Research and Practice of Course Mixed Teaching Mode Based on MOOC and Flipped Classroom

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Abstract: Blended learning model draws lessons from MOOC's network platform technology and combines the advantages of traditional methods and network learning. It not only plays the leading role of teachers in guiding, inspiring and monitoring the teaching process, but also fully embodies the leading role of students. The mixed teaching mode of MOOC and flipped classroom brings new challenges and opportunities to the teaching reform of vocational education. This paper first analyzes the connotation of the mixed teaching mode of curriculum, and discusses the preparation of curriculum resources, teaching process and methods, and curriculum effect evaluation. Practice has proved that the research based on online and offline mixed teaching mode can teach students in accordance with their aptitude, strengthen their communication and cooperation, enhance their autonomous learning ability, improve their team cooperation ability, and greatly enhance the teaching effect of the course.

1 The Connotation of the Mixed Teaching Mode of MOOC and Flipped Classroom

1.1 MOOC

MOOC is translated as "massive open online course ". MOOC is different from the traditional classroom teaching. The teaching method is online mode, with high-quality teaching resources, free open courses, complete teaching design, only a computer can be used for course learning. Through the open MOOC platform, learners can freely choose the course resources they are interested in autonomous learning, and decide the learning time, learning method and learning environment according to the progress of the course^[1].

1.2 Flipped Classroom

Flipped classroom is supported by information technology. Teachers provide teaching micro video, audio, animation, courseware, practice and other learning resources, students use these resources for self-learning before class, complete the knowledge transfer; in view of the difficult problems existing in the learning process of students, teachers carry out learning activities in the classroom, such as question solving, collaborative exploration, interactive communication, etc., therefore, students could complete knowledge internalization. It is a new teaching mode to achieve teaching objectives. Compared with the traditional classroom, in flipped classroom, teachers change from knowledge imparter and classroom manager

to learning director and promoter, students from passive recipient to active researcher, teaching form from classroom explanation and homework to pre class learning and classroom inquiry, classroom content from knowledge explanation to problem inquiry and discussion, and technology application from content display for self-learning, communication and reflection, collaborative discussion, the evaluation method has changed from traditional paper test to multi-dimensional evaluation^[2].

1.3 Mixed Teaching Mode

Traditional classroom and online classroom have their own unique advantages, and the mixed classroom is to integrate the advantages of the two together, which can not only play the role of teachers' guidance, supervision and inspiration, but also mobilize the enthusiasm, initiative and creativity of students' autonomous learning. In the online classroom, students can plan their own learning process or interact with each other anytime and anywhere; in the traditional classroom, teachers can lead the classroom and students can communicate face to face. Through the combination of online learning and offline learning, and the combination of traditional teaching and network teaching, the teaching efficiency and teaching quality of the course will be greatly improved^[3].

2 Preparation of Course Resources

2.1 Course Content

"Statistical analysis and application of aviation materials information" is a practical basic course of aviation

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materials specialty, which plays an important supporting role in the cultivation of post ability of aviation material statisticians. According to the teaching concept that ability is prior to knowledge, the course content system is

scientifically constructed. The course content is divided into 4 knowledge modules and 10 knowledge units, as shown in Fig. 1.

Fig 1. course content learning unit mind map

2.2 Resource Construction

Resource construction mainly includes self-built resources, network resources and auxiliary resources. Self-built resources mainly include electronic teaching materials, PPT courseware, learning guidance task list, mind map, preview outline, operation questions, etc. The cyber sources include MOOC, micro lesson, learning website, WeChat official account, reference materials, etc. The auxiliary resources include nail live group, wechat communication group, test question bank, questionnaire, etc. The above resources fully guarantee the various needs of online teaching.

