



X¹ + X² Blended Teaching Mode Design in MOOC Environment

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Abstract. With the popularity of MOOC in the world, SPOC (Small Private Online Course), which meets the personalized needs and is applicable to the needs of small groups, has gradually spread to China. Building on analysis of the theory and experience of blended teaching mode, this paper attempts to discuss the deep integration of SPOC and other platforms, focuses on the design of SPOC online teaching resources, flipped classroom teaching activities and formative curriculum evaluation system, and puts forward the design of a school-based hybrid teaching mode of “Spoc platform + X”.

Keywords: MOOC · SPOC Blended Teaching Mode · Flipped classroom

1 Introduction

MOOC is an important thing in the teaching reform of higher education, which has brought a very important impact on the teaching reform of higher education. Its strong online resources, online learning environment and other advantages once promoted the traditional classroom teaching in colleges and universities to make a great breakthrough. Someone presents an end-to-end multi-view interactive framework (EMIF) to predict user dropout in MOOC [1]. In order to better meet the new needs of college students such as personalized and in-depth learning, Armando Fox of the University of California, Berkeley began to integrate MOOC resources and actively explore the application of these resources in small-scale student groups. He also formally proposed the new concept of SPOC (Small Private Online Course), namely small-scale private online courses, in 2013. SPOCs were conceived to succeed where Massive Open Online Courses (MOOCs) failed, namely in the high drop-out rate [2]. Someone presents online SPOC teaching mode is conducive to improving students' interest in learning and cultivating their comprehensive ability [3]. SPOC has made good use of many advantages such as high-quality teaching resources, formative evaluation, timely feedback and so on, providing a new path and way for higher education teaching reform. Try to build a blended teaching mode based on SPOC, build SPOC online curriculum resources in combination with school-based characteristics, and build a teaching mode that combines “online + offline”, mobile ubiquitous + cooperative learning, and classroom + extracurricular

learning. This teaching mode realizes the combination of online resources, environment, in class and extracurricular learning methods, actively creates a diversified interactive and all-round knowledge input environment, breaks through the traditional single learning method, and strengthens the application of knowledge in the online + offline integration environment, so as to improve the comprehensive application ability and practical ability.

2 The Value of Blended Teaching Mode in MOOC Environment

Exploring the hybrid teaching mode of combining offline, online and offline in the MOOC environment is beneficial to students' in-depth learning, improving their high-level thinking ability, optimizing the existing teaching environment, and constantly improving the teaching quality of higher education.

Provide support for college students' deep learning and improve their high-level thinking ability. The hybrid teaching mode of combining online and offline not only absorbs the advantages of MOOC, but also avoids the defects such as the easy neglect of personalized needs, the untimely teaching feedback and communication and guidance between teachers and students. The SPOC curriculum team in colleges and universities integrates advanced concepts such as online + offline combination, classroom + extracurricular learning into teaching links such as resource construction, teaching content design, learning method reform, evaluation system construction, etc., so that the traditional teaching process can be reversed, teaching structure can be optimized, and the teaching design focusing on multiple learning situations, interactive feedback and reflection, etc. With the help of the Internet and digital technology, relying on high-quality online teaching resources and teacher team resources, we can meet personalized learning needs, and support students to change from shallow learning to deep learning in terms of resources, environment, etc. In addition, online and offline teaching, group cooperation homework, offline course group learning, interactive evaluation, online and offline discussion and other links are also used to actively mobilize students' enthusiasm for active learning and enhance students' active participation in learning. Through the combination of online and offline hybrid teaching mode, the flipped classroom was created, allowing students to experience learning preparation, new knowledge construction, transfer, application and creation, learning evaluation and other links in turn, cultivating the ability to deeply understand knowledge and solve problems, and effectively cultivating high-level thinking ability.

