

## Research on the training mode of automobile manufacturing and assembly technology professionals based on the perspective of characteristic creation

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**Abstract:** The training goal of automobile manufacturing and assembly technology specialty is to cultivate high-quality skilled talents who meet the requirements of China's socialist modernization, develop in an all-round way in morality, intelligence, physique and beauty, have the comprehensive professional ability of the specialty, and meet the requirements of production, technology, management and other front-line professional posts in automobile manufacturing, automobile parts production enterprises and other processing and manufacturing industries. In view of the problems that the talent training of traditional automobile assembly and adjustment workers can not meet the needs of technical skilled talents in automobile manufacturing, this paper uses the methods of "green + automobile", "intelligent + manufacturing" and "information + design" to reform and innovate the specialty of automobile manufacturing and assembly technology from the aspects of curriculum system reconstruction, classroom teaching reform, teaching team reconstruction, teaching diagnosis and improvement. This goal determines that the professional teaching must adopt the talent training mode of combining work with study; Through practice, good reform results have been achieved, and the quality of personnel training has been continuously improved. Its teaching achievements are of great significance to professional reform and innovation, serving regional economy and industrial development.

### 1. Introduction

At present, facing the national strategy of manufacturing power, it puts forward five major projects such as "green manufacturing project" and "intelligent manufacturing project", as well as the strategic objectives of industrial development in ten fields such as "energy saving and new energy vehicles" and "robots", focuses on strategic key industrial fields, and serves regional industrial upgrading in the face of the comprehensive arrival of the era of "intelligence", "green" and "information", It poses a great challenge to the construction of automobile manufacturing and assembly technology specialty [1]. Under the strategic background of manufacturing power, the talent training of traditional automobile assembly and adjustment workers can no longer meet the needs of technical and skilled talents in automobile manufacturing, and professional transformation is imperative. At present, the training objectives of automobile manufacturing and assembly technology major in many higher vocational colleges in China tend to develop only to the front line of automobile manufacturer's production, which leads to the disconnection between personnel training and market demand, the shortage of professional enrollment and the decrease of student registration rate [2]. The training goal of automobile manufacturing and assembly technology specialty determines that the teaching must adopt the talent training mode of combining work with study. The specific implementation path is, based on the modern vocational education concept, setting up comprehensive teaching projects, using role-playing to enhance students' social ability, evaluating students' achievements, providing students with vocational qualification certificates and promoting the growth of "double-qualified" teachers [3].

At present, China is in an important period of the transformation of old and new kinetic energy. The adjustment of industrial structure and the transformation of development mode make the demand for talents of industrial enterprises change dramatically [4]. As the main body of providing high-quality workers and technical talents for the society, higher vocational colleges are facing

unprecedented challenges. How to cultivate talents urgently needed by enterprises has become an important issue for higher vocational colleges [5]. Based on the demand survey of the talent market and the dimensions of "green + automobile", "intelligent + manufacturing" and "information + design", it is clearly proposed that the major is committed to cultivating technical skilled talents engaged in production, industrial robot equipment, maintenance and technical support in the fields of new energy automobile manufacturing, industrial robot equipment and automobile design, and will integrate the courses of ideology, politics The specific objectives of innovation and entrepreneurship education are integrated into the professional talent training program to cultivate students' professional quality and "entrepreneurship and innovation" awareness [6]. The reform of talent training mode of "school enterprise cooperation and combination of work and study" is a hot issue in the discussion of vocational education.

