

# Research on the Construction Path of the Industry-Education Integration Practice Base for the Automobile Application and Maintenance Major of the Ninth Division Vocational School

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**Abstract:** With the transformation and upgrading of the automobile industry towards new energy and intelligent connectivity, the industry's demand for high-skilled talents in automobile application and maintenance has become increasingly urgent. As the core carrier connecting vocational education with industrial needs, the construction of industry-education integration practice bases can help vocational education improve quality and excellence, realize the precise alignment of talent training with enterprise job requirements, and promote industrial development. Based on this, this paper focuses on exploring the construction path of the industry-education integration practice base for the automobile application and maintenance major of the Ninth Division Vocational School, aiming to provide theoretical references for the school to improve talent training quality and serve the high-quality development of the automobile industry.

**Keywords:** Automobile application and maintenance major; Industry-education integration; Practice base; Vocational education

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## 1. Introduction

At present, China's automobile industry is accelerating its transformation and upgrading towards electrification, intelligent connectivity, and lightweight. The popularization of new energy vehicles and intelligent vehicles has promoted profound changes in the automobile application and maintenance industry, and the demand for high-skilled talents with professional skills, innovative capabilities, and job adaptability has become increasingly urgent<sup>[1]</sup>. As the main position for cultivating regional automobile maintenance talents, the automobile application and maintenance major of the Ninth Division Vocational School has long been responsible for transporting front-line skilled talents to local automobile service enterprises. However,

the current automobile application and maintenance major has problems such as equipment lagging behind industrial technology and superficial school-enterprise cooperation, making it difficult to adapt to the job requirements of the automobile industry in the new era. As a key bridge connecting vocational education with industrial needs, industry-education integration is the core path to improve students' practical abilities and cultivate talents meeting industry needs <sup>[2]</sup>. Therefore, building an industry-education integration practice base for the automobile application and maintenance major can not only meet the requirements of vocational education reform, improve talent training quality, but also promote the rapid transformation and upgrading of the industry.

## **2. Importance of constructing the industry-education integration practice base for the automobile application and maintenance major**

### **2.1. Precisely align with industrial job requirements and improve talent training quality**

The core goal of vocational education is to cultivate skilled talents adapting to industrial development and job requirements. Currently, the automobile industry is accelerating its transformation and upgrading towards electrification and intelligent connectivity, and the skill and quality requirements for talents in the industry have undergone fundamental changes. This requires the automobile application and maintenance major to break the barriers between theoretical teaching and practical teaching, integrate real enterprise job scenarios, production processes, and technical standards into the entire talent training process, allowing students to temper their skills and improve their qualities in a real practical environment <sup>[3]</sup>. The practice base integrates teaching and training, skill training, vocational skill appraisal, technological research and development, and social services. Thus, students can deepen their understanding of theoretical knowledge in simulated or real work scenarios, proficiently operate common maintenance equipment such as automobile fault diagnostic instruments, four-wheel aligners, and lifts, and carry out operations in an orderly manner according to maintenance work order requirements. In particular, they can master new technologies and skills related to new energy vehicles and intelligent connected vehicles, making up for the deficiencies of traditional classroom teaching, thereby better understanding and adapting to industrial needs.

### **2.2. Empower professional connotation construction and enhance the core competitiveness of vocational colleges**

The core competitiveness of vocational colleges is concentrated in the quality of professional construction and the talent training level. As a core part of professional construction, the construction level of industry-education integration practice bases has become an important symbol for vocational colleges to attract students, improve school reputation, and enhance core competitiveness <sup>[4]</sup>. Under the in-depth cooperation of industry-education integration, the Ninth Division Vocational School can jointly revise talent training programs with enterprises in combination with industry technological development trends and job requirements, add curriculum modules related to emerging technologies such as new energy vehicles and intelligent connected vehicles, and realize the precise alignment of curriculum content with industry technologies and job requirements. At the same time, teachers can further promote the reform of teaching methods, implement new teaching models such as the integration of theory and practice and project-based teaching, make teaching closer to actual needs, and cultivate talents more in line with market demand. This will further promote the improvement of the overall school-running level of the college and lay a solid

foundation for the sustainable development of the college <sup>[5]</sup>.

### **2.3. Serve regional industrial transformation and upgrading, and assist in the high-quality development of the local economy**

With the rapid development of automobile electrification and intelligent connectivity, the traditional automobile maintenance industry is facing many challenges, such as technological upgrading and talent shortage. The contradiction between the urgent demand for industrial transformation and upgrading and the insufficient supply of skilled talent has become increasingly prominent. As the core position for cultivating regional skilled talents, the Ninth Division Vocational School can directly connect with the job requirements of regional automobile maintenance enterprises, focusing on cultivating skilled talents in new energy vehicle maintenance, intelligent vehicle diagnosis, etc., helping the regional automobile maintenance industry transform from traditional maintenance to modern and intelligent maintenance, and enhancing the core competitiveness of the regional automobile industry <sup>[6]</sup>. In addition, the in-depth integration of vocational education and regional industries can enable enterprises to carry out technical cooperation and research and development relying on the school's faculty and equipment resources, solve technical problems encountered in the production and operation process, and then achieve rapid transformation and upgrading, assisting in the high-quality development of the local economy.

