Advances in Educational Technology and Psychology, ISSN 2371-9400
2021 5th International Conference on E-Learning, Education and Psychological Sciences
Vol. 23, 2021, pp. 19-21

Research on Construction of Practical Teaching Curriculum System of New Energy Vehicle Technology Major

Haiqiong Li

College of Mechanical and Electronic Engineering, Yunnan Engineering Vocational College, Anning, Yunnan 650304, China

ABSTRACT. In recent years, the rapid development of new energy vehicle industry needs a large number of talents with strong specialty and high quality in this field. New energy vehicle technology talents belong to skilled talents, so in the process of talent cultivation, we must strengthen practical teaching. It is very important to build a new energy vehicle technology practical teaching curriculum system to achieve the goal of talent training. This paper first analyzes the current obstacles in building the practical teaching curriculum system of new energy vehicle technology major and introduces the path of building practical teaching curriculum system for reference.

KEYWORDS: New energy vehicle technology major, Practical teaching, Curriculum system, Construction

1. Introduction

New energy vehicle technology is a new specialty in vocational colleges. In order to improve the practical operation ability of students and meet the needs of new energy vehicle market for professional talents, new energy vehicle technology specialty must do a good job in practical teaching. However, the current practical teaching curriculum system of new energy vehicle technology in vocational colleges is difficult to meet the needs of personnel training, so actively building an effective practical teaching curriculum system is an important teaching task of new energy vehicle technology major.

2. Factors Hindering the Construction of Practical Teaching Curriculum System of New Energy Vehicle Technology Major

2.1 The Cost of Constructing Practical Teaching Curriculum System is High

Training technical talents is the main teaching goal of new energy vehicle technology specialty. At the same time of theoretical knowledge teaching, a large number of practical teachings should be carried out. In order to construct practical teaching curriculum system, it is necessary to have sufficient practical teaching equipment and facilities. However, the Practical vehicles needed for training, electric controls, motors, charging piles, batteries and other facilities and equipment needed for the practical teaching of new energy vehicle technology specialty have higher costs. Therefore, the new energy vehicle technology courses in many higher vocational colleges mainly focuses on theoretical teaching and simple cognition of structure [1].

2.2 Understaffed Situation

The construction of practical teaching curriculum system of new energy vehicle technology major needs competitive and powerful teachers to support. As a new major, many teachers of new energy vehicle technology major are transformed from teachers of traditional automobile related majors [2]. Although the professional theoretical knowledge of these teachers is very rich and solid, there will be problems once they carry out practical operation. This leads to the lack of professional training teachers in new energy vehicle technology major. Therefore, the practical teaching of new energy vehicle technology major in many colleges and universities is in vain. At the same time, it also causes a lot of waste of practical teaching resources. In addition, training or re-education for teachers of new energy vehicle technology major also needs more cost. Therefore, teachers of new energy vehicle technology major show obvious deficiencies. Due to serious lack of “Double-qualified Teachers”, it has hindered the construction of practical training teaching curriculum system of new energy vehicle technology major to a large extent.

  DOI: 10.23977/ELEPS2021005

2.3 Lack of Professional Practical Teaching Materials

As a new major in the field of vehicle, the teaching content of new energy vehicle technology major involves many core technologies of automobile manufacturing enterprises. However, the current teaching materials of new energy vehicle technology major are in short supply in both types and quantity. And most textbooks are summarizing theoretical knowledge. Or only introduce the relevant knowledge of a specific vehicle model. Few of them involve practical operation skills of electric control, motor, battery and high voltage of new energy vehicles [3]. Therefore, students cannot fully grasp knowledge and skills related to new energy vehicle technology. It is difficult to achieve the goal of personnel training of professional teaching. It is impossible to construct an effective practical teaching curriculum system.

3. Way to Build Practical Teaching Curriculum System of New Energy Vehicle Technology Major

3.1 Construction of Practical Teaching Curriculum System

Non-fuel is the power source of new energy vehicles, and new energy vehicles are vehicles with new chassis layout formed by advanced technologies, such as integrated control and drive. Compared with traditional vehicles, new energy vehicles not only inherit their basic technology. At the same time, a variety of electronic control technologies are used. Besides, the advanced electronic control technology, drive motor and battery pack are added to them. Therefore, students of new energy vehicle technology major should master the knowledge and skills of new energy vehicle major while mastering the knowledge and skills of traditional vehicle. Therefore, practical teaching of new energy vehicle technology major should focus on training students' ability to detect and maintain new energy vehicles. It mainly includes performance and detection, drive control and detection, power battery detection, motor performance detection and drive system fault analysis of new energy vehicles, etc. [4]. Through the analysis of the requirements of new energy vehicle job post group, training objectives of practical teaching ability of this major, combined with the actual professional teaching environment and practical equipment, in this way, we can get the corresponding professional skills of new energy vehicle technology major. Typical tasks will be dealt with according to the field of vocational skills. According to the progressive relationship between professional knowledge and promotion, build a practical teaching curriculum system based on vocational skills.

