Research on the Path of Teaching Quality Control in Mobile Learning

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Abstract: *This article describes the development history and status of mobile learning at home and abroad, and analyzes the characteristics of openness, fragmentation, team support, interactivity, and diversity of mobile learning in an open education environment, as well as various problems coexisting with characteristics of mobile learning. From the perspective of teaching process control, based on key issues such as user learning behavior control, access control, content control, etc., explore ways and mechanisms for teaching quality control in mobile learning, by using modern information technologies such as information context semantics and information recognition.*

Keywords: *Mobile learning; Teaching process control; Learning behavior control; Information recognition*

1. Preface

With the deep integration of mobile Internet and education technology, mobile learning is everywhere. It has become a means of distance education and open education, and teaching quality is the foundation of education. In the context of mobile learning, there are many problems in the quality control of mobile learning, which affect the play of the role of learning resources, and at the same time affect the initiative and lasting enthusiasm of learners, which poses a challenge to the quality of mobile learning. This article analyzes some characteristics of mobile learning, discusses the problems in mobile learning, and discusses some key issues and measures of teaching quality control in mobile learning.

2. The development history and application status of mobile learning

Mobile learning refers to the process of comprehensively utilizing modern mobile communication and mobile network technologies, using mobile terminals as tools, and information technology platforms as carriers, to obtain teaching resource information, obtain teaching support services, and achieve learning goals anytime and anywhere. Mobile learning (the term originated from a project called "Pan-European Mobile Learning and Development Research" supported by the European Commission) [1], is the earliest research on the application of devices in the field of mobile learning abroad [2]; the application research of mobile devices in the interactive teaching process was also carried out in Stanford University[3] in 2001; with the advancement of mobile WEB technology and the innovation of storage technology, on the basis of the original application research, Stanford University[4] later provided access to mobile teaching resources , text and media teaching forums, etc.; Japan's ALC [5]project aims to provide mobile learning resources for English lovers; the HandleR [6] research project of the University of Birmingham in the United Kingdom, with the concept of lifelong education and learning, and plans to develop mobile learning resources for different ages and groups of people.

In terms of platform practice, domestic mobile learning started in 2001, starting with the "Mobile Education Theory and Practice" pilot project of the Ministry of Education's Higher Education Department. The development trajectory of domestic mobile learning is roughly divided into E-learning, M-learning, U-learning, Smart learning, MOOC, micro-classes. In the past five years, with the in-depth application and development of big data and artificial intelligence, Liulishuo in English learning has made good use of speech recognition for human-computer dialogue and learning supervision; Hong En Education has conducted pre-school education and Chinese character recognition for school-age children. It has unique characteristics in reading education, using handwriting recognition to strengthen memory; In 2019, the Propaganda Department of the CPC Central Committee launched a nationwide learning platform with rich resources, and its points system can be used as a reference for the evaluation and learning process. Others include NetEase Open Class, Tencent Classroom, School Online, Open

Education, etc.

The above-mentioned research on mobile learning is devoted to the following aspects: (1) The support service application of wireless network in the teaching process; (2) The support service application of mobile equipment in the teaching process; (3) The construction of service support and teaching resources using wireless mobile network in the teaching field; (4) Mobile teaching services and support in a ubiquitous environment. In terms of theoretical research, the teaching process control of mobile learning at home and abroad is mostly seen in the process control of teaching theory, teaching system and quality assessment, and there are few researches on the technical teaching process control of the mobile learning platform itself. In the mobile learning environment, there is no face-to-face real-time guidance and supervision of teachers in a face-to-face teaching environment. How to control the quality of teaching is a key issue that must be considered by the mobile learning platform.

3. Key problems in mobile learning and ways to control teaching quality

Mobile learning has the characteristics of open resources, fragmented learning time, diversified users, diversified support services, and learning mobility. How to ensure the quality of teaching to achieve the teaching goals, and the control of the teaching process is the key way to improve the quality of teaching. The teaching process control determines the quality of mobile teaching, and the key issue of the teaching process control in the mobile learning platform lies in the control of media resources and the control of user learning behavior.

3.1. The students of mobile learning have poor self-learning enthusiasm, so they should strengthen learning supervision and incentive measures

In the mobile learning environment, learning users have the following characteristics: diverse learning user groups, diverse social roles of students, uneven educational levels, a wide variety of learning needs, great differences in the basic skills of students' information application, poor initiative of some students, or lack of simple information equipment and software skills.

