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A Study on the Correlation between Online Teaching Content and Student Learning Effectiveness in Adult Education

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Abstract: Online learning for adult education students has become a major learning method, which is easy to organize and facilitate learning activities, and is popular among adult education students. Conducting research on online learning for adult education students can improve their learning quality and better meet their learning needs. Research suggests that the positive correlation between teachers and students gradually increases during the initial learning phase, and then enters a stable period of positive correlation; By increasing the consideration of online teachers' investment in tutoring time and strengthening the guidance and evaluation of online teachers' behavior, the impact on students' learning outcomes will be better.

Keywords: Correlation, Online Teaching Content, Student Learning Effectiveness, Adult Education

1. INTRODUCTION

Adult education is currently an important form of education in China, playing an important role in improving the quality of the people and enhancing the literacy of workers. With the advancement of information technology, smart education has become increasingly popular due to its characteristics of easy organization and easy learning activities. Online learning for adult education students has become a major learning method. Conducting research on online learning for adult education students can improve their learning quality and better meet their learning needs.

The behavior of online education teachers differs from that of traditional face-to-face courses, mainly manifested in differences in interaction methods. As a successful example of online education, the "tutoring for distance learning: a Teacher's Handbook" written by Open University in the UK points out that the quality of open and distance learning is influenced by many factors, including: "whether there are tutors and whether they are always responsive to learners' needs and provide clear and timely evaluation of learners' homework.

This study uses a certain art public elective course on a domestic MOOCO platform as the data source to desensitize personal basic information such as students' names and student numbers. Each individual is identified by a number, mainly analyzing the learning situation of students during the spring and autumn pandemic in 2020. Subsequently, data cleaning is carried out to remove noise data that is missing or incomplete in the learning process. Finally, effective records are selected. Based on the specific manifestations of online courses, big data analysis, video analysis, and tool analysis methods are used to record and analyze the behavior data of teachers and teaching objects. The data analysis and research objects are teachers' speech, activities, teaching objects' speech, practice, and meaningless behavior, focusing on 13 teacher behaviors and 11 teaching object behaviors, As a behavioral object for behavioral sequence analysis.

Through a survey of adult education students, it was found that the number of suitable daily hours for online learning is 31.18%, with "2 hours per day" accounting for the highest proportion among all options. The most favored daily duration of online learning for students is 2 hours, which may be since adult education students are all on-the-job learners, requiring a lot of energy to handle various tasks such as work and family. The daily learning duration of 2 hours can not only ensure the completion of learning tasks, but also comprehensively coordinate work and family affairs. The interaction between teachers and students is an important component of interaction. Swedish scholar Holmberg proposed in 1985 that teachers have two major teaching functions in online education. One of them is to achieve teacher-student interaction and provide learning support services to students through various two-way communication mechanisms during their learning. The average number of times is 16.8, with a standard deviation of 17.8.

2. THE PROPOSED METHODOLOGY

2.1 A survey on the current situation of online learning among adult education students

15.24% of students have not checked in once, and nearly half of them have checked in less than or equal to 10 times (48.57%). Based on the minimum time required to complete all videos of 867.95 minutes, students who have signed in 10 times need to study for nearly an hour and a half each time to achieve full progress. The issue of fewer check-in times and higher video completion progress warnings is whether students have been studying diligently for a long time after each check-in or have been playing videos and doing other things after check-in (commonly known as brushing classes). Since the platform does not record the duration of watching videos for students each time they log in to the platform, it is necessary to find the answer to this question from other aspects. The autumn data shows that the range of check-in times is 0-60, with an average of 21.55. The proportion of students who have not checked in is less, and the proportion of full marks is more. After comparison, students are less active in check-in during the epidemic period.

The online teaching behavior analysis model system constructed for the project is based on the teaching data analysis model of Carnegie Mellon University in the United States. By following the "Na ï veBayesianModel" data analysis technology as support, a ternary analysis system for online teaching data has been planned and developed, which includes three major parts: teaching behavior association mining, technical supported teaching mode analysis, and teaching mode and learning effectiveness analysis. Among them, teaching behavior association mining is the basis of online teaching data analysis system, which is mainly aimed at mining and analyzing teaching data, video data, browsing data, perception data and other data in the teaching process. Through the data analysis set component HPCA, the solution-oriented labeling tool RapidMiner, and the big data learning and analysis tool MapReduce, they are associated with the next module. The analysis of teaching modes supported by technology is the core of the system, mainly focusing on the analysis of the correlation and impact situation with various teaching contents under different teaching modes supported by technology