The corresponding professional skills of new energy vehicle technology major mainly include: ① debugging skills of new energy vehicle; ② maintenance skills of vehicle engine system and motor; ③ maintenance skills of electronic control chassis of new energy vehicle; ④ maintenance skills of electrical system of new energy vehicle; ⑤ maintenance skills of body control; ⑥ detection and diagnosis skills of comfort and safety system of new energy vehicle technology; ⑦ new energy vehicle drive control system detection and drive system fault analysis skills; ⑧ new energy vehicle performance detection skills; ⑨ new energy vehicle motor performance detection skills; ⑩ pure electric vehicle power battery detection skills. The corresponding practical training courses mainly include: ① debugging of new energy vehicles; ② structure, disassembly and repair of vehicle engine system and motor; ③ structure, disassembly and repair of electronic control chassis of new energy vehicle; ④ structure, disassembly and repair of electrical system of new energy vehicle; ⑤ maintenance of body control; ⑥ detection and diagnosis of comfort and safety system of new energy vehicle; ⑦ detection and diagnosis of new energy vehicle drive control system and drive system fault analysis; ⑧ detection of new energy vehicle performance; ⑨ detection of new energy vehicle motor performance; ⑩ detection of pure electric vehicle power battery, etc.

3.2 Construction of Practical Teaching Material System

In terms of schools, school-based practical teaching materials for new energy vehicle technology major should be constructed according to training objectives, curriculum system, actual teaching environment and equipment of the school [5]. The construction of textbook should take into account the content, goal, and train of thoughts, training equipment and teaching staff of practical teaching curriculum system of new energy vehicle technology major. From the perspective of students, for meeting their learning needs, the main line of practical teaching is to cultivate their practical ability. To make the practical teaching materials really match practical teaching courses. Ensuring the content of teaching materials meet students’ learning needs of professional knowledge and skills, and to promote the development and advancement of students' professional ability.

3.3 Construction of Practical Teaching Mode

The main construction mode of practical teaching mode is practical training in school and post placement in enterprises. We can optimize the effect of practical teaching and achieve the goal of practical teaching through training in schools and post placement in enterprises. So that students' practical ability can be consolidated and strengthened. Adopt teaching mode of combination between theoretical teaching and practical teaching: the first class carries out theoretical teaching, the second class carries out campus practical teaching, the third class carries out group skill competition, and the fourth class carries out off campus enterprise on-the-job training [6]. Through theoretical teaching from the first class, students can master professional knowledge required by new energy vehicle technology specialty. The practical teaching from the second class improved students' practical ability. In the third class, through professional skills competition between groups, students' professional skills are constantly improved. To enable students have professional skills required for their posts. Finally, in the fourth class, students enter enterprise for on-the-job practice, providing students with the opportunity to work at zero distance. In addition, the professional skill assessment of occupational work and industrial work is integrated into practical teaching. Enable students to obtain skill certificates required by post. So that students can really use professional knowledge and skills learned in actual job to improve the effectiveness of practical teaching.

4. Conclusion

The new energy vehicle technology specialty practical teaching curriculum system should be well constructed in three aspects, construction of practical teaching curriculum system, construction of practical teaching materials system and construction of practical teaching mode. Only in this way can practical teaching curriculum system of new energy vehicle specialty be more perfect and more effective. And achieve the goal of training skilled talents. Provide a large number of excellent professionals for new energy vehicle market.

Acknowledgement

Yunnan provincial department of education scientific research fund project, project name: new energy automobile re pair major students car maintenance service capacity improvement training model research(project number: 2019J0478)
.

References

[1] Li Rong, Gao Xin. Exploration on Construction of New Energy Vehicle Application and Maintenance. Automotive Practical Technology, NO.5, pp.191-193, 2019.

[2] Guo Hailong, Zhang Yongdong, Wang Qingjian. Research on Construction of New Energy Vehicle Training Base on Vocational Colleges Based on Analysis of Vocational Ability. Journal of Guangdong Vocational and Technical College of Communications, Vol.16, No.2, pp.60-64, 2017.

[3] Wang Hongren.Research on Construction of off Campus Practice Base of Automobile New Energy Technology Major in Higher Vocational Colleges. Contemporary Education Practice and Teaching Research (Electronic Journal), NO.9, pp.896-897,2018.

[4] Chen Zhufeng.Teaching Reform of Automotive Electronic Technology Based on the Development of New Energy Automobile Industry. Times Agricultural Machinery, NO.9, pp.196-197, 2017.

[5] Chen Meiduo, Han Ming, Zhang Yu, et al. Research on Sharing Mechanism of Regional Training Teaching Platform for New Energy Automobile Specialty. Times Agricultural Machinery, NO.10, pp.205, 2017.

[6] Yang Liuqing, Shu Xianglin, pan Xijiao,et al.Teaching Reform of Automotive Electronic Technology Specialty in Higher Vocational Colleges for New Energy Vehicles and School Enterprise Cooperation Projects . Journal of Hefei University of Technology (SOCIAL SCIENCE EDITION), NO.2, pp.109-115, 2014.