Exploring the Application of Web-based Teaching Platform for Big Data Teaching

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Abstract. Big Data” has existed for some time in various industries such as military, finance and communication, but has attracted attention because of the development of Internet and information industry in recent years. With the extensive development of big data applications has increased the demand for talents, and the number of big data training courses has increased. Due to the unique content of big data teaching, it can be appropriate to teach big data through network teaching platform, so this paper explores the application of big data teaching based on network teaching platform for big data teaching.

Keywords: Big Data Network Teaching Platform, Educational Information Technology, Functions

1. Introduction

Big data is a new technology that is rapidly developing after cloud computing, Internet of Things and mobile Internet, and has become a hot spot for educational teaching reform in colleges and universities. Using big data technology can better characterize heterogeneous data and parse data, which can analyze a lot of valuable knowledge and build a knowledge base of student behavior that sets retrieval, calculation and analysis. Through data mining and intelligent analysis, students' learning dynamics can be grasped in time and their learning process, learning effect and learning ability can be assessed comprehensively. The combination of online teaching platform and big data teaching is like a match made in heaven, and it is a far-reaching practice for this course to add the two together for teaching.

2. Background of generation

Overview of Big Data Network Teaching With the advent of the Internet era, as a new communication method, the Internet enables people to communicate easily and quickly from thousands of miles away.
At the same time, it is a convenient tool that allows foreign language learners to use it to apply and learn the language and communicate with the applicants of the target language. The great development of information technology, especially the development of network technology, has promoted the creation of network teaching, which can maximize the teaching space and greatly enrich the teaching methods by using big data network teaching. Theoretically speaking, it expands and extends the project-based teaching method that emerged in the 1970s. In recent years, along with the expansion of Internet applications, networked teaching has gradually become the mainstream of language education. The WebQuest, developed by Bernie Dodge and Tom March at San Diego State University, is a collaborative web-based project-based teaching model. This teaching model makes up for the shortcomings of traditional teaching models and is an important area for future teaching development and reform [1,2].

2.1. Definition

Analyzed in a broad sense, big data network teaching refers to the hardware equipment and information system that support network teaching. Analyzed in a narrow sense, it is a collective term for software systems that use the network as a channel to provide services for curriculum education based on information network. In order to give full play to the role of big data network teaching, teachers must ensure the integrity of the following systems, the most representative of which is the online course development system.

2.2. Features

One of them is autonomy. Simply put, because the online education platform is richer in resources, students have more room to choose, based on preferences to choose the instructor, learning content, textbook resources, reference materials and so on. Independent learning is often more time-sensitive than passive learning, which not only helps cultivate students' independent learning ability, but also cultivates good learning habits. Second, interactivity. This feature is specifically reflected in the information exchange between students, teachers and students, learning and platform. Influenced by the traditional education ideology, classroom teaching is often in the state of teachers teaching students to listen, the main position of students is not shown, the quality of teaching can be imagined. With the help of big data network teaching, students can communicate with their preferred teachers face to face, and teachers can also adjust the education plan according to students' learning feedback, which effectively improves the effectiveness of education. At the same time, group members can communicate with each other anytime and anywhere, which effectively brings students closer to each other and provides a better channel for students to show their learning achievements. Third, personalization. The implementation of big data network teaching can provide a high-quality channel for teachers and students to learn and communicate, and students can choose their learning courses according to their learning time and personal learning situation, which completely circumvents the problem of obvious differences in learning in group classes[3].

3. Evaluation of existing big data web-based teaching

From the characteristics of the technical discipline of information itself, in line with the principle of availability and simplicity. The big data network teaching can not only inherit all the advantages of the courseware, but also solve the shortcomings of the common network courseware in the use, generally
as follows: First, it can realize the expansion from classroom teaching to extra-curricular teaching, so that network teaching and distance learning can become a useful supplement to classroom teaching, and the teaching space is no longer limited to the classroom and the school. Second, in the network teaching, can effectively monitor the heavy activities, to understand the process of student learning, the teacher does not have to worry about whether learning can not find the direction in the network courseware, resulting in the impact of the teaching effect. Third, the integration of this discipline is considered systematically by the general of the course. Fourth, it allows the teacher to be detached from the heavy work of courseware production, and can really put the role of teaching design as the core content of education as well as teaching. Fifth, based on the existing integration concept, the network teaching as a useful supplement to classroom teaching, can be an excellent reflection of the teacher-led role and the main role of students.

