Wisdom Course Teaching Under the Background of the Big Data Era

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Abstract. Big data not only promotes the continuous development and innovation of cloud computing, Internet of things and mobile Internet technology, but also provides technical support and carrier for the development of education informatization. It has become an important driving force of Internet technology and education informatization. Under the background of big data era, technology is constantly reshaping the education and teaching ecology, teaching methods and teaching process, the consciousness of educators and the way of knowledge transmission and acceptance, so intelligent education emerges as the times require. Big data helps to accurately track teaching and learning, so that teachers can master the personalized needs and development characteristics of students. This provides a strong support for the realization of individualized teaching and intelligent teaching. Based on the background of big data era, this paper discusses the asynchronous recording and broadcasting online teaching, the synchronous live online teaching, MOOC (Massive Open Online Courses) and SPOC (Small Private Online Courses), in order to provide help for the development of network education.

Keywords: Big data · Wisdom education · Online teaching

1 Introduction

The big data provides technical support for learner centered intelligent learning, and also provides an important foundation and guarantee for classroom teaching to obtain teaching resources. The novel coronavirus pneumonia is emerging. New generation of information technology such as big data has brought hitherto unknown opportunities and challenges to education. In the early stage of the epidemic, in order to effectively stop the spread of the epidemic to campus and ensure the safety and health of teachers and students, network teaching was carried out in many places, schools and educational institutions in China. In order to cope with the current situation that face-to-face teaching cannot be carried out, China has put forward the idea of classes suspended but learning and teaching continues. Schools and teachers need to reasonably choose teaching methods, teaching strategies and teaching resources, and effectively help students to make scientific home-based learning plans. In the process of school, the learner is the main body and the teacher is the leading principle. While imparting
knowledge, teachers should pay attention to the cultivation of students’ ability to discover, solve and innovate problems. Classes suspended but learning and teaching continues that is to use the network platform to organize large-scale online learning, reshape the traditional classroom based on education and teaching form, reconstruct the relationship between teachers and students, and integrate appropriate learning resources. This paper mainly discusses and analyzes from four aspects the asynchronous recording and broadcasting online teaching, the synchronous live online teaching, MOOC and SPOC, in order to provide help for the development of network education.

2 Asynchronous Recording and Broadcasting Online Teaching Under the Background of the Big Data Era

During the epidemic period, the main teaching methods of online courses include asynchronous recording and broadcasting online teaching, synchronous live online courses, MOOC, SPOC and so on. The asynchronous recording and broadcasting online teaching is the deep integration of big data, cloud computing and other information technologies with the course, providing diversified learning resources with online learning platform and various intelligent terminals as carriers. The main links of asynchronous recording and broadcasting online teaching are described as Table 1.

| Teaching link | Teacher                                                                 | Students                                                                 |
|---------------|-------------------------------------------------------------------------|--------------------------------------------------------------------------|
| Before class  | Teachers assign learning tasks to students and make teaching plans. Teachers make and upload teaching video, teaching courseware, text and other learning materials to establish an interactive learning environment. According to the teaching content, the teacher arranges preview tasks and discussion topics for students | According to the task assigned by the teacher, students complete the knowledge learning before class and post discussion |
| In class      | Teachers organize students to learn online according to the teaching arrangement | Students can study without the limitation of time and space. According to the learning tasks assigned by teachers, knowledge learning is carried out. When students encounter problems, they can communicate with students or ask for help from teachers in class |
| After class   | Teachers assign homework and exercises. According to the students’ feedback, the teachers diagnose and assist the students’ learning after class, and answer the students’ questions in time | Students finish their homework on time and communicate with classmates or teachers in case of problems |
Online learning platform and various intelligent terminals are used for online learning, supporting students’ group collaborative learning, cloud answering, etc., which makes the mutual learning and interaction between teachers and students more timely and effective [1, 2]. It is conducive to students’ autonomous learning, inquiry learning, collaborative learning and so on, so as to realize the construction, consolidation and transfer of students’ knowledge system. On the online teaching platform, teachers can obtain the data of individuals participating in online learning and the data of students’ online learning process, which helps to accurately track teaching and learning, and helps teachers master the personalized needs and development characteristics of students.

