

Discussion on the Teaching Reform and Practice of New Energy Vehicles under the 1+X Certificate System

Hongjuan Li

Jiangxi Vocational Technical College of Industry&Trade, Nanchang, 330038 Jiangxi, China

lhj2022_happy@126.com

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Abstract: Owing to the quick progress of China's social economy, people's living standards have significantly enhanced, and the number of cars used has increased year by year. The demand for talents in automobile maintenance and R&D enterprises is increasing, and the employment standards are becoming increasingly stringent. The main educational purpose of higher vocational colleges is to transfer high-quality applied talents to the society. However, the current teaching activities of new energy vehicles in colleges are not effectively connected with the job requirements, which leads to the inconsistency between the talents trained in colleges and the standards of enterprise employment. The article deeply analyzes the connotation of 1+X certificate system, and comes up with the teaching reform and practice strategies of new energy vehicles for reference.

1. Introduction

In the current social environment, the automobile industry structure is constantly changing and upgrading, and new energy vehicles have become the main representatives in the automobile field^[1]. It not only has the advantages of low loss and low price, but also meets the requirements of China's ecological environment protection and progress. In the future, new energy vehicles will play a leading role in the automotive field. In this environment, higher vocational colleges have actively created professional courses related to new energy vehicles, such as electronic control, battery, motor maintenance, and focus on providing professional talents for the field of new energy vehicles. Based on this, colleges should take advantage of the opportunities brought by the construction of the 1+X certificate system to promote the teaching reform of new energy vehicles, so as to better meet the market demand and enhance the scope of student employment.

2. Overview of 1+X Certificate System

Currently, China's vocational education reform has clearly put forward that compared with general education, occupational education should focus on the guiding function of education and occupation to achieve the synergistic effect of education and guidance. The 1+X certificate system was formed in this educational environment.

1+X certificate system mainly refers to graduation certificate+certificates of various vocational skill levels. Among them, the "1" graduation certificate is the teaching certification obtained by students after completing the education in higher vocational colleges, which mainly highlights the educational attribute and is the basis of the talent training strategy^[2]. "X" multiple vocational skill certificates require students to develop multiple vocational skill assessment in accordance with their professional attributes, industry talent standards, etc., and obtain vocational skill certificates. Therefore, colleges should, under the guidance of the 1+X certificate system, effectively foster and enhance students' employability, and lay a foundation for their future career progress^[3].

3. Teaching Reform and Practice Strategies of New Energy Vehicles under the 1+X Certificate System

3.1 Build a Modular Teaching System

The so-called modular teaching system mainly refers to the sufficient teaching content based on the requirements of the 1+X certificate system, with the job skills as the core. In this way, we can effectively break the shackles of the traditional teaching model with theoretical knowledge as the main body, and establish a teaching system around the theoretical content and professional skills required by the vocational skill grade certificate, so as to enhance the pertinence and practicality of the teaching content. Building a modular teaching system can hold the ability needs of students' posts, and in the process of curriculum reorganization and design, it can also set specific tasks, thus achieving the teaching goal of combining theory with practice^[4].

First of all, construct the curriculum module of basic theoretical knowledge. This module mainly guides students to master basic knowledge about new energy vehicles, main structures, vehicle overall performance testing and evaluation, etc. This is the basic requirement for talents in the field of new energy vehicles. Secondly, construct the maintenance post course module. The main teaching content of this module is to help students master the operating skills of new energy vehicle maintenance, so as to enhance the ability of students to take maintenance jobs. Thirdly, build the course module of maintenance and overhaul posts, let students master the ability to detect new energy vehicle engines, batteries, motors and other equipment, and be able to scientifically diagnose problems in new energy vehicles in practice, so as to enable students to be competent for new energy vehicle maintenance and repair jobs. Finally, construct a teaching scheme combining curriculum teaching and examination^[5]. On the one hand, integrate the requirements and standards of vocational skills examination into the actual teaching process, and enhance students' professional skills assessment ability in theoretical and practical teaching. On the other hand, strengthen the integration of courses and certificates, infiltrate the standards of vocational skill grade certificate examination into teaching, and use knowledge points to enhance students' professional skills, so as to lay a foundation for students' certificate examination.

