

Research on “Online and Offline” Blended Teaching Mode and Multiple Assessment System Based on MOOC+SPOC

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Abstract—As a new online education model, MOOC is both a challenge and an opportunity for traditional higher education. Integrating MOOCs into traditional teaching can achieve the complement of advantages and improve teaching quality. In order to avoid the lack of attraction and initiative of students in the course learning due to traditional teaching, enrich the content of the teaching, and improve the student's independent learning ability through the combination of online learning and answering questions in the mixed teaching, the classroom professor strengthens the core knowledge, and SPOC highlights the characteristics to improve the teaching quality. Mixed teaching has become an inevitable trend in the current development of higher education. This article takes the course of "Engineering Drawing and CAD" of Shandong Institute of Business and Technology as an example to introduce how to integrate MOOC with traditional classroom teaching to realize the combination of online and offline and extracurricular complementary teaching.

Keywords—MOOC; SPOC; Mixed teaching; Teaching mode; Assessment method; Evaluation system

I. INTRODUCTION

Since the 21st century, due to the development of modern information technology, E-learning has received extensive attention and research. A hybrid teaching theory marked by E-learning combines the advantages of E-learning with the advantages of traditional learning methods. The educational innovation model has become an important research direction in current teaching reform. Blended learning comes from Blended Learning, a learning paradigm that has evolved from traditional classrooms and incorporates a variety of flexible teaching methods. The definition of blended learning by Singh et al. refers to the dissemination of "appropriate" knowledge and skills to "appropriate" learners by applying "appropriate" learning techniques and "appropriate" learning styles at "appropriate" times. In order to achieve a learning style that optimizes learning effects. In the research of educational technology, mixed teaching is the most similar expression to hybrid learning. There are also researchers who use mixed learning and mixed teaching as equivalents. [3] Comprehensive domestic research on mixed teaching, mixed teaching can be a mixture of multiple teaching theories, a mixture of multiple teaching environments, a mixture of multiple teaching methods,

a mixture of multiple teaching resources, and a variety of teaching A mix of styles and multiple teaching evaluations.

The intensification of education informatization has provided a very good material foundation and support platform for the reform of teaching models. Various types of new teaching models based on the Internet are sprouting up and growing up quickly. MOOC (Massive Open Online Course) Online course teaching, SPOC (Small Private Online Course) teaching, and FCM (Flipped Class Model) constantly impact the brains of front-line teachers, forcing first-line teachers to adapt to the teaching reform goals. Adjust their teaching methods and teaching habits.

With the increase in the number of courses and students on mooc platform, it also raises three major teaching quality issues: 1. Due to the absence of courses, and the large differences in student foundations, it will dampen the learning motivation of poorly-funded students; 2. Due to openness Let students have no sense of urgency, and the completion rate of the course is less than 5%. 3. It is a purely networked teaching mode. Teachers cannot master students' learning situation well and influence efficiency.

SPOC is a small-scale online course (Small Private Online Course), in which "small" refers to a student size of tens to hundreds of people; "private" refers to students who set restrictive entry conditions to meet the requirements of applicants. Can be incorporated into SPOC courses. For online learners who meet the admission requirements to learn SPOC courses, they have the learning intensity and time, participate in online discussions, complete homework and examination requirements, and obtain certificates after passing the exam.

The mixed teaching of Engineering Drawing and CAD curriculum is to use the power of MOOC to reconstruct the teaching process, change the teaching structure, and highlight the “learning as the center” and teaching and learning model. Combining with the objectives and requirements of talent training in the school, online open courses are applied through various methods such as online learning, online learning, and classroom teaching, and the in-school and inter-university curriculum sharing and application models are continuously innovated.

II. DESIGN OF MIXED TEACHING MODE BASED ON MOOC+SPOC

The traditional teaching method is the face-to-face teaching of teachers and students in the classroom. Its greatest advantage is to enable students to master system knowledge, promote emotional communication between teachers and students, and train students' thinking ability. E-learning broadens the channels for students to acquire knowledge through the online teaching platform. More flexibility is conducive to student learning initiative and enthusiasm. The mixed teaching combines the two effectively, through the optimization of educational resources such as "teaching materials" and "science materials", the integration of traditional teaching methods and information technology methods, and the multiple evaluation methods to realize the role of not only guaranteeing teachers' leading role but also the student's dominant position.