4. The design of big data teaching service platform

4.1. Platform architecture model design.

Cloud terminal layer: It mainly pushes the cloud services required by users to different cloud terminals. Cloud terminals mainly include Pc machines, mobile terminals, intelligent terminals, etc. By establishing a unified teaching one-stop service center to provide teachers and students with convenient and fast cloud services. The cloud services for teachers and students mainly include information portal services, unified identity authentication services, teaching video resources, online teaching resources and electronic reading and distance education, etc. The cloud terminal layer provides various personalized cloud services for end users in the cloud, and learners can access the required cloud services conveniently with different cloud terminals. The inter-campus and university ask to establish private cloud, hybrid cloud and public cloud according to different authority requirements to effectively guarantee the security access authority of cloud resources[4].

4.2. Platform big data processing process.

Big data processing process is usually multiple data integration (BDP), data processing, visualization and analysis, and report analysis. It is mainly divided into four steps: data source collection, data extraction and storage, data analysis, and data display. Its function is to extract a large number of heterogeneous data sources using appropriate tools, store the results according to defined standards, use different data analysis methods according to different types of data, analyze the stored data to extract valuable knowledge from them, and use different presentation methods such as visualization to push the results to end users. The results are pushed to the end-users using different presentation methods such as visualization. We collect and organize many related information, such as information on academic performance, information on e-reading, information on participation in competitions and awards, information on clubs and information on life. Data extraction and storage: According to different data sources, different data extraction methods are adopted. For the data of well-structured information system, the usual tools are used to extract the data into the database; for unstructured data such as web pages, courseware and videos, the data are indexed and stored into the database through data crawling to form a distributed database. Data analysis: Realize statistical analysis of students' learning behavior data. In the analysis of learning behavior ability, the first is collaborative screening, which calculates the similarity between students by analyzing the grades, club activities participated in, industries of concern and personality characteristics of classified students in the knowledge base,
and recommends suitable learning programs for similar students; the second is clustering, which analyzes students of different categories through different dimensions, finds similarities among them, and then compares related attributes to give timely and scientific and reasonable suggestions for The second is clustering, which analyzes different categories of students through different dimensions, finds similarities, and then compares related attributes to give timely scientific and reasonable suggestions for different students so that they can improve in their subsequent study and life. Data display: Data results can be displayed and pushed through visualization techniques, Tableau and other software can be used to visualize the analysis results, and by combining data with beautiful charts, teachers and students can understand the data analysis results more intuitively and conveniently [5,6].

4.3. Functions and deployment of the platform.

The big data teaching service platform takes "sharing data, analyzing data, and terminal service" as the guiding ideology to provide convenient and unified terminal cloud service for all school districts in colleges and universities. The platform provides the basic data required for sharing among school departments and the analysis data required for each application service, as well as the development data required for each application system. The deployment of big data teaching platform based on cloud computing is as follows: establish a resource pool based on virtualization, build a virtualized cluster system of servers, storage, network and other hardware resources, build a cluster in the data cluster system for deployment, and establish a big data teaching cluster environment based on cloud computing. Big data teaching cluster environment, each running on an independent JVM, and interacting with information through heartbeat signals. The platform mainly adopts high-density blade servers to achieve rapid deployment and scheduling of virtual machines.

On the basis of traditional Oracle database, we apply big data distributed storage components such as HIVE and I-IDFS to support the mainstream distributed storage system Gluster. big data platform provides cloud-based platform mainly including unified authentication service, platform cloud computing scientific research platform, cloud computing experiment platform, cloud computing teaching and evaluation platform, cloud computing resource platform, interactive communication platform, etc. . The foundation platform enables the construction of diverse and personalized application systems. The cloud computing scientific research platform includes big data parallel computing system, shared collaborative scientific research system and scientific research management system, etc.; the online reservation experiment system includes experiment reservation system, web virtual online Q&A system and online communication community, etc.

The cloud terminal desktop that supports expansion can replace the traditional Pc computer. It can meet the teaching needs of traditional public basic courses such as computer and also complete personalized stand-alone experimental courses of professional experiments and other courses. The cloud terminal provides a variety of diverse and personalized application services for end learners, and learners can directly access the required application services using PC browsers and mobile terminals. Different end-users between campuses and colleges set different permissions to apply for services on demand [7-9].

5. The Application of Big Data Web-based Teaching and Learning Educational Information Technology
The advantages of network teaching are extremely obvious. Compared with the traditional teaching mode, online teaching can better reflect the main position of students. The fun nature of online teaching is well known, and it can effectively stimulate students' learning autonomy, making them learn actively and proactively. Moreover, most of the current school education in China is large class teaching, with large class size, limited space, heavy teaching tasks and other factors, which greatly limit the interaction between teachers and students. In the network teaching mode, this defect is completely corrected, and "two-way" interaction can be carried out in all teaching links, and it is not restricted by time and space. In addition, online teaching helps to share educational resources and balance regional differences. In the current situation of unbalanced distribution of educational resources, the sharing of resources can be realized through the network, so that students in remote areas can also get excellent educational resources and first-class teaching resources can serve more people who need them.

