Application of MOOC+SPOC Teaching Model in College Computer Public Courses Teaching

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Abstract: The MOOC+SPOC teaching model is an inevitable trend in the Internet plus education environment and is an innovation of the existing teaching model. This paper analyses the practical application strategies of MOOC + SPOC teaching mode in the teaching of computer public courses in universities.

1.   Introduction

The focus of this paper is exploring the MOOC+SPOC teaching mode and applying it to the teaching of university computer public courses. Making high-quality MOOC curriculum resources be effectively utilized in university education, establishing an Internet plus teaching model to contribute to the curriculum reform of universities in China. MOOC is a typical Internet plus education, which takes students as the center of education and changes the traditional indoctrinating teaching method. Reforms in universities should be vigorously promoted. The SPOC is able to fully reflect the characteristics of the school to meet the individualized learning of students. Teachers can change their teaching perspective through this new teaching mode to pay attention to students' learning process and guide students to learn autonomous learning, so as to achieve the best learning effect.

2.   Basic understanding of MOOC+SPOC teaching mode

2.1.   MOOC

MOOC is a kind of large-scale online open course. Unlike traditional curriculum education, it does not require a certain number of students to study together, and allows tens of thousands or even more people to study. Teachers will also participate in teaching activities and respond to students' questions online. The MOOC has changed the traditional teaching methods of higher education and gradually influenced the teaching mode of primary and secondary schools as well as vocational schools.

2.2.   SPOC

In the case of the widespread use of MOOC, it is reflected that the quality of students cannot be guaranteed, thus making it gradually been questioned by people. Therefore, the SPOC (Small Private Online Course) teaching mode is proposed in view of this situation. Its operation mechanism is the same as MOOC, but the scale is smaller than MOOC, and the number of people is limited to 100. SPOC has gradually become a typical teaching mode in the development of MOOC era. Combining the advantages of open and sharing of MOOC, the learners are limited to students in the school, so that students can get a higher learning quality while receiving network resources education, allowing students to enjoy offline classroom teaching in the context of MOOC. Students can learn according to their actual situation, and participate in the physical classroom to interact with the teacher, so that the teacher can timely know the knowledge of the students, facilitating the timely adjustment of the course content.

2.3.   Constructing MOOC+SPOC Teaching Model

A complete teaching process includes preparing lessons, teaching and reflection. These three

links constitute a unified whole, and any problem in any link will affect the effect of teaching. While, the MOOC+SPOC teaching model is composed of these three important links. In the preparing lessons stage, it is necessary to carry out frontal analysis and resource design for the course, plan the various objectives of the teaching, laying the foundation for the follow-up teaching. Secondly, in the specific implementation of the teaching activities, allowing students to learn independently through the SPOC platform, allowing students to actively discuss through the form of groups to build a complete knowledge. Finally, in the teaching evaluation, the online and offline learning methods are combined to form an evaluation system to evaluate the teaching effect in the MOOC+SPOC teaching model.

3. Application of MOOC+SPOC in the teaching of computer public courses in universities

3.1. Frontal analysis

The whole frontal analysis includes analysis of learners, analysis of learning objectives, analysis of learning content and analysis of learning environment. The learners are analyzed in the form of survey and analysis on mobile devices for students of computer majors in universities. Mobile phones rank first. Students need to communicate and socialize via their mobile phones. Some students will use their mobile phones for data search and online learning. Computers are less used. Through the MOOC+SPOC teaching model, students are expected to have the ability to acquire network resources through computers. The University Computer Foundation is taken as practical course this time. Through the study of computer foundation course, the students' information literacy ability is cultivated. And they should at least master one programming language design. Teachers should rationally design the curriculum according to the objectives of the study. The learning environment is divided into online learning and campus environment. With the support of the MOOC platform and SPOC teaching, students can learn better.

3.2. Resource design

The resource design is divided into four parts: choosing quality MOOC, online resource design, offline resource design and instructional design. On the MOOC platform, there are many high-quality MOOC resources. The course resources suitable for this course can be selected to allow students to learn. Classify teaching resources on the cloud service platform of schools. The offline resources are the supplements for online resources that teachers provide for students, such as the learning points of the course content, reference materials, and so on. Detailed design should be launched on learning content and resources. Let students master more knowledge points through MOOC + SPOC teaching mode to exercise their computational thinking. Students of different majors have different priorities for learning computers. For example, students in science and engineering pay more attention to the design of algorithm programs, students in liberal arts pay more attention to multimedia technology, students in medical science pay more attention to the ability of data analysis, and teachers should arrange knowledge points according to different professional categories.