## **2. Professional personnel training of automobile manufacturing and assembly technology**

### **2.1. Determination of talent training goals**

The training objectives of any major should adapt to the economic and social development. At the national level, the talent training goal of automobile manufacturing and assembly technology has been determined, that is, it is located in the front line of automobile (including new energy vehicles) industry to train high-quality technical talents with the abilities of automobile manufacturing, assembly, commissioning, test, quality control and production site management [7]. However, under the new normal situation of economic development, the demand for talents in different regions is not completely consistent due to different original foundations, development ideas and development momentum. Therefore, it is necessary to refine and innovate the talent training objectives according to local conditions and with emphasis under the national level objectives. For example, the "machine substitution" is gradually implemented in automobile welding posts and car body panel and spray posts in most areas, so the relevant course contents need to be adjusted. Formulate and improve curriculum standards according to the ability requirements of professional posts; Reconstruct the curriculum system based on vocational industrial process, incorporate new technology, new process and new standards into curriculum standards and curriculum contents, and integrate relevant contents such as vocational skill level standards into professional curriculum teaching; Promote the mutual integration of vocational skill level certificates and academic certificates, and realize the mechanism of "course certificate integration". At the same time, the talent training objectives should conform to the career growth law of students (graduates), and set certain gradients (such as operation → technology → Management) and medium and long-term development post objectives (such as technical director → Department Manager → enterprise executives) [8].

### **2.2. Current Situation of Talent Training Mode for Automobile Manufacturing and Assembly Technology Professionals**

Regardless of the school's history, location and characteristics, the common feature of the talent training mode of automobile manufacturing and assembly technology specialty in each school is that most of the talent training modes of automobile manufacturing specialty in these schools contain the keyword "Alternation". In other words, the arrangement of work and study by alternating time or place is the conscious choice of most higher vocational colleges in the reform of talent training mode [9]. At the same time, most higher vocational colleges and universities fail to continuously carry out the alternating training between schools and enterprises due to the lack of automobile manufacturing enterprises or large cooperation resistance, and often can only reluctantly carry out one round of alternating training, which affects the final talent training effect and quality of automobile specialty; How to connect talent training with automobile industry and enterprises is the main problem. The reasons are mainly reflected in the following aspects. First, the employment-oriented and service-oriented guiding ideology of running a school promotes the teaching mode of "combining work with study". Secondly, the teaching content needs to be reformed. According to

the job requirements of automobile parts manufacturing, vehicle assembly and maintenance professional posts, the curriculum system based on automobile manufacturing and maintenance work process should be constructed, and the teaching method based on real work tasks should be implemented. Third, teachers' practical ability needs to be improved to ensure the teaching needs of higher vocational colleges. Fourth, the training system and conditions do not meet the needs of productive practice.

### 3. Training mode

#### 3.1. Training mode construction ideas

Talent training mode refers to the sum of the whole process of talent training under the guidance of scientific educational theory and educational thought, according to professional training objectives and talent specifications, with certain teaching contents and curriculum system as the main carrier, so it also includes the process management, evaluation and assessment of talent training [10]. Generally speaking, the construction of a professional talent training mode is affected by the type, level, level, positioning, source of students, environment and other factors of the school, as well as the talent demand of the corresponding industrial development and reform of the major. At the same time, we should also consider the differences and personalized training needs of students. In the teaching, it is advocated to connect the processing and manufacturing of typical automobile parts, the implementation of automobile assembly technology, the inspection and maintenance of automobiles, the operation process, the assessment and evaluation methods with the actual production by means of "real automobile parts manufacturing and maintenance, the whole automobile assembly project process", and to jointly develop students' skills training and vocational ability training by relying on productive training bases on campus, off-campus training bases and colleges and school-enterprise cooperation units. Under the guidance of the school-running philosophy of combining work with study, knowing and doing, after years of practical exploration, the major of automobile manufacturing and assembly technology has built and implemented the talent training mode of combining work with study (Figure 1). This is summarized and improved in the process of long-term thinking about the two fundamental problems of "who to cultivate" and "how to cultivate people", which can better cultivate the technical skills and professional quality of higher vocational students.

