

# ***Research on the Cultivation Mode of Electromechanical Talents in Higher Vocational Colleges under the Background of Integration of Production and Education***

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**Abstract:** The integration of production and education is the inherent requirement of the training of high quality technical and skilled personnel, and it is also the only way for high - quality development to achieve high -quality development in higher vocational colleges. The article analyzes the significance of integrating industry and education in cultivating vocational electromechanical talents, the problems in cultivating vocational electromechanical talents, and proposes the path for cultivating vocational electromechanical talents under the background of industry and education integration. Through the construction of a hierarchical practical teaching system, a "three-dimensional interactive" talent training system, the expansion of the number of dual teacher types and a diversified talent cultivation quality evaluation system, we will promote the organic connection and deep integration of vocational education and industrial development, improve the quality of talent cultivation, and reduce the gap between the talent supply side and the industry demand side.

## **1. Introduction**

In December 2017, "Several Opinions of the General Office of the State Council on Deepening the integration of production and education " pointed out that deepening of the integration of production and education is the only way to achieve high-quality development of vocational education, and an effective means to promote the comprehensive integration of talent cultivation supply side and industry demand side structural elements<sup>[1]</sup>. To cope with the new round of scientific and technological revolution and industrial transformation, the state has implemented a series of national strategies such as "Made in China 2025"<sup>[2]</sup>. With the continuous development of technology, intelligent manufacturing has undergone significant changes in design, production, management and service mode. The production mode presents the characteristics of intelligence, networking, flexibility, precision and globalization. The industry needs compound talents with generality, professionalism and integration of technical skills. In order to meet the needs of social development, vocational colleges should take the initiative to connect industrial development, deepen the integration of production and education, and cooperate with schools and enterprises. combine the needs of regional development planning and industrial transformation and upgrading, and actively meet the needs of

digital, networked and intelligent manufacturing talents, and provide matching human and technical support for regional economic development and industrial transformation and upgrading.

## **2. The Significance of the Integration of Production and Education to Train Higher Vocational Mechanical and Electrical Professionals**

Higher vocational education shouldered the responsibility and mission of providing high quality composite technical skills talents for local economic construction. With the development of the new generation of information technology and the adjustment of the industrial structure, the industry's requirements for talent specifications have changed. Vocational colleges should combine regional development planning and industrial transformation and upgrading needs, pay timely attention to the changes of industrial structure, industrial technology and industrial posts, deepen the integration of industry and education, and cooperate with schools and enterprises. It closely connects professional groups with industrial clusters, majors with industries, curriculum standards with vocational standards, teaching process with production process, actively adapt to the demand for intelligent manufacturing talents in the new era of intelligent manufacturing industry, and promote the precise integration of talent cultivation supply side and industry demand side.

### **2.1. The Integration of Production and Education is Conducive to Promoting the Comprehensive Development of the School**

The quality of talent cultivation is the lifeline of higher education, which is directly related to the whole level of education and social reputation of a school. Cultivating high -quality technical and skillful talents suitable for industrial positions has always been the goal of talent training in higher vocational colleges<sup>[3]</sup>.The integration of production and education is an effective means to achieve seamless connection between talent supply and industrial needs.and an important way for vocational colleges and enterprises to carry out activities and exchanges. Through the deep integration of production and education, school-enterprise realizes resource sharing and complementary advantages, which is conducive to promoting the continuous optimization of school teaching structures. The quality, scientific research level, and social service capabilities of talent training have been continuously improved, and the comprehensive development of the school is promoted.

### **2.2. Integration of Production and Education is Conducive to Improving the Quality of Talent Training**

The new round of scientific and technological revolution and industrial reform has put forward new requirements for talent structure. The production mode presents the characteristics of intelligence, networking, flexibility, precision and globalization. The industry needs compound talents with generality, professionalism and integration skills. In order to improve the matching between the talent supply side and the industry demand side, it is necessary to further deepen the integration of production and education, school-enterprise cooperation, and jointly formulate talent training plans, develop teaching resources, carry out practical teaching, jointly build training bases, and jointly guide skill competitions<sup>[4]</sup>, so as to realize the integrated development of education chain, talent chain, industrial chain and innovation chain. Promote the close connection between specialty groups and industrial clusters, specialty and industry, teaching and production, theory and practice, practice and job skills,and realize the cooperation strategy of university-enterprise professional construction, resource sharing, talent education and responsibility sharing. The four-in-one talent training mode of integrating enterprise technician into teaching team, enterprise project into teaching content, enterprise culture into teaching environment, and enterprise standard into internship and practical

training, promoting close integration of professional talent cultivation with industries and positions, Improve the quality of talent cultivation.