Some students do not log in, study or online for a long time without supervision. In order to ensure students' active login and active learning, learning supervision should be strengthened, such as regular feedback and reminding of learning information and data, and using platform reminder and other applet embedding functions to realize learning progress supervision and reminder supervision; On the other hand, we should strengthen incentive measures to motivate and mobilize students' enthusiasm with some incentive measures, such as learning points and exchange function, by building credit bank and learning points exchange rules, and building a credit exchange bridge between academic education and non-academic education, and we should enhance the lasting experience of learning effectiveness in various fields, and build a lifelong effective mechanism for learners, Instead of letting learning give up halfway and be effective in the short term. In addition, short-term incentives, such as exchanging other profitable commodities, such as school supplies or books, can also be used to enable students to participate in learning and have a sense of gain and achievement.

3.2. The supervision and control of mobile learning are loose, and the process control of learning behavior should be strengthened

The openness of open education resources means that the access of users is uncontrollable. Since resources can be learned and used by logging in through an account on the network without limiting regions and conditions, students only need one account to log in and study, so there are problems such as students hanging up, brushing classes, skipping screens, learning more courses at the same time, agent learning, etc. the machine can't recognize who is learning and whether they listen carefully.

In view of the above problems, in terms of technical means, the functions of face recognition, network positioning and applet positioning can be used to intelligently identify and judge a variety of learning behaviors such as user login behavior, access behavior and video playback behavior. For generation learning, machine brushing and other phenomena, face and fingerprint individual information can also be used to audit the identity of learning status, and strengthen the supervision of student identity authenticity and resource access behavior control.

The control of the above mobile learning behavior can be realized by using information technology. The behavior process control is shown in the figure1.
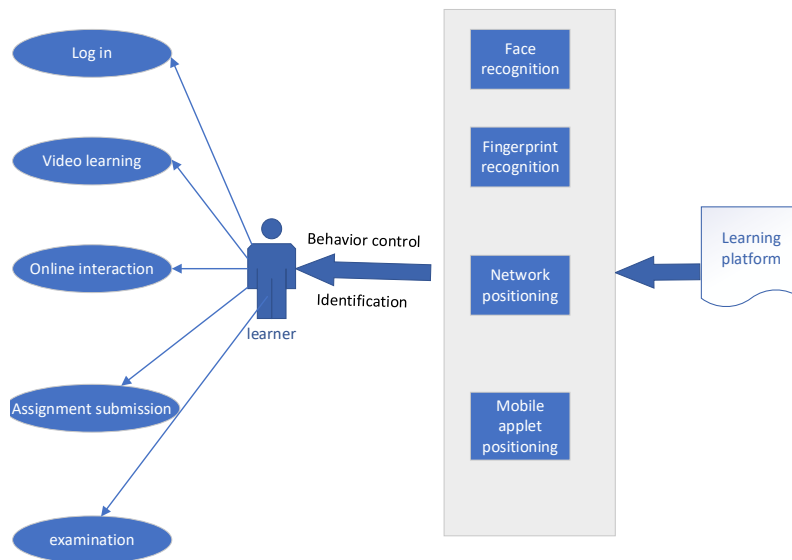
Figure.1 The behavior process control

The real-time acquisition of student identity information through face recognition and fingerprint recognition can recognize whether the login student identity is the real identity or the surrogate identity in real time. The intermittent reading of fingerprint information by fingerprint recognition can also prevent students from inviting others to learn. However, these two technical means have high requirements for network bandwidth and data processing ability, both of them require recognition, comparison and supervision of a large number of image information. It can also obtain the geographical location of learners through network ID signs and mobile applet positioning. The comparison and identification of identity geographic information can realize the audit and verification of real identity and avoid non-effective learning phenomena such as students hanging up.

