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Research on the Teaching Reform Strategies of New Energy Vehicle Majors from the Perspective of Industry-Education Integration

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Abstract: In recent years, with the rapid development of the new energy vehicle industry, industry-education integration has become an important way to improve the teaching quality of new energy vehicle majors. Industry-education integration mainly refers to the effective connection of the education chain, talent chain with the industrial chain and innovation chain through deepening school-enterprise cooperation. This can not only promote resource sharing and complementary advantages between schools and enterprises but also effectively improve students' practical abilities and professional qualities, thus providing strong talent support and intellectual guarantee for the sustainable and healthy development of the new energy vehicle industry. In this regard, this article first expounds on the significance of the teaching reform of new energy vehicle majors from the perspective of industry-education integration, and then proposes effective teaching reform strategies, hoping to provide some reference for relevant education researchers.

Keywords: Industry-education integration; New energy vehicle major; Teaching reform

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1. Introduction

Against the backdrop of the booming development of the new energy vehicle industry, the cultivation of professional talents has become the key to the industry's development. Facing the growing technological demands and market competition, the traditional teaching model can hardly meet the industry's needs for high-quality and highly skilled talents. As an innovative educational concept, industry-education integration provides new ideas and directions for the teaching of new energy vehicle majors by deeply integrating education and industry. It breaks down the barriers between traditional education and enterprises, realizes the optimized allocation of educational resources and industrial resources [1], enables students to be exposed to the actual industrial environment earlier, understand cutting-edge industry technologies and market trends, and thus continuously temper their professional skills and professional qualities in practice, laying a solid foundation for their future career development [2].

2. Significance of the teaching reform of new energy vehicle majors from the perspective of industry-education integration

2.1. Conducive to improving professional teaching quality

Currently, teachers optimize the teaching model of new energy vehicle majors relying on industry-education integration. This can not only effectively impart professional knowledge of new energy vehicles but also focus on cultivating students' practical abilities, enhancing their comprehensive competitiveness in the industry, and helping to further improve the teaching quality of new energy vehicle majors. In addition, to implement industry-education integration in the teaching of new energy vehicle majors, colleges and universities need to communicate and cooperate actively and deeply with enterprises, providing students with high-quality growth and practice platforms and continuously enhancing their comprehensive qualities to meet the requirements of the industry and enterprises for students majoring in new energy vehicles. Moreover, in order to ensure the deep integration of "industry" and "education," colleges and universities need to summarize their experience in school-enterprise cooperation and further optimize the teaching model of new energy vehicle majors, which plays a relatively positive role in improving teaching quality [3].

2.2. Conducive to promoting the continuous development of teachers

When colleges and universities carry out the teaching of new energy vehicle majors based on industry-education integration, it is not only beneficial to the growth and success of students but also helpful to promote the continuous development of teachers [4]. Through industry-education integration, colleges and universities will cooperate actively with enterprises. In this process, teachers can gain a deeper understanding and mastery of cutting-edge knowledge and technologies in enterprises. Their practical skills and experience will be significantly improved. At the same time, teachers can optimize and improve the teaching model of new energy vehicle majors according to the actual situation of enterprises. They can also communicate and interact actively with the key talents in enterprises and participate in the exploration and development of cutting-edge technologies of new energy vehicles with them, thus ensuring the continuous development of teachers [5].

2.3. Conducive to promoting the continuous development of enterprises

Under the industry-education integration model, enterprises and colleges and universities will build a cooperation platform through school-enterprise cooperation. Students can accumulate corresponding experience through this platform, improve their professional skills, and enable them to quickly adapt to their jobs after graduation, reducing the investment in human resource training in the later stage. In addition, with the help of the cooperation platform, both teachers and students can participate in the development of enterprises. This can not only promote the development of enterprises but also make full use of various resources in colleges and universities to conduct a new round of research and development of new energy vehicle technologies, reducing unnecessary waste of resources and comprehensively improving the level of technology research and development, thus injecting an inexhaustible driving force for the continuous development of enterprises [6].