In the design of this course, the traditional classroom and outside classrooms are basically reversed or flipped. The traditional theoretical classroom teaching is mainly outside the classroom. The teacher uploads the video in advance and is completed by the students online learning, thus making the traditional "in-class" flipping is the "outside the classroom" in this course; the students in the traditional classroom practice and homework, asking questions and answering questions, although in this course, part of the courses are still completed by the students in advance, but on the one hand will be A large number of exercises and assignments, questioning and answering questions are conducted in a real-life classroom. On the other hand, problems in online practice and homework, questioning and answering questions will be resolved in a real-life classroom, thus making the traditional "classroom" "Overturned" is the "in class" in this project. Combining the two aspects realizes "flipping classroom" or "classroom flipping". The combination of online teaching and offline teaching constitutes a hybrid teaching.

The information-based teaching environment of this course was established with the aid of the online education integrated platform developed by Tsinghua Education Online. In the teaching resources section, a wealth of online electronic resources have been uploaded, including 8 courses including teaching courseware, curriculum guidance, electronic lesson plans, training materials, technical standards, and extracurricular development according to the knowledge points. In the teaching activity section, there are 10 columns, such as Q&A discussion, course questionnaire, teaching e-mail, teaching notes, research teaching, coursework, online quiz, examination paper bank, broadcast unit and essay advice. In the course construction section, In order to strengthen online communication with students, the "Q&A Discussion Module" and "Job Appreciation Module" were constructed; in order to cultivate applied talents, practical teaching was strengthened, and "training design" and "race examination" modules were constructed in practical teaching. In order to understand the student's self-study situation, collect student's evaluation of the course and the teacher, help to adjust the content and teaching method of the course teaching, and construct the "course echo wall module"; in order to monitor the student's entire

autonomous learning status, it is announced regularly. Related "statistics of online learning" and "tests/job results" stimulate students' passion and motivation in learning.

Firstly, through the two online and offline teaching modules, the author has solved the problem of the unification of the authoritativeness and liveliness of teaching content. Mixed teaching includes online teaching and classroom teaching. The content of the teaching on the line is based on the content of the teaching materials. The contents of the teaching below the line can be closely linked with the social reality and the student's actual thinking, and taught in a small-topic manner to solve the problem of authoritativeness and liveliness of the ideological and political teaching content.

Secondly, through the online forum and face-to-face classroom teaching activities designed to enhance the interaction of teaching. Among the numerous digital resources, the MOCs that have emerged in recent years are the most suitable online curriculum resources for hybrid teaching.

Thirdly, the assessment will be made more scientifically through a combination of online and offline process assessments. Online assessments include unit tests, discussion forum discussions, and unit work assessments. Online evaluation includes both computer-based automatic scoring and peer evaluation and teacher evaluation. Offline assessment includes face-to-face classroom participation and final exam evaluation. Paying more attention to the examination of the learning process helps to continue to motivate students to participate in learning.

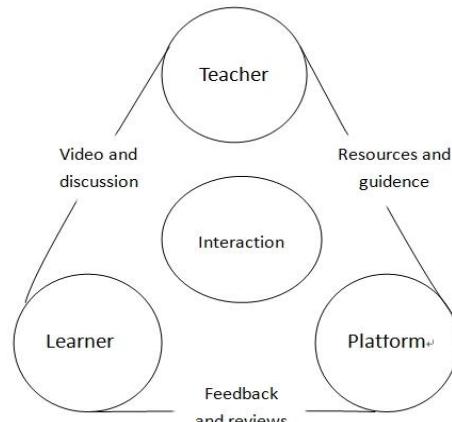


Fig. 1 Design of Mixed Teaching Mode Based on MOOC+SPOC

III. RESEARCH ON MIXED MULTIPLE ASSESSMENT SYSTEM

The "Engineering Drawing and CAD" course actively implements the "online+offline" blended teaching method, which changes the traditional teaching model. Throughout the teaching process, the teaching concept of "student leadership and teacher guidance" is always adopted, highlighting the main body of students. The status allows students to fully participate in the entire classroom teaching process, and strengthens the teaching objectives of the course. Students also increase their

