

RESEARCH ON THE TEACHING MODEL OF UNIVERSITY COMPUTER FOUNDATION BASED ON MOOC BLENDED LEARNING

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ABSTRACT

MOOC is a large-scale online open course, which is the product of the deep integration of information technology and education. MOOC is also the main direction of higher education teaching reform in the future. This paper takes the University Computer Foundation course as an example, trying to build a blended learning model based on MOOC. Through the combination of MOOC online learning and traditional classroom, this paper aims to solve the problems of single learning mode in traditional classroom, which is not conducive to students' personalized learning, so as to effectively enhance students' learning initiative, stimulate learning interest, improve teaching effect, and provide new ideas for teaching reform in Colleges and Universities.

Keywords: MOOC; University Computer Foundation; blended learning model.

1. INTRODUCTION

MOOC (Massive Open Online Courses) is the abbreviation of large-scale online open courses. It grasped the opportunity of the Internet platform to rise rapidly in the world. With the help of internationally renowned universities and its strong teaching staff, it broke the barriers of time and space, and helped thousands of students from all over the world realize the desire to acquire the essence of knowledge and share the advanced educational resources. As a new teaching mode, MOOC integrates the advantages of free teaching resources, interactive experience between teachers and students, and efficient feedback. Its existence not only effectively promotes the reform of traditional higher education, but also brings new opportunities for the reform of higher education teaching. In this paper, taking the "University Computer Foundation" course as an example, we try to build a mixed learning mode based on MOOC. The purpose is to change the present situation of traditional teaching, such as the single presentation of teaching forms and learning resources, and the lack of communication between teachers and students. We combine MOOC Online learning and traditional classroom to complement each other, so as to realize the transformation of teaching methods, the enhancement of learning initiative, and provide new ideas for the teaching reform in Colleges and Universities [1].

2. REFLECTION ON THE TEACHING OF "UNIVERSITY COMPUTER FOUNDATION" UNDER THE TRADITIONAL TEACHING MODE

Course characteristics

As a compulsory public basic course in Colleges and University, "University Computer Foundation" course aims to cultivate students' computer quality and the ability to think and solve problems by using computer technology and methods. At the same time, it can also use computing thinking to learn other subjects. The course requires students to: (1) understand the history of computer development, and carry out relevant learning on the basis of mastering computer course knowledge. (2) master the basic knowledge of computer system, the use of computer network and Internet, database system foundation and application software, find and solve problems through practical operation, so as to acquire more knowledge.

Current situation of course teaching

The course of "University Computer Foundation" is rich in content, wide in coverage and strong in practice. It is a course combining theory and practice. However, due to the lack of total class hours, students need to comprehensively master basic knowledge and practical operation skills, which is limited only by the learning in class. Through the analysis of this course, we find that there are several problems in the current teaching.

(1) There are great differences in students' computer learning foundation. New college students have a certain ability to apply information technology, but there are great differences in the overall level. Because of the heavy burden of teachers and the heavy content of courses, teachers have to focus on the students in the basic middle school. The students with good foundation and poor foundation have not been given targeted guidance, which leads to the students with good foundation not being promoted, while the students with poor foundation have not been solved in time in the face of huge learning difficulties, so they gradually lost interest in learning computer courses. If we do not combine the characteristics of students and continue to adopt a unified starting point of teaching thinking, then teaching students in accordance with their aptitude is like talking about soldiers on paper, and the actual effect is not good

(2) Teachers' teaching methods are single and improper. Good teaching content needs proper teaching methods to be accepted by more students. The same teaching content, using different teaching methods, its teaching effect is also very different. At present, although many teachers use modern teaching methods such as multimedia to teach, but in fact, they only present the content originally written on the blackboard in front of the students in PPT, and the teaching method has not changed substantially. In the classroom, the main content is to explain the knowledge points of the teaching materials, and the opportunities for students to practice and operate are very few, which is very unfavorable for students to master knowledge. Taking the course of "University Computer Foundation" as an example, is the goal of this course "knowledge or thinking"? If we simply talk about knowledge, it may be very simple and boring, and there are too many knowledge points, and we can't finish it just by the time of class. For example, the content of binary mainly includes numerical value, transformation of different number systems, signed and unsigned number, original code, complement code, calculation based on binary system, etc. it needs several class hours to teach. On the contrary, if we introduce binary system from the perspective of thinking, let students learn the most essential knowledge of a series of computers, such as "semantic symbolization - Symbolic Computation - Computing 0 (and) 1 - 0 (and) 1 Automation -Layered Construction - Structural Integration". Let

students understand that "any information can be represented by 0 and 1, that is, it can be processed by a computer". Not only it can solve the problem of tense class hours and effectively improve students' interest in learning. Therefore, "knowledge" is introduced with the explanation of "thinking", and "thinking" is formed with the penetration of "knowledge", and "ability" naturally occurs with the understanding of "thinking". The importance of this teaching method to stimulate students' interest in this course is obvious [2].

