Research on methods of personalized English teaching promoted by Big Data teaching platform

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Abstract. In the reform and development of modern education, the integration and use of big data education platform to build and promote personalized English teaching system can not only reflect the teaching concept of individualized teaching, but also fully meet the learning needs of different groups of students at different stages. On the basis of understanding the development of big data technology and the research status of personalized English teaching, this paper uses fuzzy control centralized algorithm to improve the recommendation mechanism of English teaching system, so that students can choose suitable professional teachers according to their own needs. At the same time, after drawing students' learning portraits, the portrait technology is used to evaluate students' passing rate. This provides an effective basis for the practice of personalized English teaching guidance. The final experimental results prove that the design of the whole system meets the personalized needs of the student users, and in the future technology research and development, we should pay attention to the design of functional services from the perspective of professional teachers.

Keywords: Big data; Teaching platform; Personalization; Teaching English

1. Introducion

After decades of reform and innovation, computer, mobile terminal, big data and other technologies have developed rapidly, resulting in more and more data information, and China has gradually become the world's largest data producer. In this context, the basic theories and technical methods in the field of education have changed, gradually changing from macro to micro, from the whole to the individual, how to meet the learning needs of each student, is the main issue of modern education innovation. According to the analysis of the Report on the Next Scientific Research Frontier of Big Data released by the American think tank, data is the most critical element condition in human production and life. In the field of education, when developing and designing the education platform and basic functions, it is necessary to have an in-depth understanding of the content behind the data and truly understand students' thoughts and learning needs. Only in this way can the big data education platform better promote personalized English teaching. From the perspective of the application of big data technology in recent years, it has the following characteristics: First, the computing speed is fast. In the process of software and hardware technology update and development, how to quickly obtain data in the big data system has become a new problem for scientific research. Take the MYSQL database advocated by Ali Group as an example, its storage capacity can gradually rise from hundreds of millions to trillions and millions of billions. No matter where the user is looking for any data information, only the relevant contents stored in the database can be obtained in a short time. Secondly, it contains many kinds. The classification of data in the database is very strange, most of which originate from different language structures in different time and space environments. These data information can be interpreted by computer recognition, and can be divided into text, pictures, audio, video and other forms. Big data is enriched and iterated every day, so the operation of the database system will be updated all the time, with the ability of self-calculation and self-learning. Finally, self-actualization. Big data can automatically analyze and judge the data types and main contents required by users according to their usage habits and basic needs, and use scientific algorithms of artificial intelligence to mine and sort data information, so as to form a big data system of intelligent operation. In the process of personalized English teaching innovation and promotion in recent years,

although the effect of practical education has not met the expected requirements, personalized education management has unique advantages under the support of massive data information. With the comprehensive development of big data technology and Internet technology, personalized English teaching has become a possibility.[1-3]

Nowadays, personalized teaching has formed a relatively complete educational theory, which refers to mastering the corresponding technical methods on the basis of learning and applying specific topics. From the perspective of modern English teaching, personalized teaching can produce positive teaching effects, especially after the integration and application of big data technology platform, which can not only ensure the accuracy of practical teaching, but also guide the personalized development of students. Since all behaviors of students in English teaching activities can be converted into relevant data, which is also the core element of practical education evaluation and analysis, big data technology can effectively process various data information, and evaluate students' learning ability and learning process by means of data modeling and data analysis and comparison, so as to predict the future development trend of students. Develop targeted teaching programs to improve the level of individualized English teaching. This paper mainly studies how to use the big data teaching platform to promote personalized English teaching, and puts forward effective countermeasures according to the practical teaching application, so as to provide effective basis for English education reform.

