Research and Practice on the Construction of Intelligent Equipment Practice Center with Industry-Education Integration under the Background of "Double High-levels Plan"

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Keywords: Double High-Levels Plan; Industry-Education Integration; Intelligent Equipment Practice Center; Vocational Education; Personnel Training

Abstract: Under the background of "Double High-levels Plan", the rapid development of intelligent equipment industry puts forward higher requirements for the training of technical and technical personnel. This article focuses on the construction of intelligent equipment practice center for Industry-Education Integration, aiming to build a talent training system and practical teaching platform that meets the development needs of intelligent equipment industry by deeply integrating industry and educational resources. The research adopts the methods of field investigation and so on, and deeply analyzes the theory of Industry-Education Integration, the characteristics of intelligent equipment industry and the needs of practice center construction. It is found that defining the construction goal, following the construction principles and choosing the appropriate construction mode are the basis of the construction of practice center. Curriculum system, teaching staff, practical teaching conditions and social service capacity building are the core contents of the construction of practice center; Organization, system, funds and quality assurance measures are the key to the smooth progress of practice center construction. Through the systematic construction of intelligent equipment practice center for Industry-Education Integration, it can effectively improve the quality of personnel training, enhance the adaptability of vocational education, promote the technological innovation and upgrading of intelligent equipment industry, and provide strong talent support and technical guarantee for regional economic development.

1. Introduction

In the critical period of vocational education reform and development in China, the implementation of "Double High-levels Plan" has become an important opportunity to promote the high-quality development of vocational colleges [1]. "Double High-levels Plan" aims to concentrate on building a number of vocational schools and professional groups that lead the reform, support development, have China characteristics and are world-class [2]. In this context, the Industry-Education Integration, as the key path of vocational education personnel training, is increasingly prominent. As the core force to promote the transformation and upgrading of manufacturing industry, the intelligent equipment industry puts forward higher requirements for the practical ability and innovative literacy of relevant professionals [3]. As an important platform for cultivating such talents, the construction of intelligent equipment practice center is of great significance for improving the quality of vocational education and serving the development of regional economy [4].

However, at present, there are still some shortcomings in the research on the construction of intelligent equipment practice center with the Industry-Education Integration under the background of "Double High-levels Plan" [5]. Under the policy framework of "Double High-levels Plan", the research on how to accurately meet the needs of the industry and build an efficient practice center construction model and mechanism is relatively weak [6]. In view of this, based on the policy orientation of "Double High-levels Plan", this article deeply analyzes the necessity and feasibility of building an intelligent equipment practice center with the Industry-Education Integration, and

  DOI: 10.25236/iceesr.2025.045

systematically explores the scientific construction path of the intelligent equipment practice center with the Industry-Education Integration from the aspects of planning and design, construction of teaching staff, construction of curriculum system and operation management mechanism.

2. Theoretical basis and definition of related concepts

The theory of Industry-Education Integration has experienced a long development, and its core connotation lies in breaking the barriers between education and industry, and realizing the organic connection of education chain, talent chain and industrial chain, and innovation chain. Education is no longer confined to the school wall, but goes deep into the front line of the industry and adjusts the content and mode of education according to the needs of the industry; Industry also actively participates in the education process, providing practical platform and resource support for education [7]. The Industry-Education Integration has the characteristics of two-way interaction, collaborative innovation and dynamic adaptation, which emphasizes the in-depth cooperation between schools and enterprises in personnel training, technological innovation and social services.

Intelligent equipment industry combines advanced manufacturing technology, information technology and artificial intelligence technology, showing a highly integrated, intelligent and networked development trend [8]. The intelligent equipment industry requires talents not only with solid professional knowledge of machinery, electronics and computers, but also with skills such as intelligent manufacturing system integration, industrial robot programming and operation, industrial big data analysis, and good teamwork, problem solving and innovation capabilities.

"Industry-Education Integration" refers to the deep cooperation and integrated development of industry and education [9]. "Intelligent Equipment Practice Center" is a comprehensive practice platform that integrates teaching, training, research and development, and social services under the background of "Double High-levels Plan", with the concept of Industry-Education Integration and relying on the resources of schools and enterprises.

3. Goal, principle and mode of the construction of intelligent equipment practice center with Industry-Education Integration

3.1. Construction objectives

Talent training goal: accurately meet the job requirements of the intelligent equipment industry, and cultivate compound high-quality technical and technical talents with solid professional knowledge, superb operational skills, good professional quality and innovative ability.

Technical innovation goal: to become the source of technical innovation in the field of intelligent equipment, focus on key technical problems in the industry, and carry out collaborative innovation for Industry-University-Research.

