Research on Personalized Learning Model of College Students in MOOC

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Abstract

Massive Open Online Course, with its openness, autonomy and personalization, provides a new way for learners, who can choose a personalized participation path and learning resources according to their own learning needs. Personalized learning is a new trend of the development of modern education and the individualized learning in the "Internet plus" era. At present, there are some problems in the traditional university classroom, such as the lack of enthusiasm for learning, the lack of interaction and the low degree of personalization. Based on the above characteristics and problems, the characteristics and advantages of personalized learning are analyzed in MOOC environment by this paper, and it designed personalized learning model of College Students under MOOC environment, in order to meet the needs of college students personalized learning, give full play to the advantages of MOOC.

Keywords

MOOC; Personalized Learning; Learning Model.

1. Introduction

MOOC (Massive Open Online Course) , a large-scale open online course, has attracted thousands of learners from all over the world because of its low registration threshold, open resources, asynchronous presentation and unconstrained use [1]. In 2011, the artificial intelligence course offered by the Stanford University was widely welcomed by the students, which led to set up online course supply platform Udacity; In 2012, Coursera and edX and other platforms have been established, the number of registered people continue to rise , the 2012 was known as the "the first year of world MOOC ".In 2013, the NetEase took the lead in cooperation with Coursera platform, opened a Chinese enclave, then Shanghai jiaotong university, fudan university also joined Coursera, and the 2013 was known as "China's first year of MOOC",too. In 2014, the domestic various universities have also launched MOOC platform. In 2016, the number of domestic MOOC registered more than 10 million.

MOOC environment can enable learners to self-learning, the autonomy, diversification, openness and other characteristics enable it to support learners' personalized learning in many ways[2]. MOOC support different users personalized learning, design different learning results for different users, support different users to participate in the path, as far as possible to meet the requirements of each user [3]. Personalized learning is a new trend in the development of education in the world today, the United States department of education, "2010 national education technology plan" , advocated establishing the personalized multi choice learning model in the 21st century. The "Outline of the National Medium and Long Term Education Reform and Development Plan (2010-2020)" points out that it is necessary to respect individual choices and encourage the development of the personality of the learners [4]. Therefore, with the continuous development of college education and teaching reform, we must meet the needs of learners' personalized learning.

MOOC provides learners with personalized learning platform, in order to better understand the status quo of personalized learning at home and abroad under the environment of MOOC. First of all, "MOOC" and "personalized learning" were used as the key words to retrieve in the Chinese knowledge network and IEEE database from 2013 to 2016, as shown in Table 1. Personalized learning in MOOC environment related literatures are few, but the number of documents is increasing year

by year, To a certain extent, more and more researchers begin to pay attention to the field of personalized learning in MOOC environment. Yu-qin Yang, a scholar at home, studied the personalized learning under the MOOC environment from the perspective of learners[1]. Yu-qin Yang and jian-li jiao constructed the ecological design framework of MOOC learners' personalized learning from the perspective of ecology[5]. The above research mainly aimed at all learners, and the learners are not divided into different levels.Therefore, this article mainly aims at constructing the personalized learning model for MOOC learners in the largest number of college students.

Table 1. China Knowledge Network, IEEE MOOC personalized learning articles published time distribution

Years	China Knowledge Network	IEEE
2013	1	2
2014	5	2
2015	5	8
2016	8	1
Total	19	13

Secondly, analyzed the May 2014 at Harvard University and Massachusetts institute of technology jointly issued a 2012-2013 school year edX platform 16 courses open data [6]. Based on data filtering, the number of Chinese learners in various degree phase accounts for shown in Figure 1, the bachelor degree reached 63%, to a certain extent, that the college students have a higher learning demand.
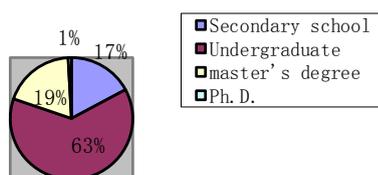

Figure 1. Chinese learners degree distribution

Based on the above analysis, as well as the existence of traditional classroom learning in students' low participation, interaction is not strong, the problem of higher degree of personalized design, personalized learning model of College Students under the environment of MOOC, in order to improve students' learning efficiency of college students to meet the individual learning needs.

