Characteristic Analysis and Evaluation System Design of Online Learning Behavior

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Keywords: online learning; analysis; assessment; system design

Abstract: With the wide us of Internet in each area, the style of education has changed much, and online learning has become an important way of learning and gained widespread attention in education. However, due to the lack of strict disciplinary constraints, online learning has a lot of randomness in choosing the way, time and place of learning. Therefore, corresponding evaluation system needs to be designed to supervise and assess students' daily learning behaviors so as to promote students' learning quality. Based on the online learning courses of Jiangsu Open University, this research analyzed the characteristics of online learning behavior, studied the influences on learning effect and designed the online learning evaluation system.

1. Introduction

Online education is a kind of long-distance non-face-to-face education mode formed by using the Internet, which is essentially a kind of long-distance education. In 1999, China began to develop distance education. There are many main forms of education, such as correspondence, audio-visual and Internet. With the development of distance education, thousands of training bases have been established. In 2005, in order to improve the importance of distance education in the field of education, China initiated and developed online learning.

This paper chooses Jiangsu Open University as the research object, collects the online learning platform data of its application, comprehensively and accurately analyses the characteristics of online learning behavior, and guides the design of evaluation system according to the analysis results.

2. An Analysis of the Characteristics of Online Learning Behavior

2.1. Research object

This paper takes Jiangsu Open University as a case study. In spring semester of 2017, more than 40,000 people selected courses, while 377 courses were offered. As a sample of this analysis, the teaching time was 4 months. The number of students'choosing courses has reached 3621096 in this stage.

2.2. Research methods

In the data analysis of this paper, three main methods are used to analyze [2] [3]: the first is classification, that is, according to the selected database samples, find out the common points among them, and classify the data with common points. In this paper, students are classified according to the methods they use to participate in online learning. The second is clustering, that is, by setting some criteria, classifying according to these criteria, thus forming a class or cluster. In this paper, by clustering, we classify the groups according to the learning focus and other criteria, and provide different learning resources and activities for different groups. The third is the correlation analysis, which aims at analyzing the relationship between various things and exploring the degree of the relationship between things. In this paper, the relationship between learning

effectiveness and activities is selected as the object of analysis for correlation analysis.

2.3. Characteristic Analysis of Online Learning Behavior

Due to the large number of courses offered by Jiangsu Open University, in order to reduce the research object and improve the data reliability of the research object, more than 500 people are selected online courses as the research object. Through data collation, students'behavior characteristics are analyzed.

2.3.1. Access frequency of each learning module

Table 1 Access frequency table for each learning module

Learning module	Frequency (frequency/person gate)	Percentage (%)	Explain
Text material	120.8	24.16	View teaching objectives, implementation plans, learning handouts, etc. Focus on the beginning of the semester.
Video material	89.8	17.96	View videos; focus on mid-term learning
BBS discuss	41.1	8.22	Publish topic posts in BBS forum; Focus on mid-term study
QQAnswering question	177.5	35.5	QQ Answer Questions; Focus on the end of the semester
Review Module	70.8	14.16	Review; concentrate on the end of the semester.

From the table above, QQ answering accounts for 35.5% of all visits, which is the highest module, and the visits are mainly in the final stage. This shows that students'online communication is carried out at the end of the term. The main reason is that the examination is near the end of the term, so students can get better results by communicating and answering questions. Among them, review module accounts for a low proportion. The reason for this phenomenon is that a large part of the courses chosen by students do not have final exam settings. For students'learning assessment, the results of the process test are synthesized, so students' visits to review module are not high.

2.3.2. The Relation between Course Achievement and Visit Frequency

There are two kinds of assessment methods that can be used in the assessment, but as far as the assessment results are concerned, the final results can be obtained by which way of assessment. In the study, 24 courses were selected to meet the requirements of the number of subjects selected. The results of the study were compared with the frequency of visits. As shown in Figure 1 below, it was found that there was a positive correlation between the two. As the frequency of visits increases, the total score will also rise. Although the two elements are different for each course, the positive correlation between them is still valid.
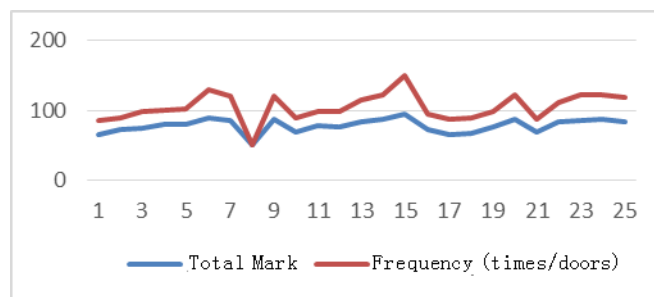
Fig. 1 The relationship between academic performance and frequency of visits

2.3.3. Frequency of student visits to courses of different nature

In the study of the frequency of visits to different types of courses, 300 of them were selected and classified. They are divided into the following five categories. The frequency of visits is also shown in Figure 2 below.
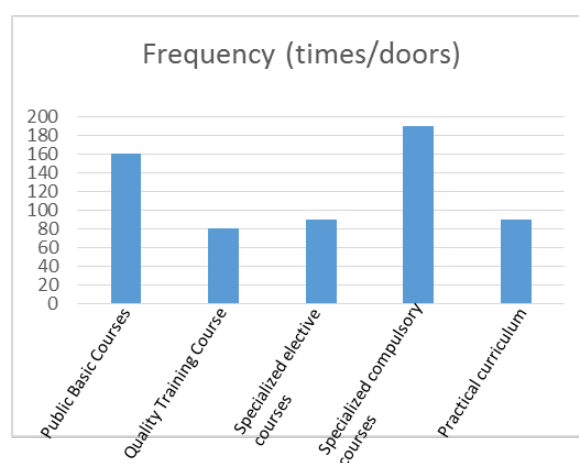

Figure 2 Frequency of Course Visits of Different Nature

From the data reflected above, we can see that the most frequent visits are professional compulsory courses, followed by public basic courses. The main reason for this phenomenon is that public basic courses are compulsory courses for all students, while professional compulsory courses are more important and are compulsory courses for corresponding majors. The remaining three types of courses, because there is no rigid requirements, and the importance of the course is relatively low, so the frequency of visits is relatively low. In addition, compared with the learning characteristics of various courses, online learning of practical courses is more interesting than textbook learning, so it is more frequently visited than quality training courses.