3. Teaching reform strategies of new energy vehicle majors from the perspective of industry-education integration

3.1. Establishing a dynamic school-enterprise collaborative education mechanism

To promote the teaching reform process of new energy vehicle majors from the perspective of industry-education

integration, the primary prerequisite is for colleges and universities to establish a dynamic school-enterprise collaborative education mechanism. This can break through the shortcomings of the traditional teaching model, enhance the teaching effect of new energy vehicle majors, and make the teaching model more flexible and interactive, ensuring that the needs of industrial development are highly consistent with the teaching of new energy vehicle majors, focusing on cultivating students' innovative thinking and continuously improving their practical abilities [7]. The details are as follows: First of all, colleges and universities should establish a joint committee with enterprises. The members of the committee mainly include enterprise staff, industry experts, and professional teachers, who are responsible for reviewing and optimizing the teaching plan to ensure that the teaching content is consistent with current industry standards and development trends. In addition, enterprises can provide immediate technological innovation and market trend analysis, helping colleges and universities adjust the curriculum arrangement flexibly to ensure that the curriculum content is closely combined with practical application requirements. Moreover, colleges and universities also need to implement a project-based teaching model. In this system, enterprises and colleges and universities work together to plan curriculum projects related to practical applications, enabling students to learn and solve problems in a real workplace environment. In this way, students can not only accumulate practical experience but also master cutting-edge technologies and workplace skills under the personal guidance of industry experts, thus significantly improving their professional qualities and innovative abilities [8].

3.2. School-enterprise collaboration to improve the professional curriculum system

First, conduct market research activities. Colleges and universities should deeply explore the industry and enterprises, conduct in-depth research on the development trend of the new energy vehicle industry, job requirements, technical requirements, and other contents, so as to master information such as the truly needed talents in the new energy vehicle industry, the future direction and trends of the industry. Then, optimize each teaching link of the new energy vehicle major according to these data. Secondly, establish training objectives and curriculum structures. Based on the results of market research, clarify the specific teaching objectives of new energy vehicle majors, fully consider the actual needs of enterprises, and establish a corresponding professional curriculum system. For example, introducing enterprise production case analysis, new energy vehicle fault diagnosis and repair, etc., into the curriculum system can strengthen students' practical operation abilities and establish correct professional values. In addition, the curriculum design should aim to cultivate high-quality new energy vehicle talents. Relying on school-enterprise cooperation, a modular curriculum system should be constructed. According to the different learning needs of students, personalized learning plans should be provided to facilitate them to choose appropriate modules for learning according to their own situations. For example, integrate information technology, control technology, repair technology, mechanical engineering, etc., in the practice module. At the same time, in order to ensure the effectiveness of practical teaching, both schools and enterprises can introduce the 1+X certificate system to optimize the teaching model of new energy vehicle majors. This is not only helpful for docking with professional standards, enriching teaching resources but also improving the quality of teaching activities and continuously enhancing students' professional competitiveness. In addition, attention should be paid to the management and supervision of the vocational skills training process, and problems encountered by students during training should be discovered and solved in a timely manner to ensure the quality of the new energy vehicle major teaching.

3.3. School-enterprise collaboration to build internship and training bases

At present, when colleges and universities implement the teaching of new energy vehicle majors around industry-education integration, they should closely cooperate with automobile manufacturing enterprises. According to the training needs of new energy vehicle majors, they should jointly build training bases and formulate internship and training plans. This involves planning the theoretical teaching area, practical operation area, simulated production area, research and development [9] and testing area, etc., of the training base, and scientifically arranging the equipment required for internship and training, such as motor test benches, charging stations, new energy vehicle complete vehicles, battery testing instruments, etc., to meet the needs of students for practical operation of new energy vehicle professional knowledge and skill training. For example, in the practice of battery management system fault diagnosis, students can accurately identify problems such as performance differences of battery cells and communication failures of the battery management system by operating special equipment such as battery internal resistance testers and battery charge and discharge testers. Through a period of practical learning, students can skillfully diagnose and repair common battery failures of new energy vehicles, significantly improving their practical operation skills. When conditions permit, intelligent vehicle innovation laboratories, electric drive test centers, new energy vehicle test and diagnosis laboratories, etc., can be built to provide students with opportunities for in-depth research. At the same time, automobile manufacturing enterprises can make full use of their own resources, such as production workshops and research and development centers, and open them to schools as places for students' internships and training. Colleges and universities can also open their laboratories, libraries, and other resources to enterprises to support the training of enterprise employees and technical research and development, thus achieving a win-win goal [10].

