Research on Computer Education based on MOOC

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Abstract: In the age of online feast, large-scale, open, online MOOC has become an important factor affecting the development of higher education, especially the change of teaching methods. Based on the new concept and new model of MOOC, this paper explores its beneficial enlightenment to computer teaching in China, and proposes computer teaching strategies for colleges and universities to adapt to the background of MOOC.

1. Introduction

With the continuous development of online education, MOOC, which is characterized by large scale, openness and linearity, has become a hot topic in the field of higher education. The famous universities at home and abroad have joined the MOOC tide by developing MOOC platforms and providing online courses. This has opened up a new path of change in higher education, which involves various aspects such as higher education concepts, teaching models and evaluation methods. Compared with the rapid development of computer technology, computer teaching in China's colleges and universities seems to be lagging behind in many aspects such as concept, mode, evaluation, etc. There are defects such as low overall teaching quality, weak practical ability of students, and weak sense of students' innovation. Faced with these problems, where does computer teaching in colleges and universities start to find breakthroughs in change and development, and become a new topic that needs urgent solution. The MOOC, which revolutionized the traditional education, presents large-scale, open, online and other characteristics, which provides many inspirations for the reform of computer teaching in colleges and universities in China. Therefore, it is necessary to closely follow the new trend of MOOC, explore the enlightenment of MOOC to the computer teaching concept, teaching design, teaching mode and teaching evaluation of colleges and universities, and propose the teaching reform countermeasures suiTable for the actual computer teaching in China. Promoting the reform of computer teaching has positive practical significance.

2. MOOC meaning

Large-scale open online course, Massive Open Online Course, referred to as MOOC. It was born in 2007 and refers to a large-scale open online course that provides course content, learning tools, and online discussions. After five years, MOOC has achieved rapid development. In particular, Stanford University's "Introduction to Artificial Intelligence" course and the Udacity platform in 2011, the MIT MITx platform in 2012, further expanded the scope and scope of MOOC. Since then, MOOC has experienced explosive growth, which has really set off a wave of reforms in the education sector. MOOC is a revolutionary breakthrough in traditional education, showing its own characteristics in the development of breakthroughs. Large scale is the first feature of MOOC. Compared with previous online courses, MOOC has broken through the limitations of existing online courses and campuses through the construction of online platforms. It can easily attract thousands of learners from thousands or even tens of thousands of people, and the audience of teaching can be expanded. Second, MOOC has an open nature. MOOC breaks the limitations of time and space of traditional courses, and provides an open platform. MOOC course learners from all over the world rely on the Internet. As long as they register, they can participate in the study and sharing of resources in famous universities at home and abroad. Again, MOOCs are online and interactive. Registered learners can not only learn the course at any time, any place, but also achieve

large-scale interactive participation and real-time feedback. This is MOOC's revolutionary breakthrough in the past E-Learning, online open class or distance education. Mainly due to advanced information technology, especially the research and application of big data, cloud computing, artificial intelligence and so on. MOOC integrates a variety of learning and social networking tools, including not only course reminder emails, emails that respond to learner questions in a timely manner, but also automated learning tools, online discussion and communication tools, and automated online assessment systems that form a diverse Learning and communication tools. Therefore, MOOC is an upgrade to the traditional online learning model, which is more authentic, more standardized and more formal.

3. MOOC-based computer course teaching mode

Course teaching resources include syllabus, instructional videos, lecture notes and experimental projects, but with instructional videos as the main carrier. In traditional classrooms and online courses, teachers often make course lectures and instructional videos according to the teaching content specified in the course, and then follow the fixed process to carry out teaching. The teaching videos of traditional courses are often used as a kind of teaching guidance materials as a supplementary form of classroom teaching. Moreover, this kind of teaching mode usually leads the whole teaching activity by the teacher and grasps each teaching link. The students only passively participate in the course learning, which leads to the initiative and enthusiasm of the students, which affects the overall teaching effect of the course. The MOOC-based computer course teaching design will adopt the student-based micro-curriculum teaching mode. The design concept is to divide the course content into several knowledge modules. Students can actively grasp the learning rhythm according to their own learning speed, thus effectively improving learning efficiency. . The micro-course teaching mode divides the teaching content of the traditional course into several knowledge modules according to the teaching objectives of the computer course. Each knowledge module contains the teaching activities required for the teaching process such as teaching video, classroom test, course discussion and homework assignment. In view of the main role of teaching video in teaching resources, micro-course teaching mode will use micro-video as the main carrier of teaching resources. The specific design method can be divided into three aspects: the traditional teaching video is divided into several micro-videos by the theoretical knowledge points in the course chapter, and the design duration of each micro-video is generally about ten to fifteen minutes; The micro-video embeds the online test exercises of the corresponding knowledge module, and can provide feedback on the test results; the student can only enter the next knowledge module after completing the learning of the knowledge module. Computer science is a very practical subject. Many knowledge points need to be verified and tested through specific practical operations. The micro-curriculum teaching mode is more suiTable for the teaching characteristics of computer courses.