initiative in the learning process and change from "Forcing My Study" to "I Want to Learn" to increase. Learning interest and motivation. Mixed teaching has also brought about a change in assessment methods. In the past, only one test paper was used to measure the quality of student learning. After using mixed teaching, the entire process of student learning can be monitored and monitored. Engineering drawing and CAD The course itself is a course that requires practical hands-on skills. The final exam alone cannot provide an objective and scientific assessment of students.

The combination of process assessment and summative assessment, focusing on "the whole process of assessment", using the entire process of assessment, from the past single test results to determine the final results, reform into a variety of forms of multi-channel, multi-faceted examination of students' overall quality and ability .

"Engineering Drawing and CAD" adopts a mixed teaching mode this semester, adopts a "diversified and comprehensive" assessment method, and pays attention to students' online and offline self-study and cooperative learning assessment to mobilize the enthusiasm of students for learning. . The assessment consists of five modules: a. Student attendance and classroom performance (5%); b. Self-study (15%): "Online interaction" Q & A Discussion module in the number of posts and online learning duration, login times, etc. Inspections; c. Online and offline operations (20%): "Online testing" 5% and "offline operations" (A3 manual drawings 5%, CAD operations 5% and exercise books 5%); d.CAD Machine Exam (10%), (Examination of CAD Computer Graphics Module); e. End of Roll Examination (50%), (Examination of Geometry and Cartography Modules). In addition, there is a week's drawing room training design (single score calculation), mainly to examine the engineering drawing module.

IV. IMPLEMENTATION EFFECT

From the "Project Drawing and CAD" 2016.12 mixed teaching reform project to the end of this school year (2016-2017-2, 2017-2018-1), great effort and time has been invested (Background data show that this semester deadline 6.13, total The online duration is 899 hours and 59 minutes, and the number of logins is 701 times, ending on 2017.11.22 days. Every week is busy. From the production of teaching resources, there are 16 units in total. Each unit includes "pre-class instruction "E-classics," "electronic lesson plans," "video recording," "pre-class online testing," and "after-school homework and counseling," and other modules, all of which require careful production of electronic resources so that students can learn independently. Good results are also a prerequisite for a good mix of teaching. The most important aspect of blended teaching is to strengthen the interaction between students and teachers. Therefore, the "Q&A Discussion" module is set as a platform for students and teachers to interact and communicate. As a teacher, there must be enough time to answer students' various doubts and timeliness. Sexual requirements are high, student problems are not resolved in a timely manner, and interactions and exchanges cannot continue. Followed by the design of teaching activities, each unit must be carefully designed, from online to offline, from classroom teaching to hands-on training, every

link can not be sloppy, otherwise students will not only not achieve the purpose of independent learning It has become a burden on students and is contrary to the original intention of hybrid teaching.

After two rounds of teaching practice (2016-2016-2, 2017-2018-1), as of 2017.11.22, the number of students enrolled in this course was 214, and the total number of visits to the course was 22,414 (the number of visits was the highest in the school), teaching the number of materials was 273. The topics and number of papers in the forum were 1,252, the number of posts per capita was 5.6 per person, the number of questions in the course exam questions was 211, the number of teaching materials in the course was 15,159, the number of submitted courses was 1,109, and the total online time was 217,079 minutes. , The number of broadcasts is 6066 times. The duration of the broadcast video: 44368 minutes. The number of online tests submitted is 648 times. Student learning statistics (as of 2017.9.25): Reading course teaching material times: 15159, handing coursework number: 1109, online duration (minutes): 217079, learning broadcast frequency: 6066, learning broadcast video length (minutes): 44368, submit online test number: 648. All the data indicate that the students' participation is very high and they also agree with this teaching method.

