

The Construction of Diversified Mixed Teaching Platforms of Independent Colleges

Taking the MOOC Meta-platform of Xin Hua College of Sun Yat-Sen University as an Example*

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Abstract—The rise of MOOC (massive open online courses) has attracted the attention of major educational institutions, but there is a lack of platforms which are combined with offline courses. From the perspective of pedagogy, the article effectively integrates online and offline resources, specifically analyzes the construction of diversified mixed teaching platforms, and proposes suggestions for optimizing the design taking the MOOC meta-platform of Xin Hua College of Sun Yat-Sen University as an example. MOOC should not only pay attention to the teaching of theories, but also improve the combination with offline teaching. For different teaching contents, MOOC should clarify teaching objectives, integrate online and offline resources to carry out teaching, and maintain the teaching advantages of MOOC. At the same time, it should strengthen the integration with offline resources, create a mixed teaching environment, and ultimately achieve the goal of improving students' overall quality.

Keywords—diversified mixed; teaching platform; Mooc

I. INTRODUCTION

MOOC (massive open online courses) have the characteristics of large-scale, open, self-organized, and have been recognized by various learners. The Outline of the National Medium- and Long-Term Education Reform and Development Plan (2010-2020) points out that it is necessary to strengthen the construction of the network teaching resource systems, develop online learning courses, and innovate online teaching models. [1]The Ministry of Education announced the "Opinions on Strengthening the Application and Management of the Construction of Online Open Courses in Colleges and Universities", affirming the

rise of new online open courses such as "MOOC" and various learning platforms. These new courses and platforms expand the time and space of teaching, increase the attractiveness of teaching, stimulate the enthusiasm and autonomy of learners, expand the benefit area of high quality education resources, and have continuously received the attention of major educational institutions. They have provided great help for online course construction and teaching, and have become a hot topic in various educational institutions. [2]MOOC appeared in 2018. The reason for the appearance is the introspection of American universities. They were thinking about how to reduce the cost of education and improve the quality of education. Afterwards, MOOC continued to develop, and there is much passion and many challenges in universities, which has promoted MOOC to be a demarcation point for Internet education applications, making online education not only limited to the contents of open courses, but also incite the deep-rooted organizational management mode of traditional classes. [3] The three relatively famous platforms of MOOC, Coursera, Udacity and edX only provide pure theoretical basic teaching. The teacher-student interaction is poor and there is a lack of organic integration with offline resources. Starting from this contradiction, strengthen the interaction between teachers and students. On the basis of the three platforms of Coursera, Udacity and edX, integrate offline resources, clarify teaching objectives, create a mixed teaching environment, and build the MOOC meta-platform.

II. ANALYZE THE DIVERSIFIED MIXED TEACHING BASED ON MOOC

Li Bingde's "Teaching Theories" puts forward the seven elements of teaching: students, goals, curriculum, methods, environment, feedback and teachers. Starting from the seven elements of teaching, this paper analyzes the MOOC, points

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out the shortcomings of MOOC and proposes optimization suggestions, then experimentally implements these suggestions, and counts, analyzes and verifies the data.

A. The Contents and Purposes of the Courses Are Shallow, Which Is Suitable for Large-scale Service, but Can't Meet the Hierarchical Needs for Knowledge

The launch of MOOC is to enable more people to learn knowledge systematically, and there is no specificity. MOOC pay attention to the teaching of basic theoretical knowledge. Learners can systematically learn a certain subject or field on the MOOC platform, at the same time, MOOC can be applied on a large scale. According to the students' feedback, the courses of the famous schools such as Harvard and MIT on the MOOC platform have not really highlighted the advantages of the famous schools, and have not revealed the deep knowledge to the public.

B. The Learning Environment Is Simplex, the Scope of Services Is Wide, but the Learning Which Requires Offline Environment Is Not Satisfactory

MOOC is a large-scale open network platform where students can use their mobile phones, ipads and computers to learn online at anytime, anywhere. Theory guides practice, and practice is the sole criterion for testing truths. Gradually, online systematic learning has been unable to meet the requirements of most learners. Especially for science and engineering, medical science and other disciplines that require experimental research and development, offline experiments are very important.

C. There Is a Lack of Knowledge Feedback Approaches and a Lack of Interaction between Teachers and Students, Which Is Not Conducive to Students to Improve Learning Efficiency

MOOC has a high demand for learners' autonomous learning ability. There are a lot of people who have registered for the MOOC, but there are few people who can persevere in the study from beginning to end, take the course exams and finally get the certificates. The reason is that there is not enough supervision for course learning on the MOOC platform, and the curriculum information feedback system of MOOC is not perfect.