3. Design and Implementation of Online Learning Evaluation System

In the subsystem of the evaluation system designed in this study, three modules are set up: data acquisition, real-time data analysis and students'behavior evaluation. Through the function of each module and the comprehensive application of the three modules, the complete evaluation of students' behavior and the comprehensive monitoring of students'online learning are finally realized.

3.1. System Design

3.1.1. Design of Data Acquisition Module

In order to ensure the accuracy of the collected information and truly reflect the students'learning behavior, the following functions should be observed in the design: (1) To check the students' visiting behavior and time interval, such as whether the students only open the resources or study in the resources for a period of time, the system should be able to browse the time of the students. Line distinction; (2) To judge students'learning initiative, it is necessary to collect information about the

number of interactions between students, to analyze students' active behavior and dynamics in the learning system by collecting whether students have a large number of interactive exchanges in learning; (3) to record the interaction state and frequency between students and teachers, and to integrate the information of students'questioning bias. (4) There is a space reserved for students to take notes, and according to the behavior state of the records and whether they insist on long-term records to analyze whether the students are attentive in their study; (5) On-line testing, mainly according to the students'learning situation, provides testing links to enable students and the system to better understand the students' current learning effect. (See Figure 3).
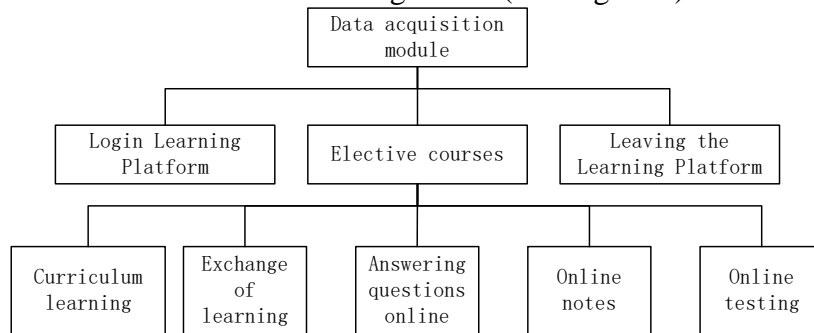

Figure 3 Design of Data Acquisition Module for Online Learning Behavior Evaluation System

3.1.2. Design of data statistics module

Data statistics module [8] is a part of the operation after the data acquisition module. It uses the collected data information, uses certain methods to collate and summarize the data, analyses the behavior characteristics of students'online learning, and transforms the analysis results into visual graphics or tables to make students or teachers understand students more clearly. Learning behavior characteristics. Statistical analysis is mainly carried out from two aspects: one is the longitudinal statistical analysis of individual behavior, and the other is the analysis of individual students'learning situation. Through the statistical analysis of individual students' learning behavior changes in a period of time, such as changes in learning time, visits, participation frequency, etc., to analyze the students in this period of time. The change of learning behavior can provide a basis for teachers to better grasp the learning situation of students. The other is the statistical analysis for a single course, which belongs to the horizontal statistical analysis. In a period of time, the frequency of visits to a single course and other data information are used to analyze whether the students have a high interest in the course and the overall learning state of the students in the course. The results of the statistical analysis can provide a basis for the improvement of the course.

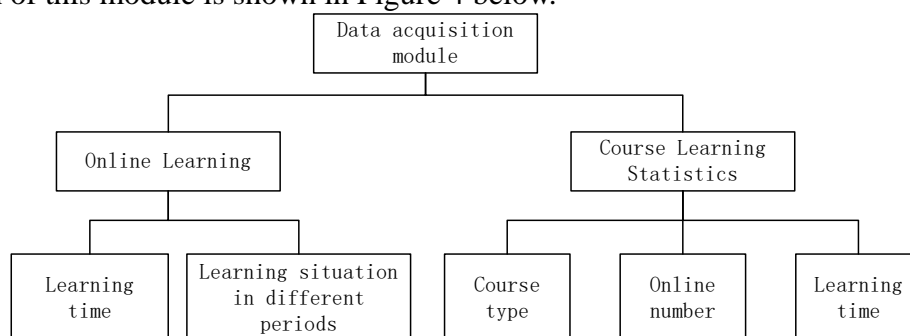The design of this module is shown in Figure 4 below.

Figure 4 Data Statistical Module Design of Online Learning Evaluation System

4. Conclusion

As far as the current education field is concerned, the Internet has penetrated into the internal education and combined with education organically, forming a variety of models of distance learning, in which online learning is a model that has been vigorously promoted in the field of education at the current stage. With the popularization of online learning, the most critical point is

to make effective use of all aspects of data and information in online learning, and make accurate and reasonable evaluation of students'learning behavior, so as to better guide students' online learning, and also to promote the overall quality of online learning. Online learning behavior evaluation system, through the collection and processing of learning online learning information, can judge the dynamic of students'online learning, and improve students' self-control of online learning, as well as teachers'teaching methods, plays a very important guiding role. Its ultimate goal is to fully mobilize students'enthusiasm for online learning, improve the overall quality of online learning, and promote the healthy development of the whole educational cause, based on the characteristics of learning behavior.

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