3.4. Establishing a collaborative education teaching evaluation

From the perspective of industry-education integration, teaching evaluation should not be limited to the campus. It is necessary to actively cooperate closely with enterprises to jointly build a comprehensive collaborative education teaching evaluation framework. This evaluation system needs to include assessments of theoretical knowledge, practical skills, and comprehensive qualities, etc., so as to escort the all-round development of students. In addition, on the basis of jointly determining the teaching evaluation indicators for new energy vehicle majors with enterprises, colleges and universities can objectively and fairly evaluate students' comprehensive abilities through various methods such as internship and training achievement reports, skill tests, and project completion situations. Moreover, colleges and universities should introduce third-party evaluation agencies, which are an important means to ensure the scientificity and effectiveness of the evaluation system. Using this evaluation method can not only improve teaching quality but also help to further deepen industry-education integration and assist the new energy vehicle industry in cultivating more outstanding high-quality professionals. In addition, in order to enable students to actively participate in the teaching practice of industry-education integration, colleges and universities should establish a corresponding reward system. Students who perform outstandingly in internships, skill evaluations, project implementations, and other fields should be given appropriate rewards and honors to ignite their learning enthusiasm and innovation awareness. Teachers and enterprise mentors who perform particularly well in teaching quality evaluations should also be given corresponding rewards and recognition to encourage them to contribute more to promoting the application of industry-education integration in the teaching of new energy vehicle majors. In short, establishing a professional collaborative education teaching evaluation system is an important part of the teaching reform of new energy vehicle majors from the perspective of industry-education integration, which will further promote the in-depth development of the teaching reform of new energy vehicle

majors from the perspective of industry-education integration and provide a solid talent support for the booming development of the new energy vehicle industry.

3.5. Vigorously building a "dual-qualified" teaching staff

In the teaching reform of new energy vehicle majors, building a "dual-qualified" teaching staff is the key to improving teaching quality and promoting the in-depth development of industry-education integration. The so-called "dual-qualified" teachers refer to those who have both solid professional theoretical knowledge and rich practical experience and skilled operation abilities. Such teachers can better combine theoretical knowledge with practical operations and provide more comprehensive and in-depth teaching guidance for students. To build a "dual-qualified" teaching staff, schools and enterprises should strengthen cooperation and jointly carry out teacher training and further education programs. Schools can invite technical experts and engineers with rich practical experience from enterprises to give lectures or provide guidance, helping teachers understand the latest technological trends and industry development trends. At the same time, teachers can also conduct on-site inspections and practical operations in enterprises to improve their practical abilities and skill levels [11]. In addition, schools can also encourage teachers to participate in various professional training and further education courses to continuously update their knowledge and skills. In the process of building a "dual-qualified" teaching staff, attention should also be paid to the teacher incentive mechanism and evaluation system. Schools can establish corresponding reward mechanisms to commend and reward teachers who perform outstandingly in industry-education integration, stimulating their enthusiasm and creativity. At the same time, a complete teacher evaluation system needs to be established to comprehensively evaluate teachers' teaching quality, practical abilities, and scientific research levels, providing targeted guidance and help for teachers [12].

4. Conclusion

All in all, carrying out the teaching reform of new energy vehicle majors under the background of industry-education integration plays a relatively important role in cultivating high-quality talents to meet the needs of industry development. Therefore, colleges and universities can try to start from paths such as establishing a dynamic school-enterprise collaborative education mechanism, school-enterprise collaboration to improve the professional curriculum system [13], school-enterprise collaboration to build internship and training bases, establishing a collaborative education teaching evaluation, and vigorously building a "dual-qualified" teaching staff. In this way, not only can students' professional qualities and practical abilities be improved, but also the in-depth cooperation [14] between enterprises and colleges and universities can be promoted, realizing resource sharing and complementary advantages, and thus cultivating more high-quality talents to meet the needs of society and making greater contributions to social and economic development [15].

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Disclosure statement

The authors declare no conflict of interest.

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