3.2 Create a Compound Teaching Model

The compound teaching mode is mainly to organically integrate theoretical knowledge teaching and practical teaching, strengthen students' professional skills and promote their all-round progress while consolidating their theoretical foundation. In the actual teaching of new energy vehicles, colleges should deepen the talent training mode of combining work with learning, so as to implement the educational goal of coordinated progress of students' theoretical basis and practical skills^[6]. Under the guidance of the 1+X certificate system, colleges should fully use network platforms and information equipment to build virtual practice projects for students.

First of all, colleges should comprehensively promote the Internet training mode, break the time-space limitation in the traditional teaching mode by building teaching APP and smart classrooms, and use the network to summarize the scattered knowledge in various professional skills. Through micro classes, online live broadcast and other ways, theoretical knowledge, practical operations, etc. should be explained in detail, so as to enhance students' learning efficiency. For instance, when learning the new energy vehicle maintenance course module, colleges can show students the internal structure and fault content of new energy vehicles through information technology, and guide students to judge the fault type through diagnostic devices. Through video demonstration, students can learn about the faults of new energy vehicles, and then achieve the goal of practical skills training. Secondly, we should establish a new knowledge system, professional skills and professional quality training standards based on the needs of enterprises and the relevant national policies for the new energy automobile industry, so as to strengthen students' professional skills and quality. On the one hand, colleges should comprehensively promote the effective application of MOOC, smart class, micro class, etc. in the teaching of new energy vehicles. On the other hand, colleges should deepen big data and artificial intelligence technology, create work scenes for students using VR technology, and present typical cases in a virtual way, so as to achieve

the effect of training exercises and promote the integration of courses and certificates.

3.3 Build Professional Practice Base

The new energy automobile industry requires not only talents with solid theoretical knowledge, but also talents who can transform knowledge into practical kinetic energy. Therefore, in the teaching of new energy vehicles, practical teaching should be carried out, which needs to be completed by relying on the practice base.

First of all, colleges can build a new energy vehicle research center, complete vehicle training area, battery training base, motor and control system training base, driving technology research training base and other classrooms [7]. On the one hand, it can meet the needs of students' certificate study. On the other hand, it can also effectively exercise students' practical skills. Secondly, colleges should also actively establish off-campus training bases, enhance the pertinence and practicability of practical activities through school-enterprise cooperation. Students can be arranged to practice for sales, production and maintenance posts in the field of new energy vehicles. In this way, students can not only really recognize the working environment and job requirements and standards, but also accumulate work experience in the process of internship and practice practical skills of corresponding jobs, thus laying a good foundation for future career progress. In the training management, colleges can divide students into multiple training groups, and have students with high technical level lead the team to develop training activities. For instance, when experiencing the production flow of new energy vehicles, the training group leader can arrange the work content of members, guides students to master the operation skills of production, assembly, quality inspection, maintenance, etc., and effectively enhances students' practical ability.

3.4 Establish 1+X Certificate Assessment Mechanism

Under the guidance of the 1+X certificate system, colleges should also establish a corresponding assessment mechanism to meet the needs of students to enhance their professional skills. First of all, colleges should expand the main body of certificate assessment and evaluation, and include enterprises, schools and industry competent units into the main body of assessment. Schools are responsible for the theoretical assessment of students, and schools and relevant enterprises are jointly responsible for the skill assessment. For instance, the competent authorities of the industry and the vocational education certificate issuing institutions jointly participate in establishing assessment standards and issuing vocational skill grade certificates to the students who pass the assessment. Secondly, colleges should also focus on process assessment, students' homework results, practical operation behavior, learning attitude, etc., and further tap students' personal highlights. Thirdly, we should also focus on the comprehensive evaluation of students' professional quality, including moral behavior, ideological ability, innovation awareness and cooperation concept. Finally, colleges should ensure that students have the right to independently choose vocational skills projects, and guide students to choose vocational skills assessment projects for learning and assessment according to their own abilities, future career planning, etc. This can not only reduce the learning pressure of students, but also enhance the pertinence of certificate study, thus realizing the goal of training applied talents in colleges.

4. Conclusion

In a word, as a crucial technological product catering to the current social sustainable progress strategy and ecological environment protection, new energy vehicles have a good future progress trend, and the demand for professionals in related fields will continue to expand. Therefore, colleges should take the 1+X certificate system as the teaching guidance, and promote the integration of courses and certificates by optimizing the teaching system, teaching mode, practice base, and assessment mechanism, so that students can truly master the working ability and theoretical knowledge in the field of new energy vehicles, and then provide talent support for the sustainable progress of the new energy vehicle industry.

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