Create an exchange environment to promote the exchange and cooperation of college students' learning. The SPOC course hybrid teaching mode uses the network platform to carry out distance teaching, which is conducive to connecting with first-class teachers at home and abroad. These teachers include top experts from domestic first-class research universities, who have profound theoretical attainments. These masters have laid a solid foundation for the design, development and implementation of university courses, and also cultivated excellent conditions for cooperative research in scientific research and other fields. Through online and offline multiple interactions, the SPOC curriculum hybrid teaching mode is conducive to creating a truly international and cooperative learning teaching environment, providing students with high-quality interaction and

communication between students. The exploration and practice of online and offline hybrid teaching mode is conducive to cultivating a group of excellent teachers who are in line with international advanced teaching concepts and teaching methods and meet the individualized learning needs of Chinese college students, forming a teaching mode with referential significance, and driving the construction of high-quality courses and high-quality courses in Chinese colleges and universities, so as to improve the internationalization level of disciplines in colleges and universities, Develop world-class schools and disciplines. It can also strengthen international collaborative innovation and promote interdisciplinary integration, so as to cultivate more first-class talents with family and country feelings, innovation ability and global vision.

3 Theoretical Basis of Blended Teaching Mode

Blended Learning theory is the theoretical basis for building a blended teaching model in MOOC environment. Professors Bonk and Graham put forward a specific definition of blended learning, he thinks blended learning is the combination of face-to-face teaching and computer-assisted online learning. Blended learning is first a combination of constructivism, cognitivism, constructivism and other teaching theories, or a combination of face-to-face teaching and E-Learning learning methods. Blended learning takes into account the advantages of traditional learning methods and digital learning, and comprehensively uses classroom learning, digital learning and other learning theories, different technologies and means, and different application methods to implement a teaching strategy. By integrating the advantages of online and offline learning, teachers help students learn more actively and effectively.

Deep learning theory of high-order thinking. Deep learning is a learning form in which learners use higher-order thinking ability. It requires learners to pay attention to the transfer and comprehensive application of knowledge, creative problem solving, decision-making, etc., and actively participate in higher-order thinking activities such as “application, analysis, evaluation and creation”. This high-level thinking ability also includes metacognition ability, teamwork ability, creative thinking ability, etc. The blended teaching represented by the flipped classroom reverses the original teaching structure, that is, the shallow knowledge learning takes place before the class, and the internalization of knowledge is realized in the classroom with the guidance and help of teachers, so as to promote the improvement of students’ high-level thinking ability.

Master learning theory. Bloom put forward the theory of mastering learning. He believed that almost all students could master almost all contents as long as they met the time and appropriate teaching conditions. Information technology has great advantages in meeting the individual learning needs of students. The different learning needs of excellent students and backward students, ordinary students and students with special needs are expected to be met. Mastering the learning theory provides a solid theoretical basis for blended teaching, especially for the learning in the pre class knowledge transfer stage.

4 SPOC Blended Teaching Process in MOOC Environment

The SPOC teaching mode has improved based on the deep learning process model, which can build a hybrid learning process of MOOC + offline classroom teaching. It is necessary to develop online and offline blended teaching mode of the SPOC platform in the post pandemic era and apply to real teaching scenarios [4]. The whole process is divided into four progressive and cyclic processes: MOOC, offline classroom teaching or live broadcast, online + offline teaching feedback. The specific process is shown in Fig. 1.

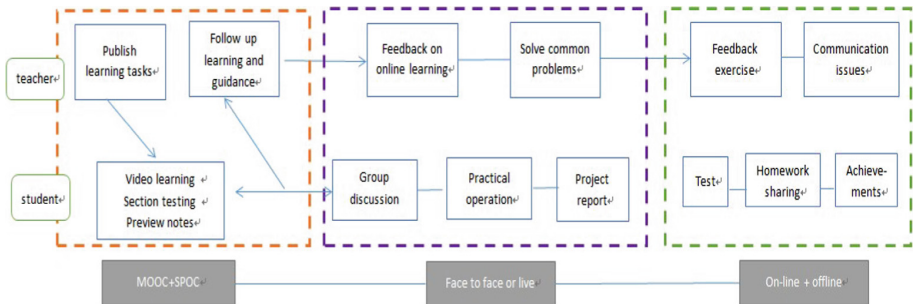


Fig. 1. “Moc + Offline Class” Blended Teaching Process

5 Design of SPOC Blended Teaching Mode

In order to build a blended teaching model with school-based characteristics, it is very necessary to revise and improve the existing blended teaching model in combination with the actual situation of colleges and universities and the characteristics and needs of college students' learning. Teachers colleges and universities for special education often need to integrate educational reform. These schools not only have ordinary students, but also have students with special needs. These personalized educational needs make the design of blended teaching mode more important. Pay attention to the characteristics of the learning subject, that is, the characteristics and learning needs of college students, and focus on stimulating students' subjective initiative in the teaching process. Therefore, the design of online courses requires vivid and complete learning resources, and the offline learning planning should have reasonable emphasis on differentiation. Based on this principle, a new specific process has been formed.

