Research on Practical Teaching of Intelligent Manufacturing Professional Flip Classroom Based on Modern Educational Technology

Wei Xianglin

Department of Mechanical and Electrical Engineering, Guangdong Innovative Technical College, Dongguan 523960, China

Keywords: Modern educational technology, Intelligent manufacturing, Flipping classroom, Practical teaching.

Abstract: Modern educational technology mainly uses modern information technology means, such as computer technology, network technology, artificial intelligence technology and remote communication technology, to carry out corresponding curriculum teaching. The flip classroom can significantly improve the teaching quality of many courses and specialties because of its outstanding advantages of combining online with offline. Based on this, this paper explores the practical teaching of the flip classroom of Intelligent Manufacturing Specialty Based on modern educational technology. Firstly, this paper summarizes the current domestic research theory, and summarizes the characteristics and advantages of modern educational technology. Combining with the main characteristics of flip classroom teaching mode and the subject attribute of intelligent manufacturing specialty, the optimization design of flip classroom practice teaching link is carried out.

1. Research Background

1.1 Literature review

Flipping classroom is a new teaching mode, which realizes the reform of teaching mode and curriculum mode. Therefore, it has been widely concerned by the educational and academic circles, and many scholars have carried out research and discussion. Li Guofeng and Li Zuhong discussed the application of flipped classroom in the process of modern educational technology teaching, understood the advantages of flipped classroom, and promoted the effective theoretical support of practical teaching of flipped classroom (Li and Li, 2017). Taking the present experimental course of educational technology as an example, Yang Jiumin and Shao Mingjie and other scholars discussed the application of flipped classroom practice teaching of micro-video resources (Yang et al., 2013) in view of the low utilization rate of curriculum resources and the unsatisfactory learning effect. He Weiwei has analyzed the practical application of the flipped classroom in the new teaching mode. The main research object is the use and maintenance of multimedia teaching platform. Through the design and improvement of the flip classroom, we can effectively improve the shortcomings of the traditional teaching mode, and then promote the improvement of learning efficiency (He, 2017). Zhang Yazhen and Deng Anyuan took the modern educational technology curriculum as an example to empirically study the learning effect of the flipped classroom. The study finds that, by virtue of the advantages of learning platform, the learning effect of flip classroom can be significantly improved from the aspects of information technology application ability and multimedia courseware practical skills (Zhang and Deng, 2017). Scholars such as Chen Yang and Hu Fangang have discussed the contradictions caused by the flipped classroom, including the contradictions between technology and people, the acceptance and internalization of learners'knowledge, macro class and micro class. Based on the analysis of the root causes of the contradictions, this paper proposes a method of dealing with the problems of complementary advantages and concurrent development (Chen et al., 2016).

  DOI: 10.25236/acaelt.2019.349

1.2 Research purposes

Intelligent manufacturing majors mainly study the basic theory and operation skills of manufacturing technology, and train engineering and technical personnel with subject knowledge integration. With the development of global manufacturing industry, intelligent manufacturing has become the core of a new round of industrial revolution. Therefore, there is an increasing demand for composite engineering and technical personnel in the market (Shen, 2018). This is both an opportunity and a challenge for the specialty of intelligent manufacturing. Influenced by traditional teaching concepts and modes, there are still some problems in the specialty of Intelligent Manufacturing in Chinese universities, such as backward teaching methods, less relevance of practical knowledge, disconnection between teaching content and actual needs, which make it difficult to meet the needs of the times (Wu and Huang, 2018). In this context, based on modern educational technology, this paper studies the practical teaching of the flip classroom of intelligent manufacturing specialty. By sorting out the relevant domestic research literature, this paper summarizes the main problems in the current teaching process. Practical teaching reform measures based on modern educational technology are put forward, hoping to provide some thoughts for the reform of Intelligent Manufacturing Specialty in Colleges and universities.

2. The Characteristics and Advantages of Modern Educational Technology

The viewpoint of modern educational technology and system is the basic guidance, and the theoretical basis is the modern educational thought. Essentially, modern educational technology is a comprehensive manifestation, which combines the advantages of modern teaching media, teaching design and teaching methods (Pei and Ma, 2017). The purpose of using modern educational technology is to optimize the teaching process in many aspects, including teaching efficiency and teaching effect. As a result of the improvement of teaching effect and efficiency, modern educational technology and teachers, students and textbooks have become the four major elements of teaching (Wang and Tang, 2017). According to the current situation of development, educational technology has formed a complete theoretical system of professional disciplines, which has a positive impact on the reform of modern education. Compared with the general sense of educational technology, modern educational technology absorbs modern scientific and technological achievements and has unique characteristics and advantages.