Social service goal: give full play to the resource advantages of practice center and provide all-round social services for regional intelligent equipment industry. Carry out skills training, technical consultation and diagnosis, professional skills appraisal and certification of enterprise employees, and become a technical service center and talent training base for regional intelligent equipment industry.

3.2. Construction principles

Principle of Industry-Education Integration: take the industrial demand as the guide, deeply integrate the resources of schools and enterprises, and realize the seamless connection between personnel training and industrial development.

Principle of collaborative innovation: integrate resources from schools, enterprises, scientific research institutions and other parties to build a collaborative innovation mechanism. All parties give full play to their respective advantages in technological innovation, personnel training and social services, and realize resource sharing, complementary advantages and mutual benefit.

Open sharing principle: break down resource barriers and realize open sharing of resources in practice center.

3.3. Construction mode

Comparative analysis of common patterns is shown in Table 1 below. Through the organic combination of various modes, give full play to the advantages of all parties, jointly promote the construction of intelligent equipment practice center for Industry-Education Integration, and provide strong talent support and technical support for the development of intelligent equipment industry.

Table 1 Comparison of Construction Models of Industry-Education Integration Intelligent Equipment Practice Centers

Construction Model	Main Participants	Cooperation Method	Advantages	Disadvantages
School-Enterprise Co-construction Model	School and Enterprise	Joint Investment, Co-construction and Sharing	High Degree of Resource Integration, Strong Targeting of Talent Cultivation	Enterprise Participation Enthusiasm is Easily Affected by Market Fluctuations
Industry Academy Model	School and Multiple Enterprises within Industrial Parks	Establish Industry Academy, Carry out In-depth Cooperation	Obvious Industrial Agglomeration Effect, Strong Capability of Industry-Academy-Research-Application Collaborative Innovation	Difficult Coordination and Management, Complex Benefit Distribution Mechanism
Vocational Education Group Model	School, Enterprise, Industry Association, etc.	Form Vocational Education Group, Achieve Multi-Party Cooperation	Wide Range of Resource Integration, Strong Social Service Capability	Low Decision-Making Efficiency, Large Differences in Interest Demands among Members

4. Construction content of intelligent equipment practice center with Industry-Education Integration

4.1. Curriculum system construction

According to the post requirements and professional ability standards of intelligent equipment industry, a "platform+module" curriculum system is constructed. The platform course covers general and professional basic courses such as mechanical drawing, electrical and electronic technology and computer application foundation, which lays a solid knowledge foundation for students. Modular courses are set according to different positions. For example, the integrated module of intelligent manufacturing system includes courses such as industrial robot programming and PLC control technology. Intelligent equipment maintenance module includes equipment fault diagnosis and maintenance, precision measurement technology and other courses. Futhermore, the content of innovation and entrepreneurship education should be integrated to cultivate students' innovative thinking and entrepreneurial ability.

4.2. Construction of teaching staff

Create a "double-qualified" faculty. On the one hand, we should strengthen teachers' enterprise practice training, formulate teachers' enterprise practice plans, and require professional teachers to

take part in cooperative enterprises regularly, participate in enterprise project research and development and technological transformation, and accumulate practical experience. On the other hand, the technical backbone of the enterprise is introduced as a part-time teacher to undertake practical teaching tasks and introduce the latest technology, technology and cases of the enterprise into the classroom. In addition, establish a teacher training mechanism, organize teachers to participate in academic exchanges and training activities at home and abroad regularly, and improve teachers' professional level and teaching ability.

4.3. Construction of practical teaching conditions

Construction of advanced practice teaching base, including intelligent manufacturing training workshop, industrial robot training room, precision measurement training room, etc. The training workshop is equipped with advanced intelligent equipment and production line to simulate the real production environment of enterprises and provide students with real project practice opportunities. Futhermore, build a virtual simulation teaching platform, use virtual reality, augmented reality and other technologies, develop virtual simulation teaching software for intelligent equipment, and carry out virtual simulation experiment teaching to solve the problems of high cost and high risk in practical teaching.

4.4. Social service capacity building

Practice center actively carries out social services, providing technical training, technical consultation and diagnosis, professional skill appraisal and certification and other services for enterprises. According to the needs of enterprise employees to improve their skills, we will develop personalized training courses and carry out customized training. Make use of the technical advantages of the practice center to provide solutions to technical problems for enterprises and carry out technical consulting services. In addition, it undertakes the appraisal and certification of vocational skills, formulates scientific and reasonable appraisal standards and processes, and cultivates high-quality skilled talents for enterprises and society. See Table 2 for details:

Table 2 Construction Contents and Equipment and Facilities of Practical Teaching Conditions

Construction Content	Equipment and Facilities	Function
Intelligent Manufacturing Training Workshop	CNC Machine Tools, Industrial Robots, Automated Production Lines	Simulate Enterprise Production Processes, Carry out Practical Teaching of Intelligent Manufacturing System Integration
Industrial Robot Training Room	Various Types of Industrial Robots, Robot Programming Software	Conduct Practical Teaching of Industrial Robot Programming, Operation and Maintenance
Precision Measurement Training Room	Coordinate Measuring Machines, Optical Measuring Instruments, Laser Interferometers	Carry out Practical Teaching of Precision Measurement Technology, Cultivate Students' Measurement Skills

Through the above curriculum system, teaching staff, practical teaching conditions and social service capacity building, we will comprehensively build an intelligent equipment practice center for Industry-Education Integration, realize the organic combination of talent training, technological innovation and social service, and provide strong support for the development of intelligent equipment industry.