### **2.3. Integration of Production and Education is Beneficial for High-Quality Development of Enterprises**

Talents are the primary productive forces. If companies want to develop well, they cannot be separated from high -quality technical and skillful talents. Higher vocational colleges are the main positions for the training of skill talents, and the integration of production and education is to establish the link between vocational colleges and enterprises, which is an indispensable factor for the high-quality development of both<sup>[5]</sup>. Through in-depth cooperation between schools and enterprises, schools and enterprises jointly participate in talent training and talent evaluation. During the internship period, students can directly practice in enterprises during the internship period, so that students can directly take jobs after graduation, reduce the time and cost of pre-job training for enterprises and talent recruitment to the society, provide enterprises with needed talents accurately and promote the high-quality development of enterprises.

## **3. Problems in the Training of Electromechanical Talents in Higher Vocational Colleges**

### **3.1. The Matching Degree between Talent Training and Social Demand is Not High**

In recent years, the country has introduced a series of policies and documents to promote the integration of industry and education, as well as cooperation between schools and enterprises<sup>[6]</sup>. Local government departments have also issued documents related to the integration of industry and education. However, these policy documents lack the incentive mechanism and supervision and assessment system, and vocational colleges have limited ability to serve enterprises, which cannot bring satisfactory profits to enterprises. These policy documents are not very attractive to the profit-oriented enterprises. Therefore, there is a phenomenon of "hot schools and cold enterprises" in the process of school enterprise cooperation, which leads to the inability to deepen the cooperation between schools and enterprises, and the low matching between talent cultivation and social needs.

### **3.2. Single Talent Training Path and Insufficient Innovation and Practice Ability**

Due to the integration of production and education, the relevant policies of school-enterprise cooperation cannot be implemented, resulting in low enthusiasm for enterprises to participate in talent cultivation in schools<sup>[7]</sup>. The main body of technical talent training is still in higher vocational colleges. Although the school will send teachers to the enterprise for investigation every year to understand the changes of industrial structure, industrial technology and posts, and timely revise the talent training program, due to the limited participation of enterprises in the education and teaching process, teaching and production can not achieve seamless connection, and practical teaching lags behind the post skill requirements, resulting in a single talent training path and insufficient innovation and practical ability.

### **3.3. Insufficient Teachers in Dual-Teacher Type**

With the change of economic structure and industrial transformation and upgrading, teachers' knowledge reserve also needs to be updated in time. Some teachers work in schools directly after graduation without practical experience in enterprises. Although the school arranges teachers to take temporary positions in enterprises for training every year, due to the limited time and low research

level of teachers, it is difficult to solve technical problems for enterprises and participate in the technological upgrading of enterprises. As a result, the practical ability of teachers is not high, insufficient teaching resources for dual teacher teachers, and the classroom teaching level is not high, which directly affects students' enthusiasm for learning. After graduation, students cannot adapt to the job requirements, and the talent cultivation model cannot meet the needs of enterprises for skilled talents in the intelligent era.

#### **4. Training Paths for Electromechanical Talents in Higher Vocational Colleges under the Background of Integration of Production and Education**

##### **4.1. Construction of the Integration of Production and Education to Build a Progressive Teaching System to Improve the Degree of Matching of Talent Training and Industrial Needs**

Closely connect the industrial chain of intelligent manufacturing, take the post ability demand as the orientation, take the industrial college as the carrier, integrate the enterprise culture, enterprise standards and enterprise projects into the practical teaching, follow the law of workplace ability progress, explore the multi-modular practice process driven by engineering projects. The establishment of the "basic + core + comprehensive + post" level progressive practice teaching system with ability training as the main line, in which basic ability training includes comprehensive quality, professional basic knowledge, professional basic training, pay attention to workplace experience and corporate culture cognition, so that students can identify the typical tasks of each post in the professional group; Core competence training is to transform core knowledge of professional direction and enterprise cases into practical training programs. In the second academic year, enterprise cases are organized into modules according to core competence to cultivate core professional knowledge of positions in different technical directions, and special skills training programs are developed in combination with enterprise cases to cultivate core vocational skills and professional qualities of professional group positions. In the fifth semester, students will choose professional extension courses based on their personal interests to supplement the latest professional knowledge needed for intelligent manufacturing industry in the future. At the same time, they will go to the comprehensive skills training center of the university to carry out enterprise project combat, complete the project combat tasks according to the combination of technical directions, and exercise the comprehensive vocational skills of the students in the professional group to work together. Job ability training is to go to off-campus training base for workplace practice in the sixth semester, adapt to the actual production environment of intelligent manufacturing enterprises, comprehensively apply professional courses related to professional groups and skills training of the first three stages in actual positions, and students complete the job ability training of professional groups, so as to exercise their adaptability to positions related to intelligent manufacturing production links. The adaptability of the post greatly improves the matching of the supply side of talent training and the industrial demand side<sup>[8]</sup>.