Specifically, the characteristics of modern educational technology are mainly divided into five characteristics: interactivity, sharing, comprehensiveness, advancement and diversity. Interactivity. The realization of the interaction of modern educational technology mainly depends on the network terminal, through the open real-time answer, realizing the good interaction between teachers and students. At the same time, the interactive nature of modern educational technology can also enable students to collaborative learning, using audio-visual means to acquire knowledge, so as to cultivate good learning habits and interest (Hu et al., 2017). Sharing. The key advantage of modern educational technology is the Internet platform, which has abundant teaching resources and achieves rapid and timely sharing. With the convenience of network technology, students can acquire and internalize knowledge without the limitation of time and space. Comprehensiveness. The comprehensiveness of modern educational technology is embodied in the integration of multimedia information. By integrating hypermedia and hypertext, students can be provided with knowledge resources rich in image, text and voice, so as to help students quickly build their knowledge system. Progressiveness. The central subject of traditional teaching mode is teachers, and students are in the position of passive acceptance. The introduction of modern educational technology into the network teaching mode has promoted the status of students, from passive acceptance to active learning. This change can stimulate students' interest in learning to a great extent, so as to achieve the teaching objectives. Diversity. The biggest disadvantage of traditional teaching mode is that it is difficult to teach students in accordance with their aptitude. Modern educational technology creates various learning situations for students through various means. Students can choose according to their learning ability and interest preferences, carry out efficient

learning activities, and get healthy physical and mental growth.

3. Design of Practical Teaching for Intelligent Manufacturing Major Flip Classroom Based on Modern Educational Technology

The concept of flipped classroom was first put forward in 2011, which has attracted many scholars' attention since its birth. After the introduction of China's education sector in 2012, it quickly caused a related research boom and achieved remarkable results. Many scholars and educators believe that it is very feasible to introduce the flip classroom teaching mode into the major of intelligent manufacturing, which can significantly improve the teaching effect. The flip classroom design based on modern educational technology effectively incorporates advanced Internet thinking and intelligent manufacturing concept, which is conducive to improving students' mastery of knowledge. Based on modern educational technology, the design of flip classroom practice teaching for Intelligent Manufacturing Major can be divided into three parts to optimize.

First, optimize the design of teaching video. Skills training is the main course content of Skills Manufacturing Major. Therefore, when optimizing the practice teaching of flipping classroom, we should clearly understand the knowledge structure and operational skills system of the curriculum. When making teaching videos, ensure the independence of flipping classroom teaching videos. In order to increase the design and practicability of practical teaching, when making teaching videos, teachers should use task and model as examples to explain the operation. All instructions should be designed according to the rules from simplicity to complexity, and the special principles involved in intelligent manufacturing specialty should be integrated into the actual teaching video. Generally speaking, teaching videos can be divided into several types. It includes basic operation, two-dimensional drawing command, layer setting and auxiliary drawing command. When optimizing the design of teaching video, we should also pay attention to effectively stimulate students' learning motivation. This can be achieved by importing the problem. Specifically, after watching the teaching videos, students can keep their enthusiasm and interest in participation by thinking about the design of teachers. This kind of effective stimulation can ensure that the enthusiasm and effect of classroom teaching activities are greatly improved. Of course, when designing guidance problems, teachers should combine teaching content to ensure the rationality of guidance problems. The problem is that knowledge should not be too simple or too complex. Students can get the idea of solving problems by consulting relevant learning materials, and then share and communicate in the actual classroom teaching. Finally, to optimize the design of teaching video, we should also carry out extracurricular teaching extension. The realization of this point is mainly through giving exercise tasks in teaching video. The design of exercises ensures that students can review and extend their knowledge structure, and helps them to review and expand to a certain extent. In addition, the overall design of teaching video has certain rules. Gradually broadcast to students to watch, so that students maintain long-term concern and interest, so as to effectively improve the practical teaching effect of intelligent manufacturing professional flip classroom.

Second, optimize the design of classroom activities. The process of internalization and comprehension of the knowledge learnt by students is realized through classroom activities. This is also the core part of the flip classroom for Intelligent Manufacturing Major. Therefore, in order to optimize the practical teaching of flipped classroom, we must pay attention to the optimization design of classroom activities. In other words, the design effect of classroom activities is directly related to the teaching quality of practical teaching of intelligent manufacturing specialty. By using modern educational technology, students can learn independently before class and have a basic understanding of some relevant operational commands. Because of the remarkable advantages of modern educational technology, students can master the rhythm of watching videos independently. In addition, the use of modern educational technology and interaction with classmates and teachers for instant communication. Teachers can also truthfully understand and master students' learning progress according to their pre-class learning situation. Through some incentives and rewards, students' enthusiasm and initiative in learning can be effectively improved. In classroom practice,

students' participation and interest are ensured by using the guidance of new problems designed before. According to the progress of teaching objectives, teachers can simply review and review knowledge. At the same time, teachers can carry out the practice teaching of flipping classroom in the form of tasks and tests. For example, let students do classroom drawing, according to the completion progress and level of students, evaluate the quality of students' pre-class learning. In addition, teachers can aim at students' pre-class and classroom questioning, carry out targeted induction and extension, so as to improve the overall quality of practical teaching.

