Advances in Social Science, Education and Humanities Research, volume 322
2nd International Seminar on Education Research and Social Science (ISERSS 2019)

Education Development Research of the MOOC in Colleges and Universities under Mobile Internet Environment

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***Abstract*—With the development of mobile Internet technology in recent years, the online education model represented by MOOC education has been more and more integrated into traditional teaching. As a product of organic integration of Internet technology and education and teaching in the era of informationization, MOOC can enhance the vitality of teaching in practice and has profound significance for promoting education reform. This paper analyzes the development and construction of MOOC education in colleges and universities, and combines the practice of MOOC teaching in college courses to explore the advantages of MOOC teaching and share the experience of online platform. This paper proposes new ideas and methods for the diversification of MOOC teaching in colleges and universities, and proposes corresponding countermeasures and suggestions for the shortcomings of existing development.**

Keywords—MOOC; Teaching Mode; Learning Path; Evaluation

I. INTRODUCTION

MOOC is the abbreviation of massive open online courses. It is a new online course springing up all over the world in recent years[1]. It is known as "the greatest innovation in education since the invention of printing". Teach the course content of famous teachers in famous schools, test it in time through big data of mobile internet. According to feedback data, not only can we urge learners to learn, but also can grasp the teaching dynamics of teachers and students in real time, so as to improve the learning experience effect and enhance the learning effectiveness. The concept of MOOC was formed in 2008[3]. In 2012, the upsurge of MOOC swept across the world rapidly, which promoted the expansion and extension of education, especially higher education in space and structure.

In the field of professional technology, some scholars have criticized MOOC for its drawbacks, but MOOC's own high-quality features attract a large number of learners across the country. The quality user experience has a certain relevance to its teaching mode. The MOOC teaching model also has aspects that are worthy of further exploration and reference[5]. At present, experts and scholars on MOOC-related research mainly introduce MOOC, and there is relatively little literature on comprehensive analysis of MOOC teaching mode from an empirical perspective.

This paper mainly analyzes the MOOC teaching mode from the perspective of learners, and summarizes the impact of MOOC on the information construction and curriculum reform of Chinese universities. In this paper, the comprehensive exploration of the influential teaching mode is carried out. Through comprehensive and comprehensive analysis and comparison, the uniqueness of the MOOC teaching model is based on the mixed teaching mode of MOOC and the diversity demand for learners. This paper comprehensively discusses the curriculum design of colleges and universities with MOOC's mixed teaching mode and diversity curriculum construction as the core[2].

II. CURRENT SITUATION AND CHARACTERISTICS OF MOOC EDUCATION IN COLLEGES AND UNIVERSITIES

A. Current Situation of MOOC Education in Colleges and Universities

2012 is the first year of MOOC. So far, the total financing of all MOOC platforms has exceeded 400 million US dollars. Although with some doubts, the construction and development of MOOC platform, the launch and sharing of MOOC curriculum resources, and the practice and application of MOOC There is no stopping to move forward. A set of figures from the online class of the online class platform shows that there are currently 6,850 MOOC courses in more than 700 universities around the world, including the old Cambridge University, which also joined the MOOC. The emergence of MOOC has enabled more people to have access to quality educational resources and channels, and has also promoted the informatization of professional institutions throughout the education system[6]. More courses have begun to adopt MOOC resources to try mixed teaching models, such as SPOC and flip classrooms. Local universities in many provinces and cities have jointly established MOOC alliances, such as good university online and school online, so that excellent curriculum resources are shared throughout the region, supporting cross-school learning and class selection, and MOOC entering colleges and universities becomes a trend.

1. 2017 Annual Scientific Research Project of Shaan'xi Association of Higher Education
2. Application of Mobile internet in Higher Education (XGH17245)
3. 2018 Special Scientific Research Plan of Education Department of Shaanxi Provincial Government
4. SPOC Course Platform of Urban Rail Transit Based on Cloud Computing (18JK1036)

