



Research on the Training Mode of Automobile Repair Professionals Based on the Teaching Concept of “Three Integrations”

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Abstract. With the increase in the per capita car ownership in China, the demand for talent in the automotive repair industry is constantly rising. However, the number of high-quality automobile repair talents is relatively small. How to cultivate professional talents who adapt to market demand, master professional knowledge, and have practical skills has been a common concern and research issue in the automotive repair education and automotive repair business circles. This article explores a talent cultivation model based on the teaching concept of “three integrations”. Promote the integration of theory and practice through virtual simulation technology and practical subject training, promote the integration of industry and education through comprehensive practical training, and promote the integration of science and education through cutting-edge field technology teaching. This teaching mode can effectively promote students’ mastery of theoretical knowledge, their understanding of the frontline of the enterprise, and their understanding of the cutting-edge direction of science, which is conducive to cultivating students’ engineering literacy and practical ability, and encouraging them to become high-quality automotive repair talents.

Keywords: Fusion of theory and reality · Integration of industry and education · Integration of science and education

1 Introduction

The automobile repair industry is a highly practical industry that requires the support of high-quality and practical talents, but the current number of talents required by the industry is relatively insufficient. The current training model for automobile repair talents has problems in meeting market demand, that is, it pays too much attention to theoretical knowledge and ignores the cultivation of practical operating skills, which has been unable to fully meet the needs of market development, and has also restricted the further development of the automobile repair industry [1]. Therefore, it is of theoretical and practical significance to develop and implement a training model for automotive repair talents that meets market demand.

Further exploration shows that the automotive repair profession needs to have a high practical operation ability and competitiveness, and currently lacks targeted and complete talent training programs and education systems [2]. The cultivation of automobile repair talents cannot be separated from comprehensive educational reforms in multiple aspects, such as curriculum setting, teaching methods, teaching staff, practical links, school-enterprise cooperation, and professional literacy. It is necessary to organically combine practical operation ability with multiple aspects such as curriculum setting, teaching quality, practical links, and teacher construction, in order to meet the market's demand for high-quality, practical operation capable talents as much as possible.

Therefore, based on the current market demand and educational situation, it is necessary to establish a training model for automotive repair talents that meets the market demand. This is both substantive and innovative, and practical and feasible. To solve this problem, it is necessary to establish a school enterprise cooperation system, optimize curriculum settings, strengthen practical teaching links, pay attention to the cultivation of students' professional and comprehensive qualities, and carry out standardized management system construction. In order to ultimately achieve the goal of cultivating these talents [3]. These measures will help to establish a market demand oriented, continuously improved and improved training model for automotive repair talents, and contribute to the development and progress of the industry.

2 Research Background

The main problems existing in the current training mode for automobile repair talents in meeting market demand include the following:

Too much emphasis on theoretical knowledge and neglect the cultivation of practical operating skills. Due to the strong practical operation ability and practical experience required by the automotive repair profession, the traditional theoretical education model cannot well meet the market demand. Some students receive only theoretical knowledge in school and do not receive training in practical operation experience, resulting in insufficient mastery and incompetence in practical work after graduation. Here is a lack of close cooperation between schools and enterprises [4]. When formulating courses for automotive repair majors, schools usually only consider the educational perspective, while ignoring the actual needs of the market. At the same time, industry demand is changing rapidly, making it difficult for schools to update their curriculum on their own, and for teachers to keep up with the pace of market development. There is a lack of effective communication and cooperation between schools and enterprises, and they have failed to combine theory with practice to cultivate talents with more practical operational capabilities. Lack of experienced teachers in the industry [5]. Due to the continuous development of the automotive repair profession, the industry's technology and knowledge are constantly updated and supplemented, and a team of teachers with professional background and practical experience is required to ensure the quality and practical effect of the curriculum. However, the reality is that many automotive repair school teachers lack the mastery of new technologies, and there are relatively few practical teaching resources from the market, resulting in a decline in teaching quality.

Therefore, the current training mode for automotive repair talents is facing greater challenges and reform pressures, and it is necessary to seek reform directions and practical exploration to improve the level and quality of automotive repair talents cultivation and meet the market demand for high-quality and practical talents.