2. The Characteristics and Advantages of Personalized Learning in MOOC Environment

2.1 The Connotation of Personalized Learning in MOOC Environment

Personalized learning embodies the people-oriented education idea, emphasize the individual difference as the starting point, highlighting the learners in the learning process of main body particularity, initiative and enterprise, is based on the learning needs and learning interest as the center of learning way[7]. personalized learning in the MOOC environment refers to a way of learning that learners can rely on the MOOC platform for autonomous learning, learners can choose their own learning resources, learning time, learning methods and self-defined learning programs.

2.2 Characteristics of Personalized Learning in MOOC Environment

Personalized learning has the characteristics of autonomy, customization and diversification. Personalized learning in MOOC environment not only has the above characteristics, but also has the openness and technicality, as shown in Table 2.

Table 2. Characteristics of Personalized Learning in MOOC Environment

Personalized learning characteristics	autonomy, customization, diversification
Characteristics of Personalized Learning in MOOC Environment	autonomy, customization, diversification openness, technicality

Openness refers to the MOOC platform of learning resources, learning environment is open, learners can learn anytime and anywhere according to their learning interests and learning needs.

Technicality means personalized learning in the MOOC environment must needs the support of network technology, need to make full use of the learning resources and learning to communicate platform of technology in MOOC for learning interactive, and with the continuous development of network technology, more and more "seamless" features of the technology into the process of the individual learning, make personalized learning more independent, flexible [7].

2.3 Advantages of Personalized Learning in MOOC Environment

From the following seven aspects, the author analyzes the advantages of personalized learning in MOOC environment, which lays the foundation for the design of personalized learning model for college students, as shown in Table 3.

Table 3. Advantages of Personalized Learning in MOOC Environment

Elements	Advantages
learner	Low threshold, not subject to restrictions on identity, age, education, etc
Learning Resources	Free and open, variety and rich resources, fragmentation and miniaturization
learning method	Diverse, collaborative learning, fragmentated learning, mobile learning, etc
Learning activities	Video learning, online testing, discussion boards, etc
learning environment	learning environment is Open and personalized ,learning is not limited by time and space
Learning evaluation	Flexible assessment methods, online testing, inter-test and discussion of the forum to participate in the combination
Support services	Course introduction, class reminder, learning behavior data records, real time answering questions,learning help and so on

In terms of learners, In MOOC environment, learners' registration threshold low, not subject to restrictions on identity, age, education, etc. In the aspect of learning resources, learning resources under the environment of MOOC is free of charge and the characteristics of a variety of video resources,there are video resources, text resources and test resources and so on in the courseware resources. The video on MOOC platform lasts 8 to 15 minutes, reflecting the fragmentation and miniaturization of the resource design . In terms of learning style, learning in MOOC environment presents the diversification, not only can learners autonomous learning, also can undertake collaborative learning with their peers, At the same time,some MOOC platform support mobile terminal download, MOOC mobile terminal building can make learners are not limited to the physical environment, the curriculum integration of learning and learning environment, to achieve personalized mobile learning [8]. In the terms of learning activities, MOOC platform curriculum settings in video learning, online testing and other aspects of learning support, and has a discussion area for learners to interact and exchange. In terms of learning environment, MOOC learning environment is open, learning is not limited by time and space. In terms of learning evaluation, MOOC environment evaluation in the online test, inter-test and discussion forum participation between combined to evaluate the learner, the evaluation method is more flexible. In terms of support services, MOOC platform will provide courses introduction, class reminder, learning behavior data records and other aspects of support.