At present, domestic and foreign educators use the rapidly developing multimedia and international Internet technologies to build up various uses and characteristics of big data network teaching and carry out network teaching activities. In China, all kinds of big data network teaching and various teaching resource websites of various subjects have emerged like a spring. According to the Technical Specification for the Construction of Educational Resources, the information resources that can be built in China at present mainly include 9 categories, which are: media materials (also including text, graphics/images, audio, video and animation), test libraries, test papers, courseware and network courseware, case The following categories are available: media materials (also including text/graphics/images, audio, video and animation), test banks, test papers, courseware and web-based courseware, cases, literature, FAQs, resource index and web-based courses. In addition, other types of resources, such as e-books, tools and software, and movies, can be added according to actual needs [10].

First, it is applied in teaching management. The functions in this area mainly include school management, teacher management (including classroom teacher management), student management, parent management, curriculum management and so on. Among them, teacher management includes functions such as teacher lesson plan, remote teaching, wholesale assignments, grade assessment, and grade entry. Big Data Network Teaching supports numerous learning activities in the network environment, such as teacher-student forum, online practice or courseware download, online question and answer, electronic reading, video on demand and assignment submission and online test, etc. The popular reversed classroom model in China is to use microlearning, computer software and online platforms to complete independent learning of concepts and related knowledge before class, and then internalize the knowledge and improve the ability through group cooperation, guided demonstration and application expansion in class. Take a school as an example, since the application of big data network teaching, teachers and students on campus have enjoyed the service of high-quality educational resources. A total of 52,310 students and 5,874 teachers have been served through the online classroom and resource platform. In addition, the school is raising funds to expand its smart campus to include school management, security monitoring, recording classrooms, innovation labs, digital libraries, electronic reading rooms, and digital function rooms, with the aim of promoting integrated and comprehensive development of education [11,12].
Next is the online testing function. The exercises on the teaching platform are in a lively and fun form, and secondly, the big data network teaching has powerful online exercises and online materials. Students no longer feel that learning is boring and tedious. Some exercises are even presented in the form of games or competitions, and students have fun PK among themselves. The better the homework is completed, the stronger the combat power, which increases students' confidence and motivation to do well in homework, forming a virtuous circle and cultivating students' cooperative learning ability. The testing function of big data network teaching is incomparable to the traditional teaching mode. As mentioned above, the current school education in China is basically a large class size, and the task of correcting test papers for each examination is huge, thus causing the problems of few tests and untimely correction. Considering this problem, in order to effectively improve the efficiency of retake classes and exams, a school took the lead in applying a new model of online course learning and computer-based exams, and implemented a new retake online teaching with the help of the Unipus platform and the testing section of the University Foreign Language Testing and Training System. Students can access the iTEST online training system from multiple clients with one account, which truly realizes multi-terminal learning and not only improves the effectiveness of teaching, but also lays a solid foundation for the networked English retake teaching. In the test of the online platform, teachers can select questions and set test periods according to the actual situation of students, or even teachers can assign homework in the form of assignments for students to arrange their own time after class. The platform can automatically mark and grade the test, and can count the scores of each question, give the correct answers and analyze the reasons for errors. Teachers can use the score analysis icons to understand each student's performance and learn about each student's learning status, thus giving highly targeted advice and help. And students can guide their performance and problems in the shortest possible time, either by asking questions directly online, which can be answered by the teacher, or by discussing with each other to solve the problems [13,14].

Finally, big data online teaching maximizes the sharing of resources. Teachers can both download excellent teaching designs, model lesson cases, courseware, videos and micro lessons, etc. from the teaching platform or subject websites, which reduces the burden of lesson preparation. They can also discuss the confusion and problems they encounter in their daily teaching work, exchange different opinions and views, and find the best way to solve problems. In addition, the implementation of the network platform teaching process should be unified resource standards, management standards, user standards, service standards, in order to completely break the "information silos", to lay a solid foundation for the realization of digital education resources. In the process of applying the platform to teaching, teachers should consciously abide by the service standards of the online learning space, and provide educational services for students while innovating the form and content of services. In the practical work of teaching, they should give full play to the ability of the management mechanism, take diversified resource services as the main goal, vigorously engage in teaching and research, and comprehensively promote development.

6. Conclusion

The analysis of big data is already well known, and big data is no longer simply a matter of big data, but the most important reality is to analyze big data, and only through analysis can we obtain a lot of intelligent, in-depth and valuable information. Then more and more applications involve big data, and the properties of these big data, including the number, speed, diversity, etc. are presented with the
growing complexity of big data, so the analysis method of big data is particularly important in the field of big data, which can be said to be the decisive factor to decide whether the final information is valuable or not. With the support of the online teaching platform, the quality of big data teaching will definitely go to another level.

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