3 Training Mode of Automobile Repair Talents Based on “Three” Integration

This article proposes a teaching model based on “three integrations”. The integration of theory and practice is the basic law of education and teaching, which can effectively promote the combination of theoretical teaching and practical teaching, and consolidate the theoretical foundation of students; The integration of industry and education can effectively promote in-depth cooperation between enterprises and education, and is conducive to improving the comprehensive quality and adaptability of students; The integration of science and education can effectively promote the combination of high-level scientific and technological innovation achievements and talent cultivation, and cultivate students’ innovative ability and innovative thinking. As shown in Fig. 1.

At the same time, in order to establish an effective operating mechanism and improve management methods, the “Five in One” teaching and management model is adopted, as shown in Fig. 2. The basic courses department, professional teaching department, teaching practice center, comprehensive training base, and enterprise training center are responsible for the organization and implementation of courses. This approach can effectively promote students’ mastery of theoretical knowledge, their understanding of the frontline of the enterprise, and their understanding of the cutting-edge direction of science [6]. It is beneficial to cultivate students’ engineering literacy, practical ability, sense of social responsibility, and lifelong learning outlook, and to help students become outstanding talents in the automotive repair industry.

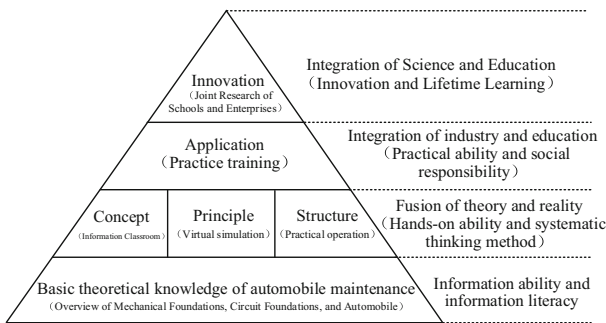


Fig. 1. Three integration teaching concepts

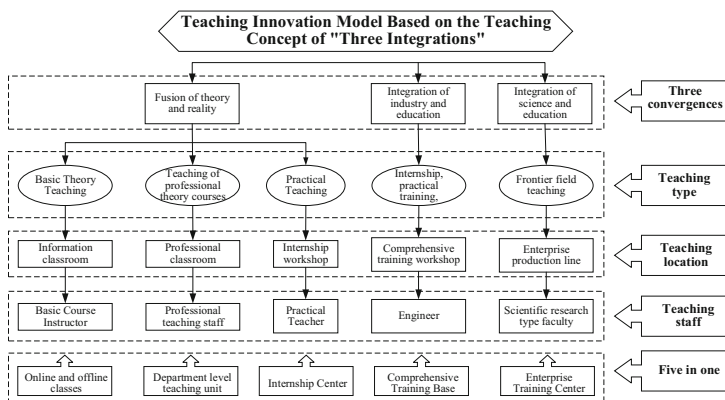


Fig. 2. Teaching Innovation Model Based on the Teaching Concept of “Three Integrations”

3.1 Optimize the Teaching Process and Deepen the Integration of Theory and Practice

In order to enable students to master more practical and operational skills while improving their comprehensive and professional qualities, it is important to optimize the teaching process, as shown in Fig. 3. It mainly includes the following aspects:

Introducing advanced courses: Integrate the training of automotive repair talents into industry standards or adopt international standards, and introduce systems into the training process of automotive repair talents. Schools should introduce advanced courses, provide regular and universal education to students, and help them adapt to the needs of the future market. And improving the pertinence of curriculum content, changes in market demand and the continuous upgrading of the industry, as well as the disconnection from traditional curriculum, are one of the main reasons for the current problems in curriculum provision. The actual needs of each enterprise are different, so the curriculum should be targeted. Schools should set up different courses for different fields of the automotive repair industry, focusing on mastering practical skills and ensuring their practical results.

Optimize the theoretical teaching process. The theoretical teaching link needs to be combined with the practical link, closely linked and coordinated to promote the mutual promotion and compensation of theoretical knowledge and practical operational knowledge. Teachers need to combine theoretical knowledge and practical skills in the classroom through discussions or case studies to enable students to better understand and master relevant knowledge.