3. Design of Personalized Learning Model for College Students in MOOC Environment

Along with the "Maker" and "Internet plus" era, in order to obtain sustainable development, MOOC must pay attention to the individual needs of learners and support learners to choose individualized learning paths and diversification of participation [9]. This paper constructs the personalized learning model of college students in MOOC environment, as shown in Figure 2.
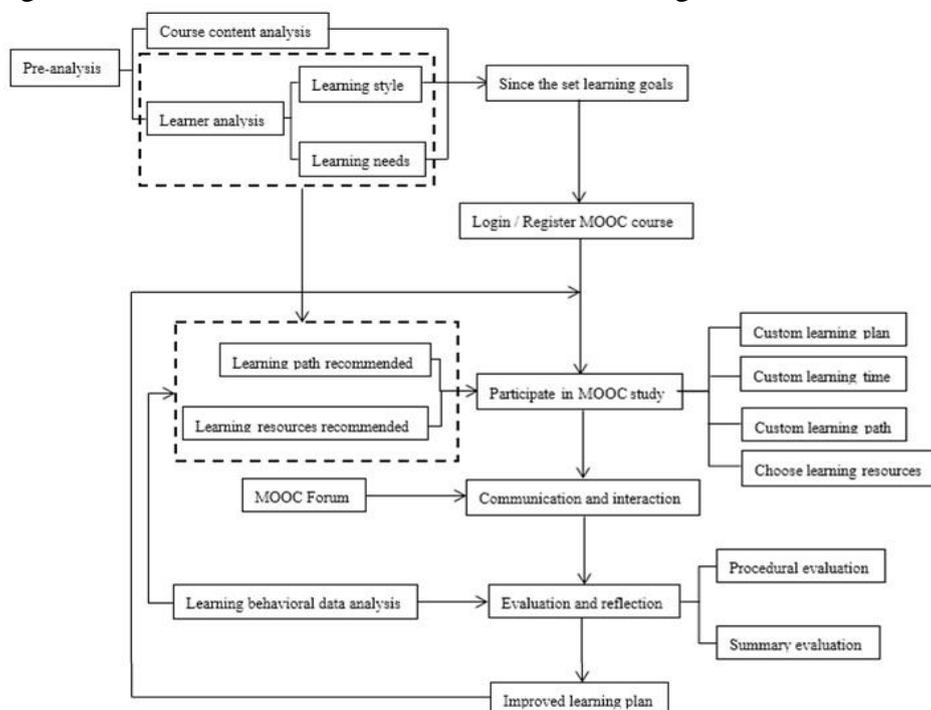

Figure 2. Personalized Learning Model of College Students in MOOC Environment

The first part is the early analysis stage. Humanistic theory emphasizes the learner centered, advocate learner in the main body position in the education. So in the early stage of analysis, mainly includes two aspects. One is the learner analysis, the learner's learning style, learning needs and so on. Another is the course content analysis,through the analysis of the course content, learners can choose learning resources, finally learners to set learning goals according to the learning situation and the curriculum itself.

The second part is the login and registration MOOC course stage, Learners can learn according to their own characteristics, and register corresponding courses to learn in a MOOC environment.

The third part is involved in MOOC learning stage. Humanistic theory emphasizes the learners' autonomous learning. MOOC platform provides free and open learning environment for learners, learners can be customized learning plan, choose learning path and learning resources. When the learners participate in the MOOC study, MOOC platform will record the learner's behavior data, through the analysis of learning behavior data, combined with the learner's learning style and learning needs, recommend suitable learning path and learning resources for learners.

The fourth part is the communication and interaction stage. Online communication plays a vital role throughout the learning activity [10]. Constructivism learning theory emphasizes the construction of meaning from the dialogue between participants, communication and collaboration, dialogue and communication is a kind of learning resource, Unicom learning theory also emphasizes the learners interaction in the learning process. MOOC with discussion area, learners can discuss with other learners in the process, collaborative learning, sharing learning resources and learning outcomes.