The "project-driven teaching, learning, and integration" teaching is based on the constructivist learning theory and advocates. The teaching concept centered on "learning", and organizes teaching around "real-life projects". Students apply various technical means, collect information, process information, publish information, and ultimately complete the project under the "Project Driven". It starts from cultivating the students' spirit of innovation and enhancing students' research abilities, and realizes the transition from "maintaining learning" to "research learning". In this process, students will continue to gain a sense of accomplishment and inspire greater desire for knowledge.

The teaching content of the "project-driven teaching, learning, and integration" teaching model must be based on market research to identify typical tasks, highlight the training of students' professional abilities, and use task-driven, project-based teaching and other methods in teaching methods. Create a suitable learning situation for students and translate the entire teaching process into a student-centered practical work process in order to realize the improvement of students' application ability and the mastery of relevant knowledge.

Changing the teaching method and enriching the teaching content is the need to achieve the teaching objectives of the course. The traditional teaching methods and the content of a single teaching material are difficult to adapt to the teaching of professional courses at the present stage. According to the requirements of teaching objectives, teaching methods should be changed and students should be enriched. Pay attention to the teacher-student interaction in the teaching process and mobilize the students' enthusiasm for learning. At the same time, the targeted frontier theory has been absorbed in enriching the teaching content, making the teaching content based on the teaching materials and higher than the teaching

materials, so that the teaching is revitalized with new vitality and vitality.

Course exam reform is a necessary motivation to improve students' motivation for learning. Examinations are the batons of course teaching and learning. In recent years, a single final exam has not been able to assess students' mastery of course content. This examination method is not conducive to students' flexible learning and application of knowledge, but also inhibits the development of students' personality and the cultivation of innovative thinking. Combining the characteristics of the "Engineering Drawing and CAD" curriculum and cultivating high-quality talents with application ability and innovation ability is to enable students to grasp the frontier of the discipline and integrate it with the actual situation of the what is learned: The reform of curriculum exams is a matter of no delay. A good examination model can inspire students to accumulate success and is conducive to the cultivation of students' comprehensive abilities.

In short, the "Engineering Drawing and CAD" course adopts "project-driven teaching, learning, and integration". The selection and design of the project during the teaching practice should be student-centered, based on the students' actual conditions and students' interests. Love to choose and set items. Implementing the project-driven integrated teaching method must adhere to the basic characteristics of "project-based, teacher-oriented, and student-centered". In the teaching practice, students should always be able to master basic knowledge and improve their ability to solve practical problems position. Make students become the main body of the classroom, teachers become the guide for students' learning, students change from passive recipients to active inquirers and creators, which greatly mobilizes students' enthusiasm and initiative in exploring knowledge, and greatly enhances students' practical problems in solving engineering problems. The ability to really make every student become a highly skilled and talented person that society needs.

V. CONCLUSION

Scientifically classify teaching objectives and adapt to the requirements of application-oriented personnel training. Based on Broome's teaching classification theory, the teaching content is re-sorted and classified according to the types of knowledge points. According to the types and cognitive dimensions of each knowledge point, the teaching goal of engineering drawing is determined, and the new engineering talents in universities are solved. Targeting issues.

Constructed a dual-education model of "Teacher-led + student-subject" with dual-subject teaching and "self-study under the class + online and offline" to solve teacher-to-students, teaching and learning, learning and thinking, and knowledge. The problem of organic integration with the bank has effectively improved the lack of class hours, the lack of student initiative, the lack of interaction between teachers and students, and the low effectiveness of graphics. Explore the use of "self-directed learning + flipping classroom + group exploration collaborative learning", "intuitive teaching",

"heuristic teaching", "situation experience + case-based teaching" teaching methods, effectively improve the students' space imagination and knowledge application ability.

Integrate theoretical courses and practical courses with "project-driven". Achieve the complete integration of theoretical and practical two major system courses, teachers and examinations. Take different levels of practical projects to train students, improve their professional practice and form a rich library of teaching resources.

Quality evaluation of "mixed teaching" highlights "multidimensional compounding". There are both teacher evaluations and self-evaluations by students; evaluations of existing teams and mutual evaluations among members; both conventional and end-of-term evaluations; both the evaluation of their knowledge and their evaluation. Greatly mobilized the initiative and enthusiasm of students' learning and improved the effectiveness of teaching.

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