## **3. Dilemmas in the construction of the industry-education integration practice base for the automobile application and maintenance major of the Ninth Division Vocational School**

### **3.1. Disconnection between curriculum setting and industrial needs**

Curriculum setting is the core support for the construction of industry-education integration practice bases and the key link connecting talent training with industrial needs. Currently, the curriculum setting of the Ninth Division Vocational School has not kept up with the pace of industrial transformation and upgrading, and there is a problem of disconnection between curriculum content, curriculum structure, and industrial needs. Specifically, the existing curriculum still focuses on traditional automobile mechanical and electrical maintenance and automobile maintenance reception, focusing on explaining the functions, structures, and working principles of various systems, assemblies, and components of the automobile chassis. However, the proportion of curriculum content related to new energy vehicles and intelligent connected vehicles is relatively low, and there is a lack of curriculum modules related to emerging technologies, resulting in a serious disconnection between curriculum content and the actual technical level of the industry <sup>[7]</sup>. In addition, the curriculum setting lacks systematicness and pertinence, the proportion of theoretical courses and practical courses is unbalanced, and there is a lack of project-based and modular practical courses corresponding to real enterprise job scenarios, which cannot effectively improve students' job adaptability and practical operation skills.

### **3.2. Insufficient construction of faculty**

Teachers of the automobile application and maintenance major in vocational schools need to continuously deepen their learning of professional knowledge in the process of pursuing the improvement of professional quality and practical training guidance level, and keep up with the latest trends in automobile technology

development. However, the current construction of the faculty of the Ninth Division Vocational School is insufficient, which makes it difficult to meet the diverse needs of practical teaching, technical services, and school-enterprise collaborative talent training in the base. Most of the existing teachers are directly employed after graduating from universities, lacking practical work experience in front-line automobile maintenance enterprises, and having limited understanding of new technologies, new equipment, and new standards in the automobile industry, making it difficult to be competent for the immersive and project-based practical teaching needs of the base <sup>[8]</sup>; in addition, some enterprise mentors have low participation and insufficient stability, and lack systematic training in teaching methods, making it difficult to effectively give play to the practical teaching advantages of part-time teachers.

### **3.3. Imperfect support and guarantee system**

As an important link for vocational colleges to cultivate high-quality skilled talents, practice bases need schools and enterprises to provide real production environments, equipment, and technical support. However, from the current situation, the Ninth Division Vocational School still has the problem of an imperfect support and guarantee system. In terms of hardware equipment, the capital investment in the construction of the school's practice base is insufficient, resulting in insufficient quantity and a backward technical level of practice equipment in the base. In the process of building the practice base, it mainly focuses on traditional fuel vehicle maintenance equipment, lacking new equipment such as new energy vehicle testing and intelligent diagnosis, and some equipment is aging and not maintained in a timely manner, which cannot meet the needs of students' practical teaching and enterprise technical training <sup>[9]</sup>.

In terms of the construction of the school-enterprise cooperation mechanism, the cooperation between the Ninth Division Vocational School and regional automobile maintenance enterprises mostly stays at a superficial level, failing to form a long-term cooperation mechanism. On the one hand, building an industry-education integration practice base requires enterprises to invest human, material, financial and other resources, and it is difficult to obtain direct economic benefits in the short term, which directly leads to low enthusiasm of enterprises to participate <sup>[10]</sup>; on the other hand, the construction of the practice base is mainly led by school teachers, the proportion of enterprise technical backbones participating in practical teaching is relatively low, and the practical teaching content is disconnected from real enterprise job scenarios and production processes, making it difficult to improve the effectiveness of practical teaching.

## **4. Construction path of the industry-education integration practice base for the automobile application and maintenance major of the Ninth Division Vocational School**

### **4.1. Optimize the professional curriculum system and precisely align it with industrial needs**

With the rapid development of the automobile industry, enterprises' demand for talent is constantly changing. The Ninth Division Vocational School needs to continuously adjust and optimize the curriculum system to adapt to new job skill requirements. Therefore, the Ninth Division Vocational School needs to base itself on its own characteristics and the transformation and upgrading trend of the surrounding regional automobile industry, optimize the curriculum system, promote the in-depth integration of curriculum setting with industrial needs and job standards, and provide a foundation for the subsequent construction of the practice base.

Firstly, the school needs to carry out systematic industrial research to accurately grasp the development status, technical upgrading direction and job demand changes of the automobile industry in the Ninth Division and surrounding regions, clarify the core positions, skill requirements and quality requirements of the automobile application and maintenance major, and revise the talent training program based on this to determine the core direction of curriculum setting <sup>[11]</sup>.