A (Analysis). The design of the blended teaching mode has a premise, that is, before the design, it is necessary to analyze not only the teaching objectives and content, but also the teaching objects, namely the characteristics of learners and the teaching environment. The first step is to formulate the overall learning objectives of the curriculum. What is the goal of SPOC course in this link? What knowledge, ability, attitude and emotion are mainly cultivated? In SPOC teaching mode, we should not only give the overall learning objectives of the course, but also formulate specific and detailed stage

objectives for different stages of learning. In the process of goal formulation, it is necessary to combine the theoretical characteristics of professional courses in the lower grades, pay attention to the needs of the cultivation of theoretical application level in the higher grades, and set up different phased learning goals according to different learning subjects and curriculum requirements. The second step is to analyze the learning content. Teachers should design the teaching content according to the characteristics of the subject in combination with the learning objectives, determine and divide the content suitable for online self-study, offline classroom interactive learning between teachers and students, and the content that needs practice or practical operation to assist teaching. Specifically, what are the contents to be taught in SPOC courses, and what are the internal links between these contents? What are the key points and difficulties of teaching knowledge? The third step is a comprehensive analysis of the learning object and learning environment. The learning object is the main body of learning in teaching activities. The design of the blended teaching mode of SPOC curriculum is inseparable from the analysis of learners. Designers should first understand the readiness of learning objects for learning content, such as whether they have contacted knowledge points, how much preparatory knowledge they have, and how many relevant skills they have, etc. In addition to the learning basis of knowledge and skills, it is also necessary to specifically analyze their learning characteristics and learning preferences, so as to understand the attitude of learning objects towards learning content and cognitive preferences. Students at different levels have different requirements for learning content. Ordinary students and students with special needs also have different needs for learning resources. Some require systematic learning content, while others focus on the practicality and operability of course content. Learning objects often have different learning styles. It is necessary for designers of hybrid teaching mode to understand the differences of learning objects in information reception, information processing, etc. For example, the time allocation of daily online learning, the cognitive differences between different genders, and the cognitive particularity of students with special needs, and so on. In addition, we should also analyze the general characteristics of all learners, such as the characteristics of learners' age and psychological development.

R (Resource). Based on the analysis of SPOC curriculum objectives, contents and learning objects, the SPOC curriculum team needs to build online resources and offline resources at the same time. SPOC hybrid teaching activities are generally carried out in one learning unit, that is, offline classroom teaching and online learning constitute a unit. According to the needs of learners, the designers of SPOC hybrid teaching mode can learn online resources of each unit for no more than 30 min, and offline resources for no more than 60 min due to discussion and interactive teaching. Under MOOC environment, online resources such as high-quality course resources, online shared resources, and video open classes in colleges and universities are very rich. SPOC course teams can apply these online resources to the SPOC hybrid teaching mode to achieve the co construction and sharing of multiple high-quality resources; teaching videos can also be supplemented according to the needs of application and integrated education. Online resources combined with personalized needs can help achieve the objectives of SPOC courses, which is conducive to the realization of the professional talent training objectives. Offline resources are teaching cases, research papers, investigation reports and

other materials provided by teachers for offline classroom teaching, as well as resources to help students practice and learn. SPOC curriculum team is also necessary to develop online and offline expansion resources, such as videos to discuss hot issues in a certain field, instructional design to carry out research learning, case based heuristic teaching materials, and so on.