The fifth part is the evaluation and reflection stage. MOOC platform take inter-test, online testing and forum participation in a combination of ways to evaluate. The biggest advantage of MOOC platform is that can record the learner behavior data. Through the analysis of learning behavior data, learners

can gain a clear understanding of their own learning, evaluate and reflect their own learning process on their own, so as to improve their learning plan, to start the next phase of study. The evaluation way is single in MOOC environment. So the model combined with formation evaluation and summary evaluation, which is used to evaluate the learners comprehensively.

4. Case Design of Personalized Learning Model for College Students in MOOC Environent

According to the design of a complete personalized learning model, to application of technical disciplines of computer technology professional "computer theory" course of "open the computer chassis" knowledge as an example, the following elaboration.

(1) Pre-analysis stage. It including the following three aspects.

① Course content analysis. "Open the computer case" are the key points in the course "computer principle". It mainly includes four aspects: ENIAC, storage procedure principle, the composition of modern computer block diagram and the components of the computer. This section is mainly the theoretical knowledge, suitable for learners to learn on MOOC platform, National Defense University of Science and Technology set up the "Principles of Computer" course in this knowledge point for 12 minutes, Learners can use their spare time to study independently, In class the teacher can guide the student to carry on the practice course of computer components.

② Learner analysis. "Computer Principles" is a course offered by freshmen. At the knowledge level, learners have some understanding of the computer before learning this section of knowledge. Freshman in early adulthood, the thought is more active, has the independent thinking ability. At the same time, there are more free time and greater learning freedom, the learning initiative is strong, can be able to participate in the MOOC course learning.

③ Custom learning goals. According to their own learning style and the analysis of the course content, learners determine the learning goals of the knowledge points.

(2) Login and registration of MOOC course. In the "University of China MOOC platform", National University of Defense Technology, University of Electronic Science and Technology and Harbin Institute of Technology all open the computer theory course, Learners can choose different courses to study according to their learning needs.

(3)Participate in the MOOC course. When studying MOOC courses, learners can develop a study plan based on the duration of the course, discussion and test time, and use the free time to study. In "the principle of computer" of MOOC course, it provides learners with video resources, text resources and the test, learners can study independently. At the same time, it also can recommend the appropriate learning resources or learning path for the learners according to the characteristics of the learner's own learning. After learning the "open the computer case" of course, there will be a test, the examples are as shown below:

① The most integrated IC chip on the computer motherboard is ().

A. memory chip   B. CPU chip   C. Northbridge chip   D. BIOS chip

② () is the location of the program runs, including the required data.

A. display   B. main memory   C. hard disk   D. compile

(4)Communication and interaction. MOOC platform provides learners with discussion area, The discussion area of the "Principles of Computer" course consists of six parts：The teacher answering area, Classroom communication area, Comprehensive discussion area, Testing work discussion area, Studying group and improving practice area. When there is a problem with the "open the computer chassis" knowledge point and the testing work, Learners can be released in the discussion area, in order to get the timely exchange and answer , learners want to expand learning, you can choose to enhance the practice area to study deeply.

(5)Evaluation and reflection. Through the study of "open the computer case", Learners can conduct self-assessment according to their own mastery of knowledge points. Based on the analysis data of

the learner behavior, teachers can evaluate the learners. Learners could reflect on the self-assessment and teacher's evaluation, deficiencies in a timely manner to improve, in order to carry out the next study. According to the analysis results of the learners' learning behavior data, we can find the learners' learning habits and learning styles, and recommend the learning path and learning resources for learners.

5. Conclusion

As a new kind of learning way, MOOC provides learners with personalized learning platform. Based on this idea and the shortcomings of traditional university classroom learning, this paper constructs the model of individual students' learning in MOOC environment. See the knowledge of "open the computer case" in the "principle of computer" as a case study, the paper describes the specific learning process of this model. We hope that we can support mode for college students' personalized learning, also hope that this pattern can get practice inspection constantly and can be further improved in college students' future learning, and meet the needs of college students' individualized learning eventually.

Acknowlededagements

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