5. Guarantee measures for the construction of intelligent equipment practice center with Industry-Education Integration

5.1. Organizational safeguards

Set up a leading group for the construction of intelligent equipment practice center for

Industry-Education Integration, which is composed of main school leaders, business leaders and industry experts. The leading group is responsible for the overall planning of the construction of the practice center, formulating the construction objectives and tasks, and coordinating and solving major problems arising in the construction process. Futhermore, the practice center management office is set up to be responsible for daily management, including practice teaching arrangement, teacher team construction, equipment maintenance and management, etc., to ensure the efficient operation of the practice center.

5.2. Institutional safeguards

In order to ensure the orderly development of practical teaching and the deep integration of production and teaching, it is necessary to construct a series of management mechanisms and systems. First of all, a perfect management system should be established, which should comprehensively cover many important aspects such as practical teaching management, teacher team construction, equipment management, safety management and so on. By defining the quality standards and assessment methods of all aspects of practical teaching, the education department establishes workload accounting and incentive mechanism for teachers' practical teaching, regulates the whole process operation of equipment from procurement, use to maintenance, and strengthens the safety management of practical teaching. In addition, it is necessary to establish a collaborative education mechanism between industry and education, and clearly define the rights and obligations of both schools and enterprises in personnel training, scientific and technological innovation, social services, etc., so as to ensure the deep integration of industry and education.

5.3. Financial safeguards

The practice center raises construction funds through multiple channels, actively strives for government financial support, and sets up special construction funds for infrastructure construction, equipment purchase and updating, and teacher training. At the same time, the practice center pays attention to strengthening cooperation with enterprises, attracting enterprises to invest funds and equipment, and jointly building the practice center. In addition, the practice center also actively expands social service channels, and enhances its hematopoietic function by providing technical training, technical consultation and diagnosis, professional skill appraisal and certification, so as to achieve sustainable development.

5.4. Quality safeguards

In order to ensure the high quality of practice center construction and operation, it is necessary to establish a quality monitoring and evaluation system. The system will comprehensively monitor and evaluate the construction and operation process of the practice center. At the same time, the school regularly carries out inspection and evaluation of practical teaching, and comprehensively understands the quality of practical teaching by collecting multi-dimensional feedback such as student evaluation, teacher self-evaluation and peer evaluation. Once problems are found, targeted measures are taken to improve them in time to ensure the continuous optimization of practical teaching. Futhermore, a tracking and feedback mechanism of talent training quality is established to track the employment situation of graduates and the feedback from enterprises, which provides a basis for the construction of practice center and the adjustment of talent training scheme.

Through the implementation of organizational, institutional, financial and quality assurance measures, we will provide all-round guarantee for the construction of intelligent equipment practice center with Industry-Education Integration, ensure the smooth realization of the construction goal of practice center, and cultivate more high-quality technical and technical talents for the development of intelligent equipment industry.

6. Conclusions

Under the background of "Double High-levels Plan", the construction of intelligent equipment practice center integrating production with education is an important measure to promote the

high-quality development of vocational education and serve the upgrading of intelligent equipment industry. Through the research of this article, the objectives, principles and modes of the construction of practice center are clarified, and the construction content system covering curriculum system, teaching staff, practical teaching conditions and social service ability is constructed, and a series of guarantee measures such as organization, system, funds and quality are put forward.

The construction of intelligent equipment practice center with the Industry-Education Integration can effectively integrate the resources of schools and enterprises, realize the precise connection between talent training and industrial demand, enhance students' professional skills and professional accomplishment, and enhance their employment competitiveness. Futhermore, the practice center has become an important platform for technological innovation, which has promoted collaborative innovation in Industry-University-Research and promoted the breakthrough and application of key technologies in the intelligent equipment industry. In addition, the practice center actively carries out social services, providing enterprises with services such as personnel training, technical consultation and diagnosis, and improving the overall level of the regional intelligent equipment industry.

Acknowledgements

The key topic of vocational education research in Yili Prefecture in 2024-2025”Research and practice on the construction of Production-education integrated intelligent equipment Practice Center under the background of "Double High Plan"

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