Third, optimize the evaluation design. In order to ensure the practical teaching effect of the flip classroom of Intelligent Manufacturing Specialty, schools and teachers must evaluate students objectively and comprehensively. Therefore, the design and improvement of the assessment system is also the key to continuously improve the practice teaching in the flipped classroom. In view of the task design of classroom activities, teachers can make corresponding comments and summaries. At the same time, students' feedback and opinions are accepted. Through demonstration and evaluation, the assessment and evaluation can be carried out impartially and objectively, and the enthusiasm of students can also be effectively mobilized. In addition, when assigning classroom tasks, we can cooperate in the form of groups. On the one hand, cultivate students' sense of teamwork. On the other hand, members of the group can evaluate each other. To a certain extent, it also improves students' practical ability to ensure that it is achieved. Turn over the practical teaching objectives of the classroom.

4. Conclusion

In recent years, the rapid development of modern information technology has led to the popularization and application of modern educational science. In the field of education, the application of modern educational technology and the use of modern information technology to transfer knowledge and information can further enrich teaching means and optimize teaching process. This paper makes use of the characteristics and advantages of modern education technology to optimize the flipped classroom practice teaching of intelligent manufacturing specialty. Through the author's research and discussion, I hope to provide some ideas and directions for the teaching reform of Intelligent Manufacturing Major in Colleges and universities. However, due to the limited time and space, there are still some deficiencies in this study, and I hope that more in-depth research can be carried out in the follow-up.

Acknowledgements

Fund Project:2018 Guangdong Province Teaching and Research Teaching Reform Project “Practical Application Research Based on Modern Educational Technology in the Inverted Class of Intelligent Manufacturing Courses”(JZ201811)

References

[1] Li G.F., Li Z.H. (2017). Research on Practical Teaching of Modern Educational Technology Based on Flip Classroom. Journal of Heihe University, 8 (7), 155-156.

[2] Yang J.M., Shao M.J., Huang L. (2013). Applied Research of Flipping Classroom Based on Micro-Video Resources in Experimental Teaching --- Take “Modern Educational Technology” Experimental Course as an Example. Modern Educational Technology, 23 (10), 36-40.

[3] He W.W. (2017). Analysis of the practical application of flipped classroom in the experiment teaching of “modern educational technology”. Qualitied Parents, 17 (17) 11-11.

[4] Zhang Y.Z., Deng A.Y. (2017). An Empirical Study on the Effect of Flipping Classroom Learning: Taking Modern Educational Technology as an Example. Journal of Heilongjiang College of Education, 36 (3), 33-35.

[5] Chen Y., Hu F.G., Liu Y.Q., Liu J.L. (2016). Reflections on Contradictory Relations Arising from Flipping Classroom. Modern Educational Technology, 26 (2), 71-76.

[6] Shen Y.J. (2018). Research on the Reconstruction and Promotion of Intelligent Manufacturing Specialty Training Teaching System under the Background of Made-in-China 2025. China Educational Technology & Equipment, 32 (17), 136-137+140.

[7] Wu W.H., Huang C.Z. (2018). Research on cad/cam teaching of Applied Undergraduate Mechanical Specialty under the background of intelligent manufacturing. The Science Education Article Collects, 15 (9), 50-52.

[8] Pei Z.Q., Ma Z.F. (2017). Research on Practical Skills Training Model for Applied Talents of Automation Specialty Based on Intelligent Manufacturing Post. Modern Economic Information, 32 (19), 421-421.

[9] Wang L., Tang Y.P. (2017). “Platform Sharing, Direction Divergence, Expanding Mutual Selection” Course System Construction: Take the Intelligent Manufacturing Speciality Group of Dawn Vocational University as an example. Journal of Liming Vocational University, 29 (2), 64-68.

[10] Hu B.W., Chen C.Y., Wu J. (2016). “Made in China 2025” and the exploration of the development path of modern vocational education. Journal of Shanxi University (Philosophy and Social Science Edition), 39 (3), 91-96.