##### **4.2. Integrating Industry and Education to Build a "Three-Dimensional Interactive" Talent Training System, Forming a New Mechanism for Multi-Party Collaborative Education**

The main goal of cultivating composite and innovative technical and technical talents that adapt to the development of high-end equipment manufacturing industry, the company works closely with industry authorities, industry associations, enterprises and industrial colleges to build a multi-party collaborative education platform. The school and enterprise jointly introduce technical standards, develop curriculum resources, build training bases, fully implement the "1+X" certificate examination, carry out modern apprenticeship training, cultivate high-level modular teacher teams, and implement

the new mode of production and education collaborative education, and form a new mechanism of multi-party collaborative education. Centering on the interaction between schools, industrial colleges and enterprises, interaction between teachers, students and enterprise engineers, interaction between teaching, scientific research and social services, we will create a "three-dimensional interactive" talent training path, and achieve extensive consultation, co-construction, co-education, sharing and win-win results in terms of cooperation mode, curriculum system, X certificate, teaching team and teaching resources. It constructs the "whole process, all-round, full cycle" and "three" collaborative education strategy based on production and education integration. Strategic and corporate technicians incorporated into the teaching team, enterprise project integration into teaching content, corporate culture integration into the teaching environment, corporate standards into the "four integration" talent training model, promote the training of professional talents, industry and posts closely.

#### **4.3. Production Expanding Number of Double Type Teachers Teaching Fusion, Improve Teachers' practical Teaching Ability**

Teachers is that schools to implement the core driving force of the development of the high quality, the level of teachers directly decide the development of the students, with the development of a new generation of information technology and industrial transformation and upgrading, new changes have taken place in jobs demand for talent structure. In order to cultivate technical and skillful talents that match industrial positions, teachers must first be familiar with post requirements, which requires the deep integration of education and industry, the implementation of the mechanism of mutual recruitment, mutual sending and mutual training of school-enterprise teachers, teachers use their spare time to take temporary positions in enterprises, participate in enterprise engineering projects and production practices, and truly realize the docking of curriculum standards and post standards. Enterprise engineers come to the school to participate in the revision of talent training program, construction of practice base, practice course teaching<sup>[9]</sup>, skills competition guidance and compilation of leaflet textbooks etc, to build a professional and combined double-qualified teachers team with excellent ethics and style, outstanding achievements in scientific research and skills competition, and remarkable social service effects, and improve the quantity and quality of double-qualified teachers. To cultivate high-quality technical and technical personnel in line with the requirements of post ability for enterprises.

#### **4.4. To Construct a Quality Evaluation System for Diversified Talents Training**

Guided by the needs of industries, enterprises and society, and based on the talent training quality evaluation system platform, a diversified talent training quality evaluation system involving the government, enterprises, schools, teachers, students and parents is established. The government is the leader of vocational education evaluation, grasp the direction of "educating talents for the country"; Enterprises are important subjects to participate in vocational education, reflecting specific employment needs; Colleges are the organization and implementer of vocational education, gathering all kinds of resources generated by the quality of talent training<sup>[10]</sup>. Teacher is the undertaker of education teaching, to the generation of talent training quality has important influence. Students are the recipients of vocational education, bearing the characteristics of talent training quality; Parents are an important factor influencing social recognition of vocational education and have the main right to speak in choosing vocational colleges. The continuous improvement of talent training quality can be achieved by constructing the quality evaluation system of diversified talent training.

## 5. Conclusion

With the continuous development of our economy and the transformation and upgrading of industrial structures, the requirement of skilled personnel in post is changing constantly. Skilled talents are an important force supporting the manufacturing in China and creation in China, and vocational colleges shoulder the important task of training technical talents. Only by deepening the two-way integration of education and industry, further promoting the cooperation between schools and enterprises, the two main bodies of schools and enterprises jointly shoulder the task of training skilled talents, and promoting the development of school characteristics and industrial enterprises to form a virtuous cycle of mutual promotion and common progress.

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