Secondly, the school needs to take the development of regional industrial technology as the core orientation, keep up with the pace of automobile enterprise transformation and upgrading, focus on integrating emerging skills such as new energy vehicle testing and maintenance, intelligent vehicle diagnosis and repair, and automobile electronic control system debugging, systematically explain the structural principles, maintenance processes and technical specifications of new energy vehicles and intelligent connected vehicles, keep the teaching content consistent with the actual technical level of the industry, and ensure that the skills mastered by students can adapt to the needs of industrial development; finally, the Ninth Division Vocational School needs to establish a dynamic curriculum update mechanism, regularly track the technical development of the regional automobile industry and changes in job requirements, and adjust the curriculum content in a timely manner. In addition, to promote the construction of the practice base, the Ninth Division Vocational School needs to build a project-based and modular practical curriculum system centered on real jobs, design practical projects around real enterprise job scenarios, realize the precise alignment of practical courses with enterprise job requirements, and improve students' job adaptability <sup>[12]</sup>.

#### **4.2. Strengthen faculty construction and build a high-quality “dual-qualified” faculty team**

Teachers are the key support for promoting the high-quality construction of the industry-education integration practice base for the automobile application and maintenance major of the Ninth Division Vocational School. The Ninth Division Vocational School needs to base itself on the actual situation of the school's major, combine the needs of regional industrial development and base construction, and build a high-quality faculty team with solid theory, excellent practice, reasonable structure, and adapting to the needs of base construction and practical teaching, so as to provide support for the implementation of industry-education integration and the improvement of talent training quality <sup>[13]</sup>.

Firstly, the school should regularly organize teachers to participate in enterprise practice training, arrange teachers to go deep into the front line of automobile maintenance enterprises in the Ninth Division and surrounding regions, participate in actual maintenance, testing, diagnosis, and other work, accumulate front-line practical experience, familiarize themselves with enterprise job standards and technical specifications, and improve practical teaching capabilities. At the same time, invite industry experts and enterprise technical backbones to give special lectures to help teachers update their knowledge structure in a timely manner, master new industry technologies and specifications, and adapt to the needs of industrial technology upgrading and base practical teaching.

Secondly, focus on introducing high-quality talents with front-line enterprise practical experience and mastering emerging technologies to enrich the faculty and improve the practical teaching level of the faculty <sup>[14]</sup>; at the same time, establish long-term and stable cooperative relationships with automobile maintenance enterprises in the Ninth Division and surrounding regions, hire enterprise technical backbones and industry experts as part-time teachers, and give full play to the practical teaching advantages of part-time teachers.

Thirdly, formulate targeted incentive policies, commend and reward “dual-qualified” teachers, teachers participating in enterprise practice training, and new technology training, so as to improve teachers’ professional identity and work enthusiasm.

### **4.3. Deepen school-enterprise cooperation and promote the construction of industry-education integration practice bases**

School-enterprise cooperation is the core path for building industry-education integration practice bases and a key measure to solve problems such as insufficient resources for base construction and disconnection between practical teaching and job requirements. The school should establish and improve the guarantee mechanism, set up a cooperation leading group composed of school leaders, professional teachers, enterprise principals, and technical backbones, hold regular cooperation meetings to communicate the problems and needs in the process of base construction and cooperation, and coordinate and promote various tasks of base construction.

Then, both schools and enterprises can jointly revise the talent training program, and clarify the talent training objectives, curriculum settings and practical teaching plans in combination with enterprise job requirements and industrial technology development trends, so as to ensure that talent training is highly consistent with enterprise job requirements; at the same time, they can promote internal and external teachers to jointly undertake the teaching tasks of the practice base <sup>[15]</sup>. For example, enterprise technical backbones focus on guiding students’ job skill training, and school teachers focus on explaining theoretical knowledge, realizing the organic integration of theoretical teaching and practical teaching. Under the school-enterprise cooperation model, enterprises can provide advanced production equipment, technical support, and practical positions for the practice base, helping the school update the base’s practical equipment in a timely manner, ensuring that the base’s equipment keeps pace with the level of industry technology development, and meeting the needs of practical teaching and students’ skill training.

## **5. Conclusion**

In summary, industry-education integration is the core path for the automobile application and maintenance major of the Ninth Division Vocational School to improve quality and excellence and empower regional industrial development, and the practice base is the key carrier connecting the automobile application and maintenance major with industrial production practice. Through paths such as optimizing the professional curriculum system, strengthening faculty construction, and deepening school-enterprise cooperation, it is possible to cultivate high-skilled talents adapting to regional needs and promote the coordinated and high-quality development of vocational education and the regional automobile industry.

## **Disclosure statement**

The authors declare no conflict of interest.

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