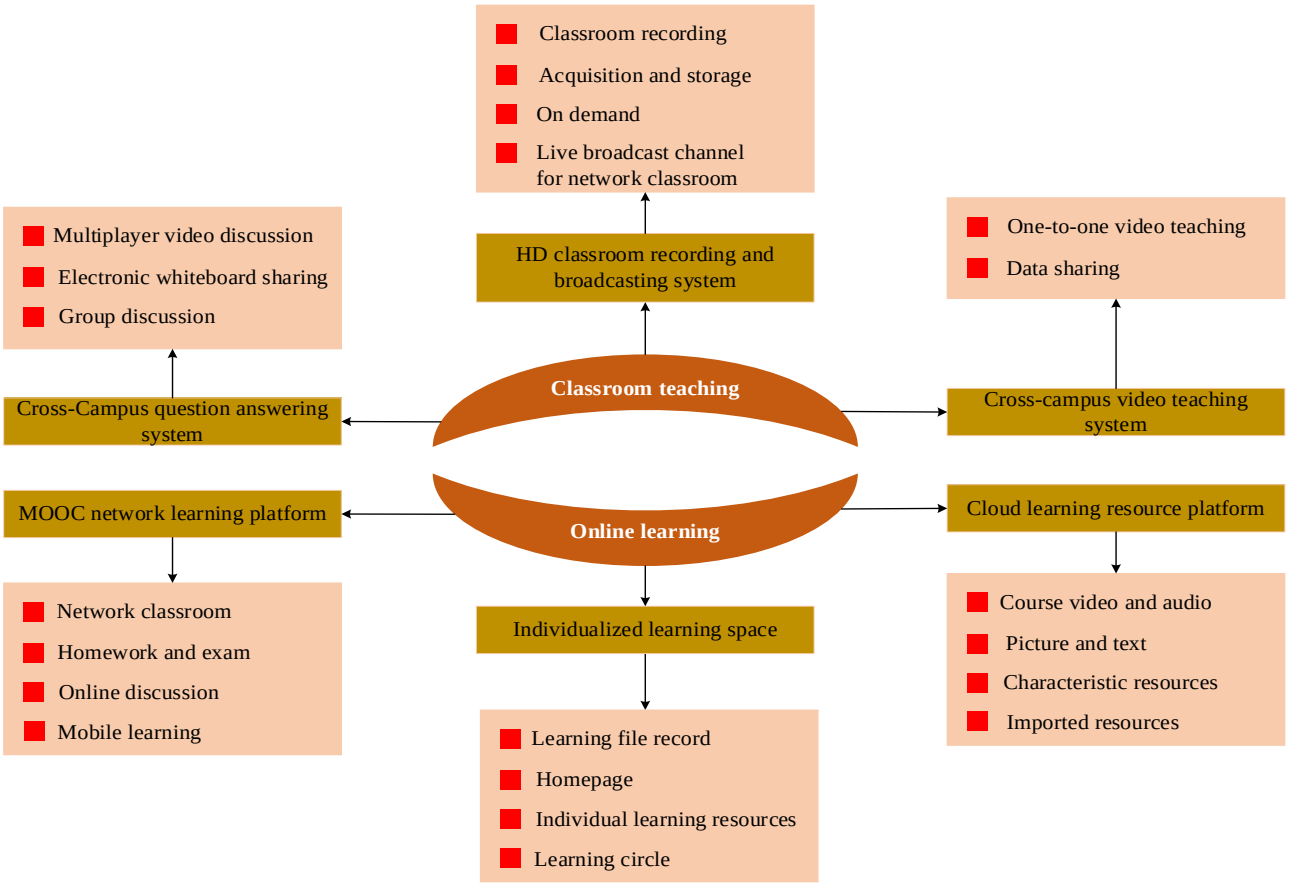

Fig. 1. Education model of MOOC

B. *Characteristics of MOOC Education Development in Colleges and Universities*

The rise of the MOOC boom originated from the meaning and value of MOOC itself. MOOC can realize the global sharing of high-quality educational resources. Many people dream of sitting in a famous university to listen to famous scholars and preaching, but they are difficult to realize due to various conditions. MOOC provides a chance to teach by a famous teacher. High-quality educational resources can be watched at any time, which has achieved educational equity to a certain extent. All courses are free and students have no burden, creating a network university that is completely different from the past[4]. Online courses are not simple videos, but based on big data, using the ever-changing network technology, through a series of teaching design development, including curriculum preparation, class teaching, interactive communication, real-time testing and service evaluation. The system model fully pays attention to the individual needs of learners.

The characteristics and advantages of MOOC's own openness and sharing have prompted the entire education community to re-examine the direction and approach of reform. MOOC has some obvious features. First of all, the entire instructional video is divided into several segments, each of which is ten minutes long, without causing learning fatigue. At the same time, the teaching process will intersperse many small problems, which is convenient for learners to allocate time for learning. Secondly, MOOC has a complete learning system[7]. The learning process adopts a customs clearance mode, that is, only after the correct answer can continue to learn, thus improving the learner's interest in learning; again, the interaction of MOOC is very strong, and the feedback is very timely, there will be relevant classroom test after the course. And after-school exams, in order to understand the teaching experience in a timely manner, check the learning effect, and reduce the accumulation of problems in the traditional classroom[9]. MOOC encourages reflection, promotes collaboration, and motivates students to be proactive, creative, and collaborative by creating a learning community. At the same time, MOOC will not neglect its own teaching according to its own aptitude, based on big data analysis, comprehensively track the learning level and learning effect of each learner, and continuously improve the quality of teaching.