3 Synchronous Live Online Teaching Under the Background of the Big Data Era

In the synchronous live online teaching, the main lecturer carefully conceives the live teaching content and teaching interaction, and then uses the webcast platform as the technical support to conduct real-time live teaching. Students enter the virtual classroom through mobile phones, computers, Pads and other smart terminals to learn the synchronous live online courses [3]. Teachers create teaching situations to further mobilize students’ interest in learning, so that students can gain a sense of online presence and efficient interaction [4]. Big data, cloud computing, Internet of things and other technologies provide support for learner centered all-weather learning, and also provide an important basis and guarantee for classroom teaching to obtain teaching resources [5, 6]. The main links of synchronous live online teaching are described as Table 2.

| Teaching link          | Teacher                                                                 | Students                                      |
|------------------------|-------------------------------------------------------------------------|-----------------------------------------------|
| Before class           | Teachers assign learning tasks to students, make teaching plans, and provide high-quality learning materials according to the teaching content, such as excellent MOOC | According to the learning link arranged by the teacher, students complete the preview before class |
| In class               | According to the teaching objectives, teachers create a good teaching situation and carry out live teaching. Teachers use the live broadcast platform to organize teaching activities | Students use the online live broadcast platform for class |
| After class            | Teachers record the live broadcast of the course and upload it to the live broadcast platform or learning exchange group for students to watch and learn repeatedly. The teacher assigned homework and exercises after class | Students choose to replay online live teaching videos based on their knowledge of knowledge. Students complete homework tasks on time as required. If students have any questions, they can interact with teachers in real-time and non-factual |
Synchronous live online courses provide strong support for individualized teaching and individualized teaching. The online platform records the teaching process data, which provides a visual basis for evaluating students’ learning status, and helps to reconstruct and improve the learner centered teaching mode. Teachers fully listen to the feedback of students’ online learning, refer to the data of students’ online learning process, and constantly adjust online teaching strategies and methods.

4 MOOC Under the Background of the Big Data Era

MOOC is to expand the teaching time and space through online learning, build a new education ecosystem, and realize knowledge construction and knowledge internalization in different time and space [7]. It can meet the diverse needs of learners to obtain high-quality learning resources, stimulate learners’ interest in learning, reshape the way of education and teaching, optimize the teaching effect, and promote the fairness of education starting point [8]. MOOC has a huge audience, learners can learn online according to their own needs. In MOOC, we can choose suitable public courses, general education courses, professional basic courses, professional courses and professional development courses. Through the high quality learning resources it provides, we can communicate with other students and teachers. As of April 2019, the number of MOOCS in China has reached more than 12500, and more than 200 million people punch in to learn MOOC. This provides an important guarantee and support for building a learning society and promoting lifelong learning. Especially during the epidemic period, MOOC resources should be used to assist the suspension of classes and schools, and accelerate the development and optimization of open digital teaching resources in China.

5 SPOC Under the Background of the Big Data Era

After large-scale practical application, it is found that MOOC lacks immersion learning experience and ignores the face-to-face interaction between teachers and students. It cannot meet the personalized learning needs of learners and reduce the learning efficiency. SPOC combines MOOC with traditional classroom teaching organically, improve and optimize on the basis of MOOC. SPOC introduces MOOC high-quality resources into traditional classroom teaching and integrates them with specific courses [9]. It is a learning mode serving small-scale and specific groups. We can use the existing MOOC resources or the curriculum resources developed by schools and other organizations, so that students can choose any time and any place to carry out online learning, complete the learning of this course resources, as well as the discussions, exercises, tests, etc. in the course [10]. Schools can also arrange teachers to supervise and manage the classroom, organize offline communication activities and offline examinations. Small scale online learning is helpful for teachers to provide personalized counseling for students’ problems in the learning process and provide better learning experience for students.
6 Conclusions

With the continuous development of society and the continuous progress of science and technology, teaching philosophy and teaching mode are also constantly innovative and diversified. In the era of big data, the deep integration of information technology and education not only changes the traditional education and teaching service mode, but also promotes the renewal of education concept and the reform of education and teaching mode. The asynchronous recording and broadcasting online teaching discussed in this paper is the deep integration of big data, cloud computing and other information technologies with the course, providing diversified learning resources with online learning platform and various intelligent terminals as carriers. In the synchronous live online teaching, the main lecturer carefully conceives the live teaching content and teaching interaction, and then uses the webcast platform as the technical support to conduct real-time live teaching. MOOC is to expand the teaching time and space through online learning, build a new education ecosystem, and realize knowledge construction and knowledge internalization in different time and space. SPOC combines MOOC with traditional classroom teaching organically, improve and optimize on the basis of MOOC.

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