Based on the above analysis, optimized program measures are proposed from the aspects of curriculum, purpose, method and feedback, and the diversified mixed teaching mode is introduced. The "diversified" of the diversified mixed teaching means diversified educational methods, that is, teaching students in accordance with their aptitudes. It is defined in the paper as making different teaching plans according to different personal situations of students, so that students with different foundations can receive different teachings. And the disadvantages of MOOC that the behaviorist learning theory is dominant and the theoretical basis is too simplex are reduced as much as possible. The "mixed" means the mixture of learning modes, the integration of on-line and off-line learning resources, and in depth is a mixture of teaching models based on different

teaching theories, a mix of activities, a mix of learning environments, etc. Therefore, the diversified mixed teaching in the paper is defined as: based on MOOC, evading the simplex theoretical basis, focusing on teaching students according to their aptitudes, diversifying the teaching methods, realizing the mixture of teaching modes, the mixture of learning modes and the mixture of learning environments, and optimizing the teaching effect.

III. OPTIMIZE MOOC, PROPOSE DIVERSIFIED MIXED TEACHING PROGRAMS

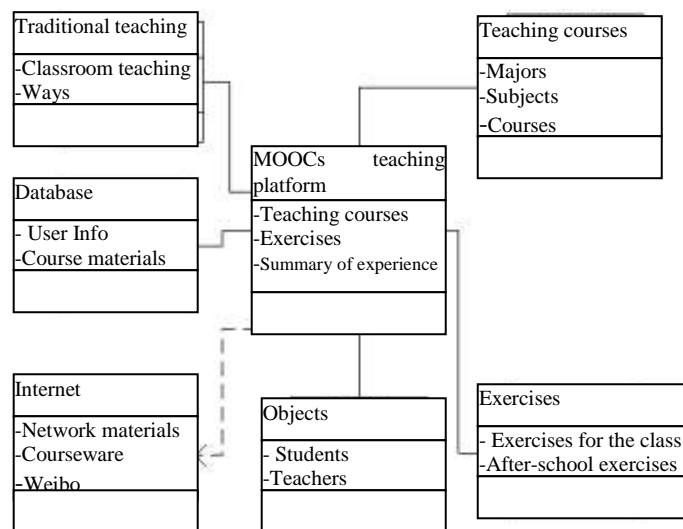


Fig. 1. MOOCs object-oriented diagram.

Establish a MOOCs management system in the school, always focusing on students' development, based on the quality, selectively uploading recorded videos, and making the courses interesting and practical. Therefore, the system can be divided into the following five subsystems: network teaching system, network learning system, database management system, maintenance management system, and course retrieval system.

A. Network Teaching System

The teacher can modify and improve the uploaded video courses as needed, and can edit the uploaded videos and insert contents to the video courses to make them complete. And the system supports some basic operations of teachers and students, such as certification, information improvement and data query.

B. Network Learning System

Through this system, students can find the courses they want to learn according to their needs. In the process of learning, students can edit the videos to make notes, write experience, etc. The system also has the function of adding discussion groups, students can put the problems encountered in the videos into the discussion groups for discussion. The discussions between teachers and students can improve students' learning efficiency and learning enthusiasm.

C. Database Management System

The videos recorded by the teachers of various subjects of various majors are summarized and classified; the supporting materials and exercises for the courses are summarized, which is convenient for teachers and students to search and download. The system also contains information such as students' learning progresses and learning plans, which has improved the utilization of the system.

D. Maintenance Management System

Update the system, fix system vulnerabilities and increase or decrease functions, so that the normal use of the system can be better ensured. Maintain the system regularly, modify the redundant data and functions, and display the search information of the newly added teaching courses on the homepage of the system.

E. Course Retrieval System

The search methods can be divided into general search, classified search, professional search, and advanced search. Classified Search: Recorded videos can be classified according to their time (long and short courses), majors (literature, science, medical, engineering, economics, management, law, arts professional courses), subjects (professional courses), and types (compulsory courses, elective courses, public courses). Professional search is mainly based on keyword search. For advanced search, students and teachers can search courses according to the details of the courses and the information of the course instructors.

IV. INTEGRATE RESOURCES AND BUILD THE DIVERSIFIED MIXED PLATFORM

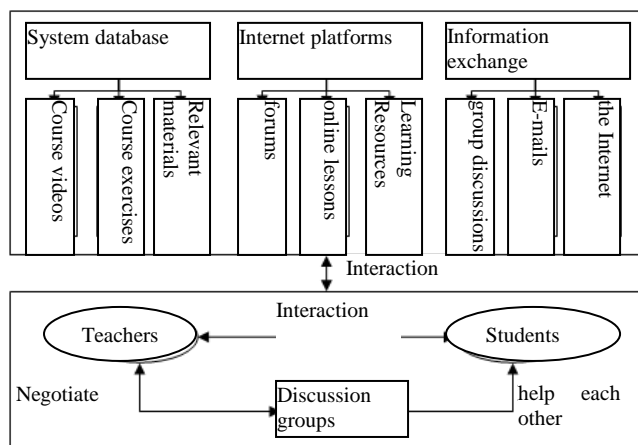


Fig. 2. Overall block diagram of the platform.