Strengthen the practical operation teaching link. Automobile repair majors require high practical operation ability and experience, so practical teaching must be strengthened. Teachers need to systematically learn, master, and apply practical operating skills, tools, and equipment through demonstration or guidance from a more practical perspective, combining specific projects or examples.

Introduce advanced practical education resources. The automotive repair profession is a continuously developing industry that needs to keep up with the pulse of the market and update educational resources in a timely manner. Teachers should introduce

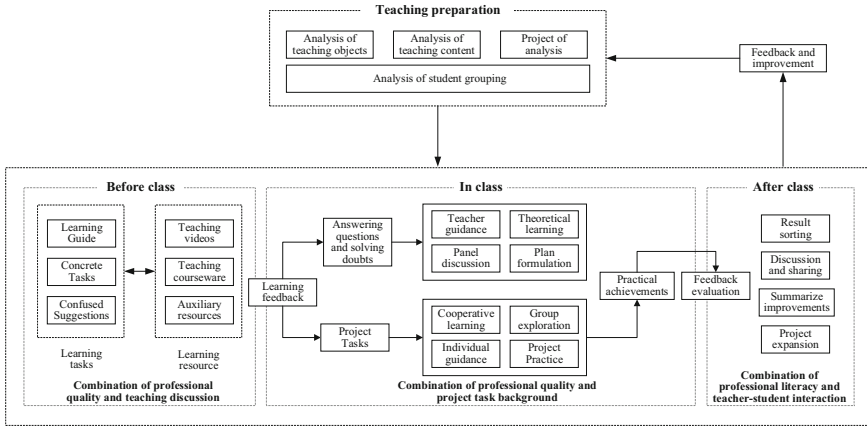


Fig. 3. Teaching process of integrating theory with practice

advanced practical education resources [7]. If experts with rich practical experience in the industry can be invited to participate in teaching, students can learn from practical experience and better adapt to the development of the industry.

School enterprise cooperation helps practical teaching. The automotive repair industry has always lacked a correct talent cultivation model, with too much emphasis on theory and the need to connect with enterprises to provide students with the necessary real practical experience. The practical teaching model of school-enterprise cooperation can provide students with real industry conditions, comprehensive practical experience, and quality education.

3.2 Strengthen Practical Training Teaching and Implement Integration of Production and Teaching

The key to the integration of industry and education lies in the deep cooperation mechanism between manufacturers and universities. Establishing a school enterprise cooperation system will be one of the keys to building a training model for automotive repair talents that meets market demand. The following are suggestions for a practical education plan based on school-enterprise cooperation:

Establishing a cooperation mechanism: Schools need to establish a cooperation mechanism with local automobile repair enterprises in order to provide students with more internship and employment opportunities, and receive higher quality practical education during and after graduation. Design of practical education plan: Schools need to formulate practical education plans based on market demand and actual needs of enterprises, combined with their own teaching resources. The practical education plan should include teaching content such as in-school experiments, practical courses, and enterprise internships, attach importance to the cultivation of practical operating skills, and establish a complete faculty and laboratory facilities to ensure that students can receive truly effective practical education.

Training for corporate mentors: Automobile repair business mentors need to receive professional education and training, understand teaching plans and objectives, in order to better provide internship and employment guidance for students. At the same time, corporate mentors also need to understand students' course learning, and provide support and guidance for students' practical education. Internship management and evaluation: Schools need to establish a complete student internship management system and evaluation mechanism, provide students with a better internship environment and opportunities, and conduct more detailed evaluation of practical education content, in order to continuously improve the effectiveness and practicality of practical teaching.

Through the above suggestions, students can better accept practical education, and the quality of practical education can also be improved. The involvement of enterprises can effectively improve the quality and pertinence of training, create an environment for students to apply what they have learned, and further promote the development of the entire automotive repair industry.