III. New Development of MOOC Education in Colleges and Universities Based on Mobile Internet

The rise of MOOC is technically supported by the Internet, so our research on MOOC is inseparable from the construction of the Internet. The mobile Internet and the MOOC platform are inseparable, and the combination of the two is inevitable[8]. The characteristics of the MOOC platform are somewhat consistent with the characteristics of the mobile Internet, such as a video clip of about 15 minutes, which is just suitable for the fragmentation time of mobile users. Users use mobile

terminal equipment, board the MOOC platform to enter the learning forum, enter the video module, interactive discussion module, etc. This kind of anytime, anywhere access is the combination of MOOC and mobile internet[10].

A. Optimization of MOOC Platform Based on Mobile Internet

The mode of video transmission in streaming media MOOC. When making teaching video of MOOC, the video file will be transcoded into multiple bit rates and resolutions to realize manual or automatic selection to satisfy the user experience. In the implementation of streaming media in mobile internet, we should pay more attention to its limitations and challenges, and optimize the streaming media protocol. With the problem of traffic and billing, almost all mobile users will face the traffic restriction of packages when they leave free Wi Fi, because the traffic beyond the packages will incur very high cost and video is a major traffic consumer. The users of MOOC platform can not always be in the free Wi Fi environment, so our streaming media optimization must consider the traffic until the cost when using MOOC in mobile network. Channel environment problems, when users experience MOOC teaching video; often appear frequent buffering phenomenon, which is due to channel congestion, signal attenuation and other reasons. If not targeted optimization, not only will reduce user experience, but also cause traffic consumption.

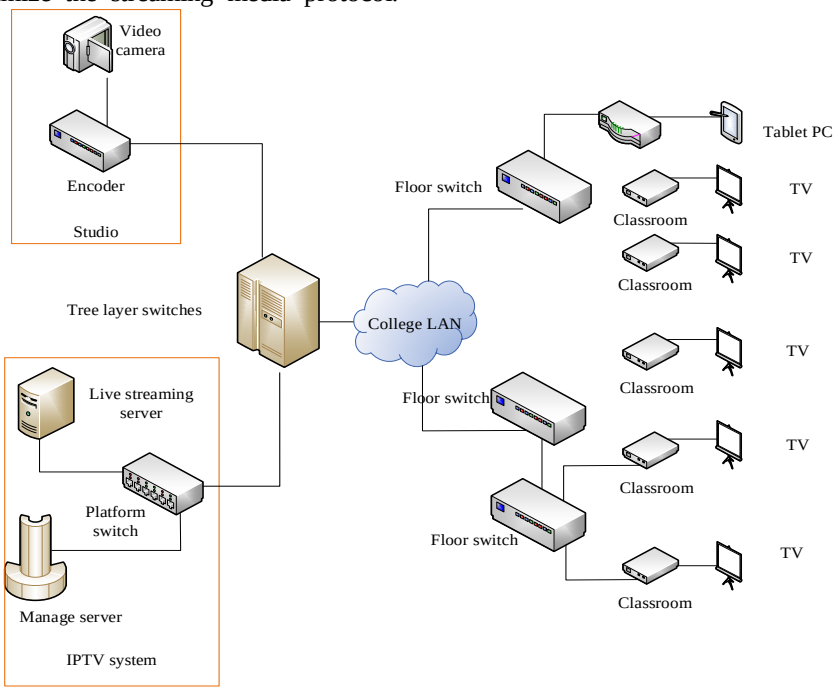

Fig. 2. Streaming media mode of MOOC platform under mobile internet

For the problem of bad traffic, billing and channel environment, the optimization scheme should be proposed in a targeted manner. You can analyze it first. If you choose the front end of the B/S architecture, it depends on the function of the browser itself, so there is no more optimization. If the APP mode, optimization will give users a better learning experience. So, we choose the optimization of the APP side. The APP supports read-ahead caching. Users can use this feature to pre-download the videos they want to watch locally in the free high-speed Wi Fi environment, and then in the low-speed charging environment of 3G or 4G when they need it. Watch it down, which eliminates the hassle of frequent buffering. However, 3G or 4G and Wi-Fi network environments are not only constantly changing for APP access points, but also have a great experience. The APP is optimized to accurately and automatically determine the environment in which the user is in the Wi Fi environment, and the high-rate video is automatically played. In the 3G or 4G environment, the low-rate video is automatically used to automatically complete the operation.