(3) Lack of learning resources. Rich learning resources are conducive to building students' knowledge system, expanding students' knowledge field, enriching students' knowledge reserve, and providing more ways for students to explore new knowledge. In the traditional classroom teaching, students' learning resources mainly come from teaching courseware made by teachers and old textbooks published for many years. If they want to keep up with the pace of the times, they must learn a lot of excellent works.

3.THE REFORM OF TEACHING MODE OF UNIVERSITY COMPUTER FOUNDATION BASED ON MOOC BLENDED LEARNING

Analysis of theoretical system

How to better apply MOOC's blended learning mode in the course of university computer foundation, the analysis of theoretical system is particularly important. This teaching mode is formulated in accordance with the relevant provisions, standards and guidance in the "basic computer course teaching requirements for college students" compiled by the University Computer Course Teaching Steering Committee of the Ministry of education, which conforms to the actual needs.

Analysis of constructivism

The theory of constructivism is student-centered. Teachers create learning situations, provide students with rich and personalized learning materials, guide and promote students to actively explore and discover knowledge, so as to complete the active construction of knowledge. The application of MOOC's hybrid learning mode gives students full time authority and independent authority, promotes students to study independently on the special MOOC platform, realizes the sharing of teaching resources, and breaks through the limitation of time and place [3].

Analysis of blended learning theory

Blended learning is a new term in the field of education after network learning. Blended learning is to combine the advantages of traditional learning methods with the advantages of online learning. It not only plays the leading role of teachers in guiding and inspiring teaching process, but also fully embodies the subjectivity, initiative, enthusiasm and creativity of students. From the perspective of students: MOOC is a process in which students watch teaching videos online and complete knowledge transfer before class according to their own learning needs. In the traditional classroom, when students encounter problems, they can always seek the help of teachers or peers, and solve problems under the guidance of teachers and the cooperation of peers, so as to realize knowledge internalization. It can be seen that MOOC is the combination of

online learning and traditional face-to-face teaching. It complements the advantages of traditional teaching and online learning, and improves the learning effect through creative use of technology and micro video learning activities.

Analysis of network learning theory

Network learning is a kind of learning through computer network. Through the network platform, it can carry out independent learning, cultivate students' ability of finding and solving problems, collecting, analyzing and using information. Colleges and universities upload the teaching resources related to the course of university computer foundation to the MOOC platform. Students can find and use the learning resources according to the needs of the platform to realize the learning methods of online learning, online communication and online feedback, and improve the learning quality and teaching effect.

In China, as of the end of 2018, more than 300 computer MOOCS have been launched on the platforms of MOOC, Xuetang online, good university online, Chinese MOOC, wisdom tree, etc. In the first batch of national top online open courses, 48 computer MOOCS were identified as national top-quality courses, and 55 universities participated in the construction, covering 985, 211, application-oriented undergraduate and other types of universities at all levels [4]