2. Method

2.1 Requirement Analysis

To build a big data system platform based on personalized English teaching, the application model as shown in Figure 1 below should be built：[4-6]
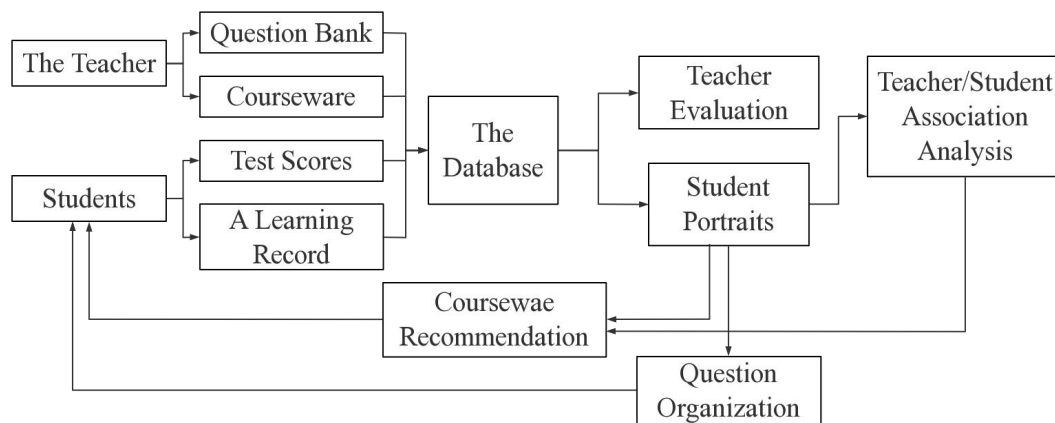

Figure 1 Application pattern structure diagram of the system

By analyzing the structure of the figure above, it can be seen that there are four core data sources, the first is the knowledge topic bank, the second is the knowledge courseware, the third is the knowledge score, and the last is the students' browsing courseware data. The four data sources are pooled into the database to focus on evaluating the teaching situation of teachers and students, conduct correlation evaluation according to the focus of the learning courseware and the learning performance, and finally recommend the learning courseware and professional teachers with higher matching degree for students, and recommend the test questions according to their learning level and learning direction.[7-10]

The core of the whole system is to build a matching model according to teachers and students, so as to provide professional English teachers with higher matching degree for students' learning. The overall model contains the following judgment criteria: First, obtain the relevant knowledge points and scores of each test question from the examination score records participated by students, and then analyze the students' learning time in this knowledge point and the number of courseware, and

then upload it to professional teachers; Secondly, if a student spends less time studying a certain knowledge point than other knowledge points and gets a lower score than other knowledge points, the number of recommended questions for this kind of knowledge should be increased. Thirdly, if a student studies a certain knowledge point for a longer time than other knowledge points and scores lower than other knowledge points, the correlation index of students to the relevant courseware teacher will continue to decline, and they will think that the courseware compiled by the teacher is not in line with students' learning habits, and then recommend the professional courseware with higher correlation to them. Finally, if a student learns a certain knowledge point for a shorter time than other knowledge points and gets a higher score than other knowledge points, then the student's correlation index to the relevant courseware teacher will continue to rise, and he thinks that the courseware compiled by this teacher is in line with students' learning habits, and then increases the number of recommended courseware compiled by this teacher.

2.2 Teacher Recommendation

According to the above analysis, the data input of the professional English teacher recommendation model is shown in Table 1 and Table 2 below:

Table 1 Students' learning data

Data source	Data Type	Primary key	Link
Student id	Text string	Yes	Basic Student Data Sheet
Courseware id	Text string	No	The courseware table
Upload the teacher id	Text string	No	Teacher Basic Data Sheet
Study time	date-time	No	---
Knowledge point id	Text string	No	Knowledge point preset table

Table 2 Test data of students

Among them, students' learning data is mainly used to construct two links, one is the link between students and knowledge point learning cost, the other is the link between students, knowledge point and teacher. The test data of students is mainly used to construct the link of students' mastery of knowledge points. According to the analysis of the application requirements of the teacher recommendation model, the selection strategy of fuzzy matrix in this study can enable students to choose more appropriate teachers to learn English knowledge according to the matching degree, so as to improve their own learning efficiency.[11-13]

2.3 Student Portrait

This model is divided into two parts, one is the front portrait, the other is the background portrait. The former is mainly convenient for students to quickly understand their own knowledge points, can significantly reflect the change of students' learning, and is more convenient and effective than the traditional examination score evaluation method; The latter should use the internal functions of the system to match students' knowledge points, so as to achieve personalized recommended learning objectives. Combined with the background portrait data structure analysis shown in Figure 2 below, we can see that we should pay attention to studying students' current learning time in different knowledge points, test and analyze score data, and correctly describe students' learning times and other basic information.
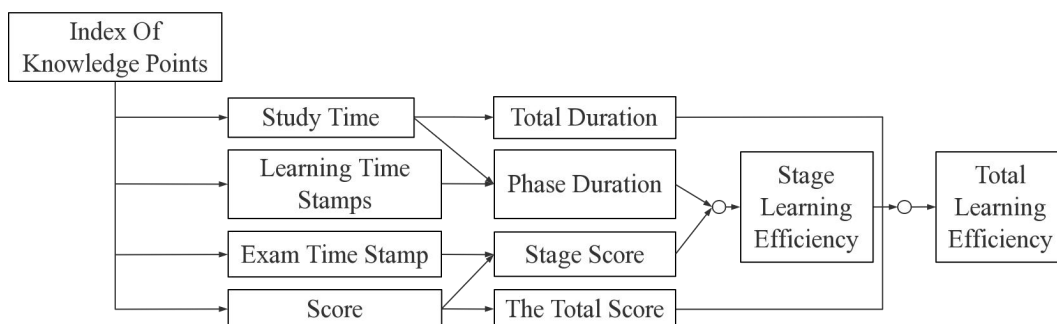
Figure 2 Background portrait data structure diagram