The teaching mode of traditional online courses is relatively fixed, and there is a lack of academic evaluation mechanism for teachers and students to participate in interactive communication. The MOOC-based computer course teaching model combines the advantages of traditional classroom and online courses to maximize the teaching communication mode of traditional classrooms, and has more convenient and flexible online education characteristics than traditional classrooms. This new online teaching model covers the entire process of teaching activities and provides online testing and discussion for course teaching. In the computer course teaching mode with micro-course design, the online test questions embedded in each knowledge module can be in the form of multiple-choice questions, multiple-choice questions and micro-programming questions. After the students complete the online test exercises in the classroom, the system will automatically feedback the test results, and the test process can automatically switch between the test questions and the support platform. For subjective questions that exist during the learning process, students can communicate in real time through social networking tools such as forums, Weibo, and instant messaging. This kind of interactive communication helps to improve students' enthusiasm for participating in learning, and can

effectively improve the teaching effect of the course, which is very consistent with the basic characteristics of computer course teaching.

At present, the university computer major courses generally complete the teaching evaluation from two aspects: the usual results and the final results. The usual grades mainly include classroom attendance, program verification and program design; the final grades are mainly paper examination and machine assessment. However, these assessment methods do not fully reflect the mastery of the students' knowledge of the curriculum. In order to give full play to the guiding and stimulating role of evaluation and evaluation, the MOOC-based computer course teaching mode uses a combination of teacher evaluation, peer-to-peer evaluation and self-evaluation to comprehensively evaluate students' knowledge ability level. The specific design principle is that the teacher evaluation is based on the student's curriculum design and actual project evaluation; peer review is based on the thinking method of flipping the classroom, the students use the role conversion method to anonymously evaluate each other; and the self-evaluation is the student's entire course. The summarization and generalization of knowledge is submitted to the course platform in the form of a course report as a staged evaluation of the professional course study. Teachers can reasonably set different proportions of the above three assessment methods according to the talent training objectives of different professional courses, so as to obtain a comprehensive evaluation of the courses that students have learned.

From the design and interaction of classroom learning interaction, it can be seen that the teaching interaction of computer professional courses is mainly based on the social network platform. Students will generate a large amount of behavioral data in the process of learning interaction, which will reflect the students' existence in the learning process. Kind of problem. Based on the cloud computing and data mining technology, the corresponding data model is established according to the collected student behavior data, and the available information is extracted by using the corresponding data mining algorithm for analysis and processing. Based on the information extracted, teachers can make reasonable improvements to the teaching methods, teaching resources and teaching decisions of the course, and provide students with a personalized, diverse and humanized learning environment to effectively solve the problem of students' learning.

Computer practice teaching is an important part of computer professional course teaching, and also an important means to improve the quality of applied talents. Due to the limitations of teaching resources, many universities in China do not have perfect experimental teaching equipment and modern experimental environment, which in turn affects the effect of computer practice teaching, resulting in serious lack of students' hands-on ability, design ability and innovation ability. Based on the virtualization technology of cloud computing, a virtual experimental teaching platform with interactive and personalized is established. Make full use of the computing, storage and network resources provided by the cloud platform to integrate teaching, management and services, and establish a virtual practice teaching classroom. According to the needs of computer professional course teaching, integrate various teaching resources on the cloud platform, completely eliminate the space and time constraints of traditional course teaching, and provide diversified, multi-angle and multi-level distributed teaching for teacher teaching and student learning. The environment provides platform support for innovative teaching models and optimized teaching resources.

4. Conclusion

MOOC provides a new direction for the development of future education. This new education model will have a huge impact on the existing higher education. This paper draws on the teaching design concept of MOOC course and studies and discusses the reform of computer course teaching in colleges and universities. Introducing the MOOC curriculum model into the instructional design of computer science is an active and beneficial attempt. However, because there are certain differences in the design ideas between the traditional computer course teaching and the MOOC course teaching in colleges and universities, how to combine these two teaching modes perfectly and implement them in the specific teaching process still requires the majority of computer educators. Conduct a deeper exploration.

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