4. THE CONSTRUCTION OF TEACHING MODE OF UNIVERSITY COMPUTER FOUNDATION BASED ON MOOC BLENDED LEARNING

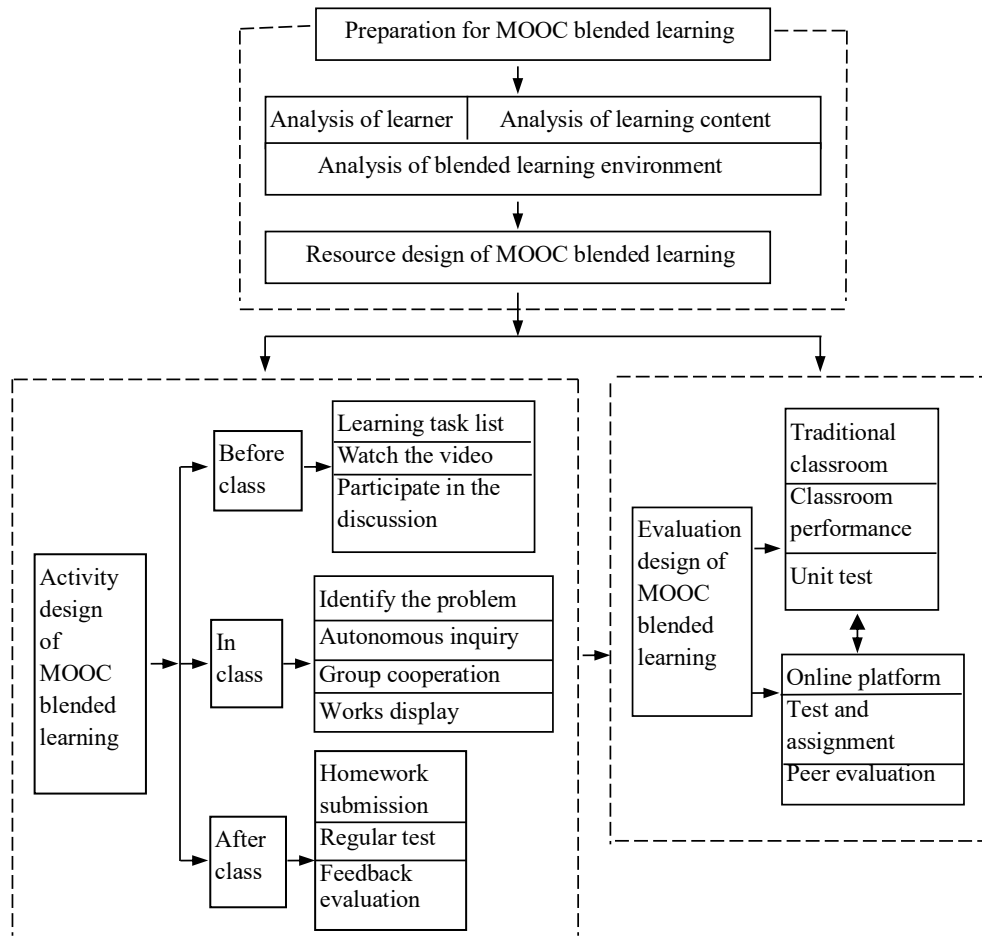


Figure 1. The teaching model of 《University Computer Foundation》 Based on MOOC Blended learning

The teaching mode of University Computer Foundation Course Based on MOOC blended learning is carried out in accordance with the basic process of "independent learning - teacher guidance - group cooperation - feedback evaluation". Students are the main body and teachers are the assistant. It can meet the needs of students' personalized learning to the maximum extent, and focuses on training students' practical skills of obtaining information. This paper constructs the teaching mode as shown in Figure 1, which is mainly divided into three stages: the term preparation of MOOC blended learning, the activity design of MOOC blended learning, and the evaluation design of MOOC blended learning.

Preparation for MOOC blended learning

Before carrying out mixed learning activities, teachers need to analyze and interpret the basic situation of the course in detail, consider whether the implementation of the model in the course is appropriate, and whether the implementation of learning activities is smooth, so the early analysis stage is very important.

Analysis of learner

In the whole teaching process, classroom activities belong to students, all activities should be around the center of students. Therefore, teachers need to understand the students' original knowledge reserve, learning hobbies, extracurricular learning environment, the proficiency of using MOOC platform, personal learning attitude towards blended learning, etc.

Analysis of learning content

On the basis of the analysis of learners, the focus of learning activities is the actual needs of learners, and according to the actual needs of students to choose learning content, and then determine which part to learn on the MOOC platform and which part to learn in the classroom. In MOOC based blended learning, learning content is composed of two parts: textbook resources and learning resources provided on MOOC platform.

Analysis of blended learning environment

The MOOC platform provides an open and flexible learning environment for students. In the MOOC learning environment, MOOC online resources provide students with the basic knowledge they need in class, and students can carry out independent learning in an environment free from time and space constraints. In the classroom, teachers provide students with necessary learning tools, learning resources, etc. to create a cooperative learning environment for students. The learning environment of the course is mainly divided into two aspects: network learning environment and multimedia classroom learning environment. The network learning environment refers to the class QQ group communication platform and MOOC learning platform; while the multimedia classroom is a teaching tool that plays an important role in the classroom teaching -- the teacher collects a large number of materials related to the teaching content before the class, such as text, video, etc., and then presents the content to be taught with equipment to give full play to the role of modern teaching equipment in classroom teaching .

Activity design of MOOC blended learning

Before the beginning of mixed learning activities, teachers mainly through questionnaire survey and bottom test to understand the original knowledge reserve of students, organize students to create a class QQ group communication platform for students to communicate. The activities in class mainly include the following three links.

Learning before class

Teachers provide students with MOOC video, teaching plan and learning task list based on the analysis of learning situation in the early stage. With the help of the learning task list, students

can understand the course content, learning objectives and key and difficult points of MOOC, and then freely arrange time to carry out independent learning. Under the guidance of the task list, students log in to the network platform to watch the course video of university computer foundation and complete the test questions assigned by the teachers. In this process, students can learn independently according to their own learning pace and preferences, and students with strong learning ability can speed up the learning progress at any time, students with poor learning ability can slow down the progress or repeatedly play the video until they learn to understand.

