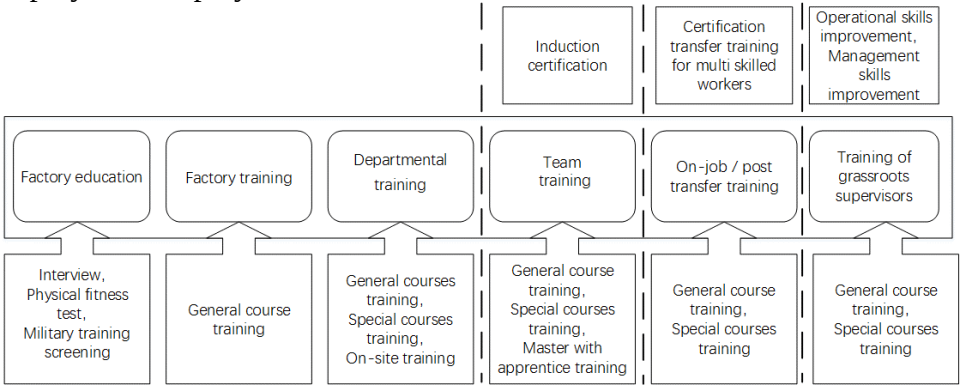

Figure 1. Six links.

Table 1. Taking welding post courses as an example, the course arrangement of welding post is as follows:

Area of Study (Course)	The class Close/single	Nature of the course	Classroom	Weeks	Total hours
Career planning and entrepreneurship employment guidance	single	compulsory	enterprise	14	28
Body welding technology	single	compulsory	enterprise	14	56
Welding equipment and maintenance	single	compulsory	enterprise	14	56
Welding process and implementation	single	compulsory	enterprise	14	56
Automotive production site management	single	compulsory	enterprise	2	48
Comprehensive training of automobile welding	single	compulsory	enterprise	14	160
Innovation practice	single	compulsory	enterprise	4	96

Integrate the learning field (curriculum) into enterprise curriculum modules (public basic courses, professional basic courses, basic skills courses, core skills courses, personalized development courses, comprehensive vocational courses) suitable for corporate teaching, and plant-level training to complete the public basic course learning; departmental training completed the basic professional course study; team training completed the basic skills course study; on-the-job training completed the core skills course study; rotation / transfer training completed the professional development, professional group personalized development course study; grassroots supervisor training completed the comprehensive vocational course study.

6. Conclusion

Through this reform, based on the school-enterprise collaboration to educate people, conduct in-depth research on school-enterprise cooperation methods, talent training means and methods, establish and improve the school-enterprise collaborative education system and mechanism, to ensure the smooth development of high-quality technical skills innovation personnel training; explore the " the integration of production and education and the coupling of posts and courses" school-enterprise cooperation method to meet the enterprise's demand for high-quality technical and technical talents; implement the "five-stage, six-link" teaching task to ensure the quality of talent training. Innovate the “two-coupling, five-segment and six-link” school-enterprise collaboration to train high-quality technical skills and innovative talents, cultivate more high-quality technical skills and innovative talents, with a view to improving the outstanding problems of insufficient number and low quality of technical skills and innovative talents , To meet the needs of enterprises for high-quality technical skills and innovative talents.

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