A. Achieve Diversified Resource Sharing

For the MOOCs courses, there are typically tens of thousands of people in the same classroom. A large amount of complex data information will be generated during the actual operation processes. The work performed by teachers in traditional education such as scoring, tutoring, and discussion can be achieved through computers and the

Internet. A large amount of data generated from students' learning will be recorded and analyzed by the server. The diversified resource sharing of MOOCs makes more high quality courses, professional training videos, online core courses, micro-curriculum and other curriculum resources better serve the learners.

B. Create Flexible Flipped Classrooms

In 2011, Bergmann J. and Sams A. pointed out that the research on flipped classrooms mainly focused on the teaching practice exploration and application, teaching methods, comparison with traditional teaching models and teaching practice effects.[4-5] The flexible flipped classroom is an innovative teaching concept, which is different from the theoretical curriculum teaching. It highlights the innovative effect of the application of theoretical knowledge. However, it does not mean that the basic theoretical knowledge teaching is weakened. At the same time, students' learning should not be limited to the passive mastery of theoretical knowledge, nor should students be satisfied with simply perceptual cognition of theoretical knowledge. Using the Internet technology and social media platform resources and using the flipped classroom mode which combines online, offline and virtual environment to promote the actual teaching.

C. Promote the Mixed Teaching Model

The design and preparation, teaching process, teaching methods, and teaching-related personnel of the MOOCs courses are very different from those of the traditional courses. The novel educational theories, curriculum systems, and teacher training should meet higher requirements and standards. In the traditional mode of teaching, a teacher usually faces tens to hundreds of students, while in the MOOCs courses, a teacher will face tens of thousands of students. The relationship between teachers and students has changed accordingly. Students can evaluate different teachers and choose teachers freely. Learners can learn from and help each other, score assignments and exercises for each other, and discuss questions with other students. In this way, a learning community can be truly formed, which can promote the teacher-centered teaching model transforming into the student-centered teaching model. And through the MOOCs, the "flipped classroom" used in realistic teaching can be synchronized to the cloud classes.

D. Reconstruct Open Curriculum Systems

In the learning of courses, the interaction between teachers and students, students and students is an important factor in improving the learning effects. MOOCs can carry out interactive exercises and tests automatically evaluated by the machines, which is beneficial to learners to make real-time learning feedback, breaks through the limitations of knowledge dissemination in the traditional mode of distance education, can better guide students' learning methods and further improve their learning effects. Automated machine evaluation ensures the achievement of the "massive" goal. Open interactive exercises tend to evolve into advanced forms, such as multimedia courseware, game-based learning,

virtual labs, and automated questions and answers, which helps to increase the openness of the learning space. Students from various regions can analyze and discuss a specific problem according to their own ways of thinking, which not only integrates the traditional learning model, but also forms a larger learning community. Compared with the traditional mode of online video education, MOOCs show powerful data acquisition and analysis functions which can record the learners' corresponding learning behaviors, and the online learning information of tens of thousands of students can be statistically aggregated into big data. Through systematic data mining and machine learning, combined with grasping the specific laws hidden in it through macro and micro level analysis, teachers can dynamically know students' learning situations at any time, provide effective feedback and timely guidance, and reconstruct the open course system.

E. Non-classroom Supplements for Classroom Education in Schools

Since the online open courses of MOOCs are taught to students through the Internet platforms, MOOCs are difficult to achieve good teaching results when the course teaching requires supporting hardware facilities. Although MOOCs can't replace the experimental and practical courses in the classroom teaching mode, MOOCs can help students to master the basic knowledge required for the experimental and practical courses. This will help improve the quality of the classes in the school. Therefore, MOOCs can complement the classroom teaching in the school. Focus on the curriculum teaching in the school, taking the MOOCs curriculum as a supplement, boost or reference for the curriculum resources of the school. For example, Professor Michael J. Cima of the Massachusetts Institute of Technology conducts in-campus classroom teaching and provides MOOCs courses simultaneously. Students can enhance their understanding and mastery of the classroom teaching knowledge through MOOCs. MOOCs can greatly help the teachers of the school to teach courses of other schools. For example, teachers of the College of Electronic Engineering in San Jose State University (SJSU) direct students to study the electronic circuit courses of the Massachusetts Institute of Technology (MIT). The course requires students to complete corresponding assignments and exams. Since there is no MIT teacher coming to SJSU to teach the courses, the students need to watch the online course videos on MOOCs recorded by MIT teachers before they can complete the related homework and simulation experiments. This method of combining the MOOCs curriculum with the school's teaching curriculum makes the excellent resources of universities in the world able to serve as the on-campus courses for students of the school, so that the independent colleges which have a large gap with the first-class universities in teaching resources have the opportunity to provide students with more excellent courses, which can improve the teaching of independent colleges and narrow the gap between independent colleges and leading universities at home and abroad in teaching quality.

V. CONCLUSION

The diversified mixed educational model of combining MOOC online courses with offline courses, as a supplement to the regular MOOC course learning, makes up for the lack of emotional communication and the inability to establish values of MOOC courses. This paper takes the MOOC platform of Xin Hua College Of Sun Yat-Sen University as an example, fully demonstrates the feasibility of implementing this model in independent colleges and provides a reference for the information-based teaching reform.

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