3.3. Criteria of assessment

Changing the traditional assessment methods and adopting the assessment model of the combination of online and offline to integrate students' online learning with offline discussion and experiment to assess the learning effect of students, which can ensure the quality of teaching and help students master knowledge points. The whole assessment is divided into several modules, such as online learning, online discussion, experimental results, classroom performance and examination. The final exam can be conducted on the SPOC platform and the system will automatically score.

3.4. Teaching activities

The entire teaching activities are divided into pre-class, in-class, and after-school modes. Before

the course, teachers should upload learning resources about this section on the SPOC platform to present them in the form of short videos and set up discussion topics to allow everyone share their views. According to the relevant arrangements of the course, the following arrangement needs to be made in the classroom: Ask students register on the SPOC platform to facilitate timely learning of online resources. Supervise students to learn according to the student's online learning situation. The key and difficult problems should be explained in depth to solve the problems raised by students. Have students conduct group discussions and ask each other questions. Arrange students to study online. Finally, arrange the learning tasks for the students. After the classroom teaching, the effect of the whole classroom learning should be reviewed and sorted out, and the students can share the materials they use on the SPOC platform.

In the MOOC + SPOC teaching mode, teachers should fully understand students' needs and adjust classroom contents in time so that students can have more time to discuss. Students' personalized learning needs should be fully met, so that students can learn to actively learn, thereby improving the learning effect.

3.5. Teaching evaluation

The learning effect of MOOC+SPOC teaching mode is analyzed and divided into three parts: analysis on the effect of learning process, analysis on learning result and analysis and survey on students' evaluation.

3.5.1. Analysis on the effect of the learning process

Using the MOOC+SPOC teaching model, most of the university students have chosen the course, and over a period of time, the number of students will gradually increase or decrease with time. On the SPOC platform, learning resources include short videos, document learning, classroom discussion and unit testing. Students who learn on the SPOC platform can follow the classroom time to learn and can complete the learning test.

3.5.2. Analysis on learning result

Throughout the classroom teaching process, the relevant courses of the computer were tested several times through the SPOC platform, and the students' overall online results were better.

3.5.3. Analysis and survey on students' evaluation

After the introduction of the course, the students were tested by the questionnaire on the evaluation of the new teaching mode. Students can learn in an orderly manner through the SPOC platform, can participate in the discussion consciously, and get answers to the questions. And the overall satisfaction is higher, indicating that this method is more helpful for students' learning and enables students to obtain knowledge.

3.6. The improvement of problems

3.6.1. Problems

According to the MOOC+SPOC teaching platform, the students' learning behavior data is analyzed. Students who selected the course in the later stages may not be able to keep up with the progress of the study. On the one hand, they are not proficient in computer operation. On the other hand, they do not fully recognize the teaching mode, or because the computer restrictions make many students unable to study at the prescribed time. Students' ability to learn offline is poor. Course videos are less attractive to students and the initiative is poor. The impact of the new learning model on students is gradually decreasing. Students will be lazy without supervision by teachers. The entire teaching system does not form a close relationship, and there is a high degree of mobility, which may be because the topic is not attractive enough, or the teacher has a certain lack of guidance for the students. The group's cooperative learning is not ideal, the main reason is that

the number of groups is large, making it easy to be of divergence. Most of the students will learn online through mobile APP, which leads to the management system can not record the students' behavior completely, and easy to cause data loss.

3.6.2. Improvement methods

In response to the problems in the MOOC+SPOC teaching model, the problem is improved according to the university's own education. In the practice of MOOC+SPOC teaching model, students need to have the most basic computer operation ability to ensure that there is no obstacle to their autonomous learning. Also, the students should be familiar with the specific functions of the platform according to the students' own situation, so that students can master the functions of the learning platform. Strengthen campus construction, improve the coverage of wireless networks on campus, and enable students to conduct mobile learning at any time and anywhere. A sufficient number of computer rooms are available to make it easier for students to study on computers. Supervise and manage students' learning behaviors. The students' browsing records should be counted and analyzed through the management system to warn the students appropriately. Teachers should guide students' discussion correctly, understand students' questions, and organize students to discuss. In order to solve the problem of poor effect of group cooperative learning, it is necessary to group students reasonably according to their knowledge and minimize the number of members of group cooperative learning so as to improve the depth of group discussion.

4. Conclusion

The MOOC+SPOC teaching model is a new online open course. The combination of the two platforms can further increase the initiative of students and broaden the scope of teaching. It continues to expand the educational resources and keeps pace with the development of the Internet, providing innovative opportunities for university education and teaching, and enabling university teaching to have sufficient technical skills to face various challenges. As an important means to promote the development of the times, innovation is also important in the field of education. The combination of MOOC+SPOC teaching model promotes the renovation of university teaching model and allows MOOC to develop rapidly in universities to improve students' ability to learn independently.

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