"Internet + education" and "mobile Internet + MOOC" are compatible with the modern information age. It has created a superior environment for the development of MOOC college education. In recent years, although the development of MOOCs in domestic universities has made a major breakthrough, the voices are higher than the waves, but the substantial progress seems to be a little bit of thunder and rain. The reason may be due to people's understanding of the development of MOOC and some of the constraints that have arisen in its development. This chapter is centered on the construction of MOOC in colleges and universities under the mobile Internet environment. It analyzes the constraints and various doubts of MOOC development in colleges and universities, determines the new thinking of colleges and universities in mobile Internet + MOOC, and promotes the construction of MOOC in colleges and universities under the mobile Internet environment.

B. *MOOC and Talent Education in Colleges and Universities Based on Mobile Internet*

When the era of mobile Internet comes, the enterprises, economy and market that are suitable for it are also integrated into this modern network era. At the same time, the talent demand of the new era also puts new demands on the talent education of colleges and universities. The essence of education is to cultivate talents for the development needs of society, what kind of talents are needed for enterprises and markets, and what kind of talents should be cultivated for education. The deep integration of MOOCs into the mobile Internet in colleges and universities has adapted to the market demand in the Internet era. The reform of colleges and universities, especially the reform of curriculum teaching, is also in line with its needs. At the same time, building a platform for entrepreneurship and employment for students is a need to promote entrepreneurship and employment, and it has far-reaching implications for the slogan of "mass entrepreneurship and innovation" proposed by the state. In addition, in order to cope with the reform of education, it is the expectation of everyone to realize the personalized education of the university and the lifelong learning.

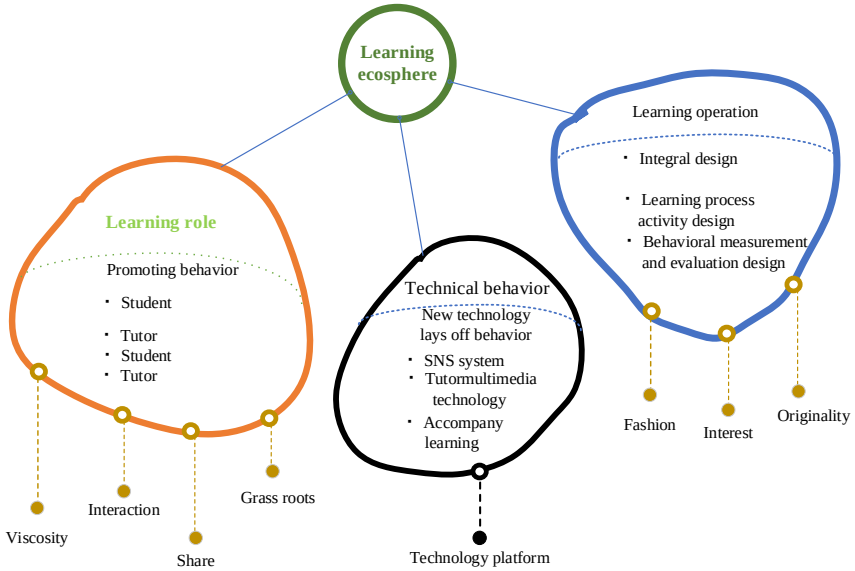

Fig. 3. MOOC Eco-learning Circle in Colleges and Universities Based on Mobile Internet

Mobile Internet + University MOOC, not only for universities, but also for the education of the vocational education and IT industry, to achieve multi-level population can receive high-quality higher education without leaving home. The Internet has become a global virtual university. The teaching of teachers, the study of students, the flow of information, and the formation of knowledge are all realized on the Internet. Some experts said that the current stage of construction shows that "Internet + education" has been basically completed, and the latter thing is innovation and integration. Innovation should be based on the concept and thinking of education reform and development. To create international standards and to innovate talent training models, the traditional "one-minded" education approach has become less and less popular. In addition, innovative teaching evaluation methods should be invigorated to stimulate The potential power of teaching. On the basis of innovation in all aspects, we will comprehensively and deeply promote the integration of education and teaching in modern information technology universities such as mobile Internet, cloud computing and big data.

IV. Conclusion

Online learning with the help of mobile communication equipment will become a more common trend. Traditional classroom space and teaching time will be liberated under the network technology and mobile Internet environment. Instead of attending classes in a regular way, they will choose their own way to learn at anytime and anywhere. It also forces traditional universities to accelerate the pace of change to adapt to the new teaching methods. In the mobile Internet environment, MOOC's advanced teaching technology, high-quality educational resources, benign operation mode and complete design system have improved the quality of network education, deepened people's understanding and recognition of the combination of new network and education, more importantly, MOOC's characteristic advantages and the characteristics of higher education are perfectly matched, and the platform of MOOC is well utilized and perfected to take shape. To become a brand of higher education and online education to promote online education and non-academic Internet education is the direction of future efforts.

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