Online and Offline Theoretical and Practical Teaching Reform for Automotive Professions

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Abstract: Online teaching makes the teaching work of higher education institutions of automotive profession meet new development opportunities and challenges, especially after the occurrence of the COVID-19, major campuses generally use the Internet to complete teaching work. How to strengthen theoretical teaching and practical teaching plays a key role. The teaching work of automotive majors requires students to have high practical ability. The key to innovation in the teaching process lies in the effective integration of theoretical foundation and practical ability. The essay elaborates on the theoretical foundation and practice based on the online and offline automotive professions, in hope of providing reference for the teaching process of them.

Keywords: Automotive professions；Theory and practice；Online and offline education

It is obvious to all that the theoretical knowledge related to automotive profession has strong professionalism, and at the same time, it needs to have strong practical ability. Therefore, teachers of higher education institutions, who teach automotive majors, should effectively integrate online and offline theoretical foundation and practical teaching, so as to improve students' professional level and employability in the future stage and enhance students' full understanding of professional knowledge. Based on the education principle of "stopping courses but not stopping learning", the playback of online education and offline practical education mode for automotive professions should be strengthened in order to improve the education effect.

1. The problems of traditional offline education of automotive professions

A lot of shortcomings are usually existed in the offline teaching process of the automotive profession: firstly, putting too much emphasis on the theoretical basis. It is not difficult to find that most teachers ignore the cultivation of students' practical ability in the teaching process, and students seriously don't have the opportunity of operating practically, which makes the theoretical knowledge learned by students useless and the practical ability cannot be improved; secondly, showing the preference for practical education. Students lack of theoretical knowledge, who can not get enough knowledge accumulation and refining as a result, can neither improve the degree of theoretical knowledge which students gain and nor realize the combination of theoretical foundation and practice; furthermore, characterizing by transience in the teaching of automotive professional. Students of automotive professional in the traditional classroom who learn for a short period, can not acquire the knowledge with accurate understanding and mastery, resulting in the future employment process of students' difficulty to understand deeply of working content; finally, it is hard to adapt to the teaching model[1]. Under the background of the COVID-19, the teaching work has to be transferred from offline to online, and a large number of online education resources are integrated and applied. When teachers carry out teaching work, they seem to be obviously incompatible: focusing on the professional education in the teaching process, losing control of the course progress, lacking of guarantees of education atmosphere, and students are more inclined to the simple absorption of knowledge. At the same time, online education is even more unable to realize the traditional practical teaching, so that students lack good opportunities for practical operation.

2. Online and offline, theoretical and practical education solutions for automotive professionals

2.1 How to prepare a course

In the process of applying the online teaching mode to the automotive courses, the traditional teaching contents should be integrated first. For example, in the course process of explaining the content of<Automotive Testing and Diagnosis Technology>, the teacher should refine and integrate the course resources again according to the students' learning level and situation, and create a knowledge structure , which is in line with the practical work content and process, so as to start professional teaching on this premise, and reasonably grasp the course schedule and promote students to learn and absorb the points of knowledge in a short time, in this way it can achieve the situation that students can fully absorb the points of knowledge they have gained, and help students to relieve the pressure of the learning process.

2.2 Preparation for class

When teachers teach the content related to the <Automotive Testing and Diagnosis Technology> course, it is especially crucial to plan the course schedule rationally, and they need to fully prepare for multiple aspects such as questions before class, answers after class, and teaching during class [2]. Before classroom teaching, teachers should not only combine with the professional course content, but also use the Internet to collect, organize and expand the professional materials, and use the teaching tools such as courseware and PPT made in advance to reflect the teaching content in the course, and distribute the corresponding course resources to students, so that students are able to make pre-course pre-study and post-course knowledge consolidation.

2.3 Combining online and offline models

In the process of classroom teaching, network teaching and real teaching can be effectively integrated, that is, teaching videos and related materials are implanted into the client of the learning software, so that students can pre-study before the course and can be reinforced in the classroom process. The teacher can use the term of online living to explain the course content in the classroom process, so that students can learn the car structure and troubleshooting technology in depth, strengthen students' full learning degree for the professional knowledge of the car, and ensure the teaching quality to the maximum extent.

2.4 Combining theory effectively with practice

When teachers carry out classroom teaching for <Automotive Testing and Diagnosis Technology>, they should strengthen the comprehensive characteristics of the theoretical foundation and practical operation in all classroom teaching processes, using a certain range in the workshop or multimedia classroom as a teaching situation, and using multimedia teaching tools to show the course and teaching situations, for example, when teachers explain the process of automobile inspection technology, through the term of role-playing: using the identity of a car overhauler to do practical inspection of detailed car faults. During this period, teachers can explain about the general process of car repair at first, then explain in detail the location of large car repair and small repair, and summarize the relevant knowledge based on the overall structure of the car. For example, automotive overhaul refers to the overall repair of the car and replacement of the corresponding parts, while minor one refers to the implementation of individual parts testing and replacement, teachers should combine the detailed parts of the car and the specific structure of the vehicle to students, so that they can repeatedly observe after class.

2.5 Using virtual and real practice teaching

Teachers of automotive professions can use a combination of virtual and real teaching mode in the teaching process to students in depth the structural principles and working mechanisms of the car, and use this term to improve the practical operation level of students[3]. For example, teachers can integrate certain VR technology in the teaching process, prompting students to use the mouse to send commands to the corresponding parts and parts of the car, using the mouse to realize virtual operation of the car's electrical equipment, engine, body and chassis components and promoting students to further familiarize with the working principle of the car, so that students have the best adaptability in the future practice and operation process, proficient in professional knowledge and basic knowledge, so as to effectively improve the course effect of the automotive profession.

3. Concluding remarks

How to let automotive teaching effectively connect online courses with offline courses is a major test for both teachers and students. To determine the content of online teaching in a short period of time without sufficient preparation need thorough and detailed planning and design. From the initial inability to the later familiarity, teachers continue to explore and improve the teaching methods and modes, so as to effectively improve the quality of teaching, which creates a good foundation for the future growth and development of students.

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