The main process is divided into the following three parts: first, students complete the learning tasks before class with the help of MOOC course and learning task list, and communicate the problems encountered in the learning with online teachers in the discussion group module of MOOC platform; then, for the unsolved problems, students can feed back the problems to the classroom teachers through the class QQ group; finally, before class, the teachers give feedback to the students. The problems encountered in online learning are collected, sorted and analyzed.

Learning in class

(1) Identify the problem. In the classroom, teachers analyze and summarize the difficulties and problems in students' autonomous learning feedback, collect the problems that most students find difficult to understand and have exploration value, and communicate and discuss with students, so as to help students master the knowledge more firmly.

(2) Autonomous inquiry. After putting forward inquiry questions, teachers should first create a personalized learning environment for students, that is to say, students should first conduct independent inquiry, and then teachers should implement a "one-to-one" teaching method for students' problems encountered in the process of autonomous inquiry, provide precise guidance for students, and help students solve the puzzles encountered in internalizing knowledge and consolidating inquiry [5]

(3) Group cooperation. After giving students a certain amount of time to explore independently, teachers should organize students to discuss in groups, so that groups can solve some problems in cooperation, so that students can make clear the ideas of solving problems in the discussion, so as to achieve the purpose of solving problems. The way of thinking of each student is quite different. The exploration of problems through group cooperation is conducive to learning from each other and improving together.

(4) Works display, summary and evaluation. Work display requires students to collect and organize the process of independent exploration and group cooperation and then display it to everyone. The teacher organizes the students to evaluate the work report card within and between groups, summarizes the problems encountered by the students in cooperative learning, and evaluates the students' performance. The group sent representatives to show the group's works, shared the problems encountered in the production process and the experience after solving the problems, and finally fed back the evaluation of communication within and between groups.

Learning after class

The main task of after-school learning is to analyze the problems in a deeper level, and use MOOC platform and class QQ group to carry out after-school exercises. It is mainly divided into the following steps: first, the homework assigned by the teacher comes from the testing section of the MOOC platform. After the students complete the test, the MOOC platform provides real-time feedback, and the visual data can help the students understand their knowledge; the homework can also come from the after-school exercises designed by the teacher according to the students' knowledge in the class, usually published in QQ group. Then, teachers regularly carry out targeted tests after class. According to the requirements of homework, according to the evaluation standards of standard test methods, the students' homework and periodic tests are evaluated. Finally, the students complete the test and homework modules in the online course, and feedback the unsolved problems to the classroom teachers online.

Evaluation design of MOOC blended learning

The evaluation of students' learning is an indispensable part of the whole teaching process. It is a scientific judgment of students' learning behavior and results in the whole learning process, mainly including traditional classroom evaluation and online platform evaluation.

Traditional classroom evaluation

In the traditional classroom, learning evaluation has different functions according to the time of implementation. Generally speaking, learning evaluation can be divided into three types: diagnostic, formative and summative. Diagnostic evaluation usually helps teachers to understand the original knowledge of different students and their advantages and disadvantages before the beginning of the course, so as to make a better teaching plan. Teachers usually use the combination of bottom finding test and past scores. Formative assessment mostly takes place in the classroom, and takes unit as the main module for testing. Its main function is to help teachers accurately grasp the real-time learning situation of students, and then provide effective help. It can also help teachers to find problems in the past curriculum teaching and correct them in time. A general test method includes in-class test, unit test, etc. The summative evaluation takes place after the implementation of the whole teaching plan, which is the overall evaluation of the learning achievements of students and teachers in the whole learning process.

Online platform evaluation

Online platform includes MOOC platform test, job and peer mutual evaluation. (1)MOOC platform test and assignment: after class assignment is an important way to measure whether students have mastered the knowledge they have learned. Teachers select all the contents of tests and assignments on MOOC platform as after class exercises. Students need to complete the assignment before the next class and send it to the teacher's email, and at the same time, transfer the completed after class exercises to the class QQ group for everyone to learn and communicate. The purpose of MOOC platform test and assignment is to check students' application of skills and extension of knowledge. (2)Peer evaluation: the evaluation of the assignments submitted by students comes from teachers on the one hand, and from their own learning peers on the other.

Only after the student has submitted his own homework can he participate in the evaluation of the peer's homework. The purpose of mutual evaluation is to form a two-way evaluation between peers and find out their advantages and disadvantages. Then teachers use the above evaluation to analyze the causes of the problems according to the problems encountered in the actual teaching activities, and promote the better achievement of teaching objectives by modifying and improving the learning mode, supplementing learning resources, adjusting learning activities, etc.

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