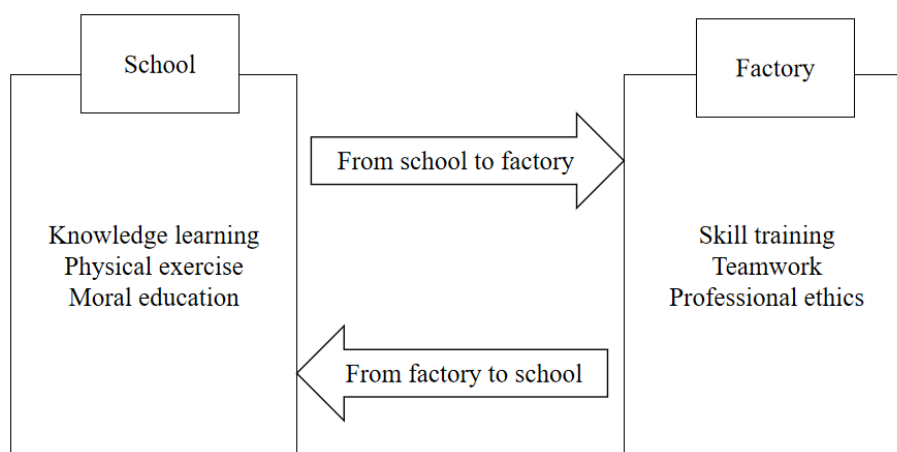


Figure.1 Talent training mode

#### 3.2. Practical exploration

First, the classroom teaching mode of "learning by doing and learning by doing" is implemented based on the school training base. The general teaching mode and process is that teachers explain first and then practice. Change the traditional teaching mode. The teaching process is guided by the

engineering project of automobile manufacturing and assembly. Starting with the implementation of typical work tasks, the basic knowledge and technology such as mechanical principle and automobile structure are taught in the way of teaching. The skill training relies on the productive training base in the school for project teaching and real operation training, The curriculum model of integrating theory with practice implements "learning while doing, learning by doing". The model of learning while doing deepens the understanding of knowledge and technical methods. Second, schools and enterprises jointly carry out project teaching and training. Productive training and post practice are very important parts of personnel training in higher vocational colleges. The talent training scheme is integrated with industry standards for training employees, the manufacturing process of enterprises is integrated with teaching practice activities, and the evaluation of enterprises is integrated with school assessment, which provides support and guarantee for the implementation of the talent model of "production, teaching, engineering, learning and doing". Enterprise instructors participate in the talent training plan in the whole process, and are responsible for providing production technical guidance to students in the form of masters and apprentices, helping students solve practical production technical problems, summarizing production technical experience, and helping students grow in vocational skills and engineering literacy. Third, professional ethics and quality training should be integrated into the whole process of talent training. The goal of higher vocational education is to cultivate high-quality and skilled talents, which inevitably requires higher vocational colleges to carry out quality education and run professional ethics education through the whole process of professional talent training. Employ the managers of the human resources department of the enterprise to bring the advanced enterprise management concept to the students, and set up courses aimed at the cultivation of professional ethics quality in the teaching plan.

#### **4. Conclusions**

Under the background of manufacturing power strategy, our country is changing to intelligent manufacturing and green manufacturing, and the transformation of automobile manufacturing and assembly technology is imperative. The talent training mode of automobile manufacturing and assembly technology adopts the project as the carrier to carry out the integration of theory and practice teaching, and constructs the "combination of engineering and learning" integration of theory and practice teaching mode. Through continuous improvement and improvement from the aspects of professional training goal transformation, curriculum system reconstruction, classroom teaching reform, teaching team reconstruction, teaching diagnosis reform, etc, It has achieved good results in the practice of professional reform and innovation. Improving the quality of personnel training through the reform of personnel training mode is an important aspect of expanding the supply of high-quality education, and it is also a key breakthrough area of automobile manufacturing and assembly technology education reform in the future. Therefore, "work-study combination" is an effective way to strengthen the cultivation of students' professional ability, improve their skill level and develop good professional quality in the major of automobile manufacturing and assembly technology.

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