According to a survey of students' homework assignments and grading methods during online learning, 65.54% of them were found to have "teachers publish assignments on the platform and make online evaluations after completion", while 40.45% were found to have "teachers publish assignments on the platform and the platform automatically evaluates them after completion". Currently, adult education students' online learning homework assignments are mostly posted by teachers on the platform, requiring students to complete them. Then, the teachers make online corrections and provide grades, and students can check the homework correction results at any time. Based on the availability of data, this study comprehensively selected a course offered by Beijing Open University in the autumn semester of 2016 in the field of preschool education, involving 210 students. Excluding two students who registered for the course but did not participate in the study, the effective number of students was 208. There are 6 classes and 6 teachers. The behavior data of students and teachers comes from the backend data of the learning platform.

2.2 A correlation model between teacher behavior and student learning outcomes

The behavior data of teachers includes: the number of login times of teachers, the online time of teachers' courses, the number of on time replies from teachers (including the number of on time replies within 6 hours, the number of on time replies within 12 hours, the number of on time replies within 24 hours, and the number of on time replies within 48 hours), the number of replies from teachers, and the number of feedback words from teachers on student assignments. Among all the selected students for the 2020 spring course, 82.18% of students did not post discussions, 66.8% of students did not reply to discussions, and only 12.38% of students both posted and replied to discussions. The maximum number of published discussions is 33, with an average of 6.62; The maximum number of replies and discussions is 83, with an average of 15.89.

The above data indicates that most students did not complete assignments and chapter quizzes in a timely manner and did not actively participate in discussions. However, the overall level of completed tasks was relatively high. There are a total of 13 teachers teaching this course, and there are significant differences in the teaching methods of these teachers, which are reflected in: knowledge teaching as the focus, practical demonstration as the main focus, heuristic teaching as the main focus, and guiding reflection as the main focus. The teaching method mainly based on knowledge teaching focuses on content explanation and blackboard writing, while the teaching method mainly based on practical demonstration focuses on courseware demonstration and guidance, The teaching method based on heuristic teaching focuses on questioning and assigning tasks, while the teaching method based on guiding reflection focuses on evaluation, activity organization, and management.

According to a survey of students' main problems with online learning, 28.69% believed that they were not proficient in using learning platforms, learning software, etc., 27.81% believed that poor internet access prevented smooth learning, and 27.21% believed that there was a lack of interaction in online learning and delayed feedback on learning issues. Data shows that the difficulties faced by adult education students in online learning mainly include inadequate use of learning platforms and software, poor internet access, lack of interaction in online learning, and a lack of learning atmosphere in online teaching. These difficulties affect students' learning effectiveness and hinder the improvement of their learning quality. Does the level of feedback from teachers affect students' online time, thereby affecting their posting and ultimately affecting their grades?

Taking the four assignments in this course as an example, Table 5 shows that as the assignments progress, especially to assignments 3 and 4, the teacher's feedback level (reflected in the number of feedback words) is related to the number of text clicks (r=0.155, r=0.170), number of text visits (r=0.183, r=0.178) There is a correlation between the number of multiple posts (r=0.138, r=0.207), the online time on the student platform (r=0.149, r=0.201), and the number of course launches (r=2.214, r=0.300) that students have completed the required posts. From this, the level of feedback from teachers on student assignments will affect students' access to learning texts, and online learning time will also be correspondingly extended. The quality of posts will be improved by posting again to improve grades.

Therefore, assuming H2 is established, the level of feedback from teachers has a significant impact on students' learning outcomes. Whether students actively participate in discussions can reflect their learning level. During the epidemic, students' enthusiasm for participating in discussions decreased, and most students did not post or reply to discussions, which indirectly indicates that students' learning engagement is insufficient. The data shows that the more discussions and replies posted, the more likely it is to receive high scores for mid-term assignments and final grades. Therefore, teachers can organize students to have a discussion every time they complete a video learning, which can include personal insights and doubts about the video. The collision of thinking between students is more conducive to learning.

3. CONCLUSION

Conduct research and analysis on the relationship between teaching technology application behavior and students' understanding and explore and analyze the correlation between teaching behavior and students' learning outcomes. The research results show that data analysis can reveal the teaching phenomena and teaching mode characteristics of the online course in preschool education, providing theoretical support for the future optimization and improvement of online teaching in this course. At the same time, it also has reference value for online teaching of other technical practice courses in preschool education. A comprehensive understanding of the

current situation and difficulties faced by adult education students in some in terms of their willingness to accept online learning, teaching methods, and targeted policy recommendations can optimize teaching effectiveness, solve problems in adult education students' online learning, and ensure the smooth progress of online learning.

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