3. Result analysis

3.1 Experimental Test

This paper conducts test analysis in a small scope, serving a total of 3275 student customers and 182 professional English teachers, focusing on the analysis of the software's impact on the passing rate of students and the actual exam passing rate, clarifying the matching degree between professional teachers and students, as well as the subjective evaluation of teachers and students on the software. The final experimental results show that the shortest use time of all the students participating in the test is 398 hours, the longest use time is 2193 hours, and the average learning time is controlled within 1293 ± 109 hours. Among the student users, the number of students taking CET-4 accounted for 31.4%, CET-6 accounted for 13.4%, TEM-8 accounted for 3.1%, IELTS accounted for 1.3%, and TOEFL accounted for 1.2%. This experimental result proves that the actual passing rate of students is higher than the value predicted by the software, and the system is more conservative in predicting the passing rate of students. From the perspective of professional English teacher users, among the 65 courseware submissions, they can ensure that they are recommended at least 10 pieces every day, 15 of them have more than 7,000 pieces of recommendation, and the professional teacher with the highest amount of recommendation has more than 210,000 pieces of recommendation every day. This proves that in this recommendation mode, excellent teachers who have been screened account for 7.1% of the total number of teachers, and the recommendation results of the platform software for professional teachers are in line with the head effect.[14-15]

According to the objective evaluation results of students and teachers as shown in Table 3 below, 1 star represents the lowest and 5 star represents the highest. Among them, the evaluation of student users is much higher than that of teacher users, because the system software is designed to provide services for students, and student users have obtained excellent service experience in the system software. Therefore, in future technological research and innovation, researchers should shift the focus of personalized English teaching platform service design to professional teachers and pay attention to providing high-quality service functions according to their teaching needs.

Table 3 Analysis of user evaluation results

Compare the items	N	Five stars	Four stars	Three stars	Two stars	1 star.
Student users	3275	1927(58.8)	924(28.2)	323(9.9)	85(2.6)	16(0.5)
Teacher users.	182	32(17.6)	57(31.3)	65(35.7)	19(10.4)	9(0.5)
Note: The number of stars is expressed as the number of users (percentage)						

3.2 Effective Measures

To promote personalized English teaching under the platform of big data teaching, we should start from the following points: First, we should build a diversified teaching evaluation system, pay

attention to the individual differences shown by students during the study period, pay attention to the analysis and evaluation of students from multiple perspectives and levels, so that students can have a positive interest in English learning after showing and choosing their own interests freely; Secondly, it is necessary to develop a personalized English teaching model, integrate the use of network technology and computer technology to achieve auxiliary teaching, gradually break through the traditional education management mode, let students choose English knowledge according to their own learning ability and interests, create a high-quality network education environment, establish confidence in learning; Finally, it puts forward personalized English teaching objectives. As the basis for the implementation of practical activities, teaching objectives should not only fully consider the learning differences of each student, but also get rid of the restrictions of professional textbooks and teaching syllabuses, pay attention to the development of teaching objectives according to each student's learning ability and learning needs, and create diversified problem situations, so that each student can experience the fun of personalized English learning. Have a broader space for learning and development.

Conclusion

To sum up, in the development of modern education reform, faced with the influence caused by big data thinking technology, Chinese education departments based on the big data teaching platform, put forward a personalized English teaching method, so as to transform the traditional education concepts and speed up the pace of English teaching development. Therefore, both English teachers and students should participate in personalized English teaching activities independently, gradually expand their own thinking awareness and professional ability, and truly realize the practical significance of personalized English teaching in the era of big data.

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