3 Teaching Process and Methods

Combined with the characteristics of the course and the situation of the students, we propose the online and offline mixed teaching mode based on MOOC and flipped classroom. The mode can effectively integrate online learning and traditional face-to-face classroom teaching with complementary advantages, breaking the previous "knowledge infusion" teaching mode, reflecting the teaching concept of "taking students as the main body and teachers as the leading". It can not only give full play to the subjective initiative of students as learning subjects, but also reflect the leading role of teachers in guiding and monitoring the teaching process^[4].

3.1 Autonomous Learning Before Class

Before each class, the notice is issued through nail group and wechat group, so that students can understand the learning task according to teaching resources, view the pre class guidance task list through the network media platform, and use the network platform to independently learn MOOC teaching micro video, tutorial materials,

teaching courseware and other resources, and teachers can solve difficult problems, and finally complete MOOC unit test and knowledge system cognitive carding.

3.2 Guidance and Improvement in Class

1) Ideological and Political Teaching is Silent

In the teaching process, we should always focus on the core values of the course "patriotism, dedication, responsibility", put ideological and political work through the whole process of teaching, realize the ideological and political construction pattern of "three complete education", focus on cultivating new military talents who love the motherland, love their jobs, work hard and pursue excellence, and realize the organic unity of value guidance, knowledge education and ability training.

2) Task Driven and Flipped Classroom

According to the teaching objectives, teachers collect the difficult points of the students, and then introduce the situational task. Through the task driven, according to the strong practical characteristics of the course, the teaching content is reasonably connected with multiple tasks. The task driving runs through the whole process before, during and after class, highlighting the key points and solving the difficult points. Using the teaching concept of flipped classroom, in the network space classroom environment, through the omni-directional construction of knowledge system, promote the development of deep learning. "Information transmission" is carried out by students before class. Teachers not only provide videos, but also provide online guidance; "absorption internalization" is completed through interaction in the classroom. Teachers can understand students' learning difficulties in advance, give effective guidance in class, and stimulate students' interest in learning through deep communication and interaction, so as to achieve the internalization process of knowledge. Finally it is the classroom summary, deepen memory, summarize knowledge, consolidate and

improve^[5-7].

3) Strengthen the Management of Double Teachers Online

In order to ensure the teaching quality and learning effect, a teacher is specially assigned to be the special supervisor of teaching order to manage and supervise the

students (as shown in Fig. 2). The online management mode of Double Teachers strengthens the teaching management function, effectively solves the difficult problem of online teaching management, and enables students to experience the magic of cloud meeting in an all-round way.

Fig 2. the function of teaching order administrator

3.3 Review and Consolidate After Class

On the network course platform, the students are organized to complete the exercises and stage tests through the questionnaire star regularly after class, and make homework comments. For the students' questions, timely feedback, teachers seriously answer questions.

3.4 Multiple Evaluation of Courses

The whole process of curriculum diversified evaluation is realized. It consists of three parts: pre class evaluation, classroom evaluation and after class evaluation, which constitutes the whole process evaluation (Fig. 3 is the distribution map of students' usual scores). Students' self-evaluation, group mutual evaluation and teacher evaluation realize the diversification of evaluation subjects^[8].

4 Teaching Effect

From 2019 to 2020, the number of students with 90-100 points has increased by 7%, and the excellent rate of students' performance has been significantly improved. At

the end of the course, questionnaires were conducted from different perspectives (as shown in Fig. 4 and 5). The questionnaire shows that more than 88% of the students choose the mixed teaching mode based on MOOC. Most of the students think that the mode has more opportunities to communicate with teachers and students, improve their learning enthusiasm, exercise their self-learning ability, cooperation ability, communication ability and the ability to analyze and solve problems.

5 Conclusion

The deep integration of MOOC and flipped classroom can

not only stimulate learning interest, improve learning efficiency and improve learning quality, but also fully demonstrate the teaching concept of teacher led and student-centered. The teaching practice shows that in the blended learning teaching mode, teachers and students can discuss and communicate without limitation of time and space, so as to achieve hierarchical teaching and targeted teaching, which is not only conducive to the cultivation of students' professional ability, but also conducive to the improvement of teachers' information literacy^[9].

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