3.3. The interaction of mobile teaching is poor, and the teaching feedback does not form a loop. Strengthen the organic integration of qualitative and quantitative assessment

At present, the mobile learning resources of most mobile learning platforms belong to the indoctrination media resource learning mode. There is a lack of necessary interactive communication among teaching elements such as students, teaching assistants, technical support and professional teachers. The interactive function design of the platform is weak, which can't provide data support and application feedback for teaching supervision and quality evaluation. The interactive relationship between teachers and students is weakened. In the absence of mandatory index management (such as class hour requirements, teaching assistant Q & A requirements, number of homework questions, discussion quality and other index requirements), the guarantee of teaching effect and teaching quality mainly depends on the consciousness of the main body of teaching activities, and the feedback loop of teaching and learning does not form a closed-loop system.

For example, when a student does not understand a certain teaching content in the teaching resources and wants to turn to the teacher for help, the student wants to get feedback through online message or online Q & A. usually, the response must be answered by the teaching assistant or professional teacher when they see the message or the student's question. The process from question to answer may take a long time, As a result, there are three possible situations. One is that the students get an answer but are not satisfied with the answer. The other is that the students get an answer but don't get an answer in time. The third is that they don't get any answer, this is the worst teaching feedback. The above three situations will consume students' learning enthusiasm, affect students' enthusiasm[7], and then chain reaction affect students' consciousness of autonomous learning.

Mobile learning is a learner centered teaching process with multiple interactions among multiple elements. The relationship of mobile learning elements is shown in the figure 2.
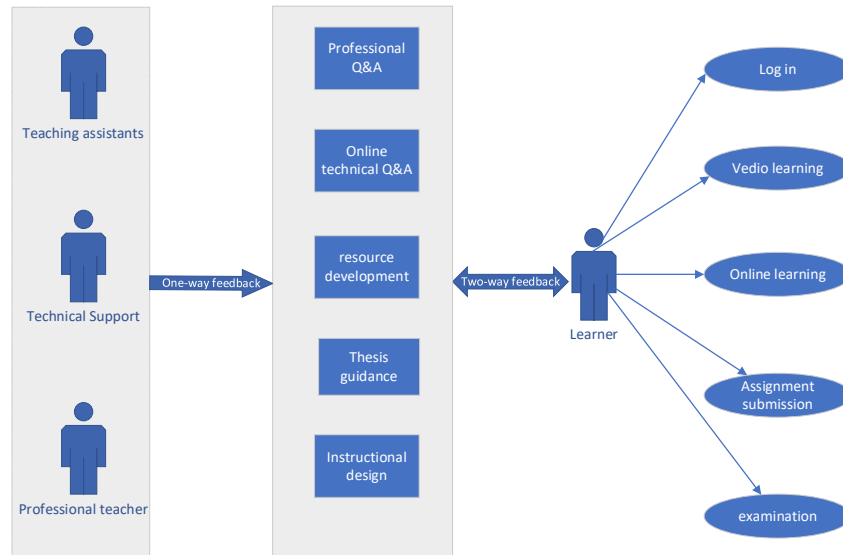
Figure.2 The relationship of mobile learning elements

The main body of the teaching process is mainly composed of teaching assistants, technical support personnel, professional teachers and learners. Teaching subjects must realize the interactive communication between subjects in the teaching process through the two-way feedback mechanism of the platform in professional Q & A, technical Q & A, resource development, thesis guidance and teaching design, so as to make flexible, efficient and timely interactive communication between learners and the other end of the mobile platform (Teaching assistants, full-time teachers and technical support personnel).

In most mobile learning platforms, the teaching process is in a passive state[8]. The mobile teaching links are disconnected, and it is impossible to guarantee the teaching quality in mobile learning by relying on the attraction of resources or online practice. Meanwhile, the content and direction of interactive discussion must be participated by professional teachers. The timeliness and effectiveness of participation require the platform to have real-time feedback, notification, statistics, supervision and quantitative assessment.

In addition, simple quantitative assessment or score can't truly reflect whether the interactive content has professional quality or is suitable for the teaching theme. It is difficult to realize effective quality supervision and feedback by relying on a small number of curriculum teachers and service personnel to supervise [9]. In the mobile open environment, the quality control and supervision of learning is decoupled from qualitative assessment. The interactive effect of mobile teaching process depends on the evaluation of quantitative teaching indicators. To achieve quality control, the measurement indexes and various elements of teaching quality should be considered in detail, such as assignments, papers, discussions, comments, questions and answers, and in-house examination, etc. to consider whether these evaluation methods are conducive to improve learning quality.

Acknowledgement

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