E (Environment). The construction and sharing of online and offline platforms should be the focus of the curriculum team. The online platforms such as MOOC of University of China and Netease Cloud Classroom selected and used by SPOC can meet the basic needs of students for a hybrid learning environment. Teachers can also actively use diversified platforms such as school online disk and cloud classroom system to build a flexible and diverse online learning system in combination with students' personalized needs. The construction of offline learning environment is mainly around the classroom. The design of hybrid teaching mode is student-centered, focusing on the design of classroom discussion, group learning, class reporting or sharing, etc. around the objectives and content of SPOC curriculum, to provide high-quality offline environment for students to carry out personalized learning. At the same time, the existing practice base platform, college students' innovation and entrepreneurship platform, and college students' discipline competition platform are flexibly used to help students deeply grasp theoretical knowledge and improve their comprehensive practical ability. These platforms are widely used in the SPOC hybrid teaching mode, and the online platform and on-site internship are combined to achieve a learning environment that combines online and offline.

E (evaluation). The evaluation of MOOC quality is a multiple criteria decision-making issue [5]. Different from the traditional teaching mode, SPOC hybrid teaching mode focuses on formative evaluation, that is, the evaluation of both online and offline learning runs through the whole teaching process. This evaluation breaks through the traditional single evaluation method and combines online system evaluation with offline evaluation. This evaluation runs through online learning, offline classroom discussion and final examination. The online evaluation adopted by SPOC hybrid teaching mode is mainly based on the learning platform to collect and analyze the data of students' online learning, including the time spent watching videos, the number of online discussions, the number of forum posts, online unit exercises, final tests, students' self-evaluation and other evaluations. The offline evaluation adopted by SPOC hybrid teaching mode is mainly completed by teachers, based on offline data such as learners' participation in classroom discussion, group cooperative learning and examination results. The SPOC model attaches particular importance to creating group assignments for interaction between teachers and students and between students and students. See Fig. 2 for group work flow.

Divide students into groups of two or three. Group members focus on SPOC curriculum goal planning issues, which can be hot topics in a certain field or common problems in this field. Cooperate to write group analysis reports, mainly to analyze these problems and propose solutions; A new group is formed between the two groups to carry out comparative research on the same topic, mainly reflecting and evaluating the analysis reports of other groups, so as to ensure that the members of the group can inspire and learn from each other during the second cooperation; Then all members further improve

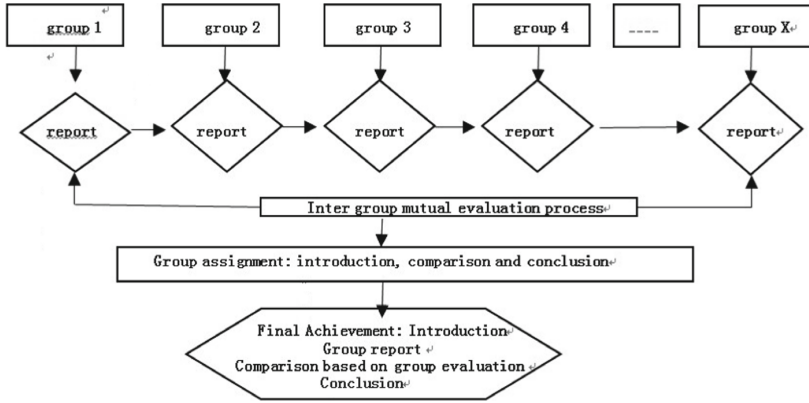


Fig. 2. Flow chart of group work

their respective analysis reports according to the opinions of mutual evaluation. Finally, a report set completed by the whole class will be formed.

This formative assessment is also reflected in the timely feedback of SPOC curriculum team on students’ learning. Self-regulated learning (SRL) is a fundamental skill to succeed in MOOCs [6]. Teachers evaluate students according to SPOC course objectives in terms of classic reading, video watching, classroom discussion, group work, final examination, etc., so that students can get timely feedback in the learning process and adjust learning methods to improve the learning effect. Whether it is online discussion or offline classroom discussion, teachers often timely guide the topics in the discussion area or classroom discussion, and give timely answers, so that students can learn in depth and clarify misunderstandings. As for group work, focus on evaluation of students’ academic standards, content innovation and report quality. For the topics that all students pay attention to, and for the good practices and strategies that students experience in China, use the SPOC platform course teaching to implement the curriculum ideology and politics, “tell a good story about China”, and “convey the voice of China”.

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