3.3 Strengthen the Teaching of Cutting-Edge Technologies and Promote the Integration of Science and Education

The integration of automobile repair science and education refers to the combination of theoretical knowledge, practical skills, and technological innovation to form a more scientific and effective teaching mode to cultivate automobile repair talents with multiple talents and comprehensive qualities. Specifically, the integration of automotive repair science and education is mainly reflected in the following aspects:

Closely integrate with industry needs. Educational and teaching institutions should actively understand market demand and technological changes in the industry, develop more appropriate teaching courses and phased objectives based on actual conditions and market demand, and ensure the cultivation of automotive repair talents capable of meeting market needs. Introducing modern educational concepts. Education concepts are constantly changing, and the automotive repair technology industry is also changing rapidly. Advanced education concepts and teaching models should be actively introduced [8]. The upgrading of teaching models depends on the transformation of educators' concepts and changing frameworks and methodologies, thereby combining theory, practice, and immediate updates and improvements to form a trajectory of technological innovation, scientific research, and industrial transformation that helps students integrate learning and practice. Improve teaching quality and cultivate innovative talents. Educational and teaching institutions should focus on teaching quality, strengthen students' operational practices, cultivate students' practical skills, organizational and coordination abilities, and practical problem-solving abilities. At the same time, they should improve their innovative quality and entrepreneurial spirit, and inspire them to better subvert and innovate the industry based on their understanding of experience and practice.

Cooperation between schools and enterprises promotes integration. Schools need to work closely with companies in the industry, develop more appropriate practical and practical training courses based on the actual situation of the enterprise, and extend deeper training objectives and industry concepts. This can better improve the comprehensive quality of students, allowing for better communication and mutual promotion of practical operations and theoretical knowledge. In short, the integration of automotive

repair science and education is an educational model that integrates theory, practice, and innovation, which will make the automotive repair technology industry more scientific and innovative.

4 Results and Discussion

The training mode of automobile repair talents based on “three integrations” has achieved certain results, but there are also some problems and challenges.

1. Practical operation skills have been improved. In response to market demand and the actual needs of enterprises, practical operation courses have been strengthened, and students’ practical operation abilities and experience have been improved, more in line with the market’s requirements for automotive maintenance talents.
2. The personalized and comprehensive qualities of students have been improved. The cooperation between schools and enterprises and the teaching model provide students with more opportunities to cultivate their practical skills, application ability, organizational coordination ability, and practical problem-solving ability. At the same time, the comprehensive quality and innovative ability of students have been further improved.
3. Collaborative development between schools and enterprises. Closer collaboration and interaction between schools and enterprises will further promote the development and progress of the entire automotive repair industry, and promote important cooperation mechanisms and policy cooperation that are related to the long-term development of both schools and enterprises.

Disadvantages and challenges:

1. Traditional teaching methods are still being used. Although the current training model for automotive repair talents that meets market demand has higher requirements for practicality and pertinence, some educational institutions still use traditional teaching methods, ignoring the combination of theory and practice, and due to outdated teachers or teaching equipment, the quality of talent training has not been effectively improved.
2. Insufficient educational resources. The field of automobile repair often involves many cutting-edge technologies, requiring a large amount of funds and advanced equipment. However, in reality, there are still gaps in some educational institutions, lacking sufficient educational resources and establishing high-quality laboratories and teaching facilities, which limit the quantitative and quality of talent cultivation.

5 Conclusions

In general, the current training model for automotive repair talents that meets market demand has achieved some results, but there are also some problems and challenges. Based on the analysis of the existing situation, it can be found that the following points are worth further exploration and improvement:

1. More emphasis needs to be placed on improving practical operating skills. The major of automobile repair requires high practical experience and practical operation ability, and attention must be paid to the setting and strengthening of practical operation courses in teaching.

2. Education and teaching institutions need to strengthen their contacts with the market and enterprises, better understand market demand and industry changes, and based on this, develop more appropriate teaching courses and teaching plans to make the trained auto repair personnel more responsive to market demand.
3. Pay more attention to the cultivation of innovation ability to help students better adapt to technological upgrading and keep pace with the times.
4. It is necessary to improve the teaching quality as much as possible, enhance the comprehensive quality and practical operation ability of students through the school-enterprise cooperation practice teaching mode, so that students have strong organizational and coordination abilities, technical management abilities, and self-learning abilities, and better adapt to the complex and volatile automotive repair market in the future.

Looking forward to the future, based on the rapid development of big data, the Internet, and intelligent technology, the automotive repair industry is gradually developing towards intelligence, informatization, greening, and service-oriented directions. Therefore, the future training model for automobile repair talents needs to pay more attention to the cultivation of innovative thinking, technological innovation, practical ability, service awareness, and environmental protection ability, to better adapt to future market demand and social development needs.

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