Development Research on Management System of University Teaching Resources Based on Cloud Computing

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Abstract: The construction of teaching resources includes the construction of teaching management information system, which is an important part of education informatization. With the rapid development of modern computer technology, the construction of university information education resources has become an important means to promote the teaching efficiency. The emergence of cloud computing also provides a new platform for teaching management information system, which is more suitable for the future development trend. This paper summarizes cloud computing, and analyses the necessity, feasibility and key points of developing information-based teaching resources under cloud computing environment, which can provide some references for relevant researchers.

1. Introduction

With the development of information technology, more and more computer equipment and electronic equipment are interconnected. In this case, overloading makes it very difficult for the Internet to operate. How to deal with the data and information on the Internet safely and effectively is very important and also a very difficult challenge. In order to adapt to this new situation and meet the needs of the development of information technology, a new Internet Computing model, namely cloud computing, has come into being. It takes distributed computer as the basis to solve these complicated data problems. Cloud computing is connected through the network, which can provide users with data operation, storage and processing services, and can collect, process and utilize user data [1]. In addition, cloud storage technology is also included to support resource sharing. Compared with the previous data storage, it is more convenient to operate and more secure. Because the data collection and storage process is not carried out at a computer terminal, but in the cloud, without connecting with the server, users can complete the data storage operation in a short time, without worrying about data loss, even if the computer fails, the data will be stored intact in the cloud. Cloud computing technology has brought opportunities for the construction of university teaching resources sharing platform. As a new information technology service mode, cloud computing can fully share computing resources, storage resources and data resources in different places through the network. Cloud computing can not only provide storage space, super computing power and a variety of ubiquitous access to teaching software for the vast amount of teaching resources in universities, but also reduce the cost of teaching resources construction by the on-demand payment mode of cloud computing. Therefore, the development of university teaching resources system based on cloud computing management is the trend of the development of education industry [2].

2. Necessity and Feasibility of Management System Development of University Teaching Resources Based on Cloud Computing

2.1 Necessity.

Universities are building digital teaching resources platform, spending a lot of manpower, material and financial resources, and the construction of the platform needs continuous trial operation, to a certain extent, affecting student's learning. The platform data built by universities are stored in a

certain capacity database, not distributed storage. When the amount of access is large, the response of the platform is slow, the interaction with users is slow, and the amount of data stored increases. The storage capacity of database is becoming insufficient. When the university educational administration system logs in at the end of the term, it will be unable to login or withdraw automatically in the course of operation, which is caused by insufficient resources. At present, the digital teaching resources platform of each university is built by the universities themselves. The data format is not uniform, the database is not uniform, the information is difficult to integrate, and the platform data cannot be shared. At present, many of the resources in some university teaching resources platforms are outdated or obsolete, and need to be replaced, and most of the digital platforms have fewer student visits, and the utilization rate of resources is not high. Some universities do not have dedicated personnel to maintain and manage the resources because of financial reasons. There are problems such as errors in resource access and update. For example, some high-quality courses in higher vocational colleges are hardly updated once the construction is completed, and some are even more directly inaccessible. Under cloud computing, the storage of information-based teaching resources in Kunming University has been improved. There are essential differences between the general storage of information-based teaching resources in Kunming University based on cloud computing. In addition to storage on local servers, it can also be stored on virtual servers, that is to say, there is a cloud. In this way, data can also have enough storage space, information-based teaching resources have the ability to expand, completely breaking through the capacity and computing capacity constraints [3].

2.2 Feasibility.

Under the cloud computing technology, universities can minimize the investment in the construction of information-based teaching resources. Only a small number of management terminals and equipment are needed. Others can be accessed to the cloud. Users can share various teaching resources through cloud storage, which reduces the financial pressure of university and saves some expenses. With the continuous development of modern network technology, teaching activities need network more and more, and cannot be separated from network more and more. Network has also brought very porTable services to teaching activities, especially with the use of cloud computing, the dependence of teaching activities on computer systems has gradually weakened, and the requirements for hardware performance are not high. As long as it has general functions, access devices can operate normally, very convenient, and not subject to the limitations of time and place, everything can be carried out relying on the cloud. In this way, the use of teaching resources can be more universal and extensive, so as to get rid of the traditional fixed teaching time and fixed classroom teaching activities to make everything handy. The establishment of information-based teaching resource bank in universities can make daily teaching activities more convenient. However, due to the difference in the level of investment and development of teaching resources in different university, the allocation of information resources among different departments and colleges is unbalanced. And each department has its own characteristics of teaching resources, which exist independently. It is difficult to realize resource sharing and effective utilization. In the cloud computing environment, teaching resources can be shared between university, departments and departments, and between departments and colleges to achieve the purpose of complementary advantages, which is of great significance for the optimization and integration of teaching resources and the improvement of resource utilization. With the help of these teaching resources, the quality of teaching has been continuously improved, resulting in new and better resources. Teachers can also enrich the content of teaching resources in the process of using [4].

3. Key Points of Management System Development of University Teaching Resources Based on Cloud Computing

3.1 A Complete Overall Architectural Design.

A Teaching resource management platform under cloud computing mode is divided into five parts: data source, distributed teaching resource storage center, data mining analysis, data resource access interface and data resource utilization. The platform integrates all kinds of scattered teaching resources to form a cloud of teaching resources within the university, which can provide high-quality service for teachers and students and teaching management. In order to speed up the development and utilization of cloud computing technology teaching resources, deepen the theoretical research on the integration of cloud computing technology and teaching resources, establish a special teaching resources development organization, concentrate on educational technology, computer technology, subject teachers and other forces, joint tackling key problems, develop high-quality and effective cloud computing courses, to meet the needs of social information. At the same time, we should establish incentive mechanism to encourage teachers to actively use the teaching resources of cloud computing platform, actively explore the new teaching mode of applying cloud computing service platform, vigorously promote the use of educational information resources based on cloud platform, and further improve the teaching level. Based on the teaching cloud center, all the teaching resources of universities are organized into one network node, and the teaching resources management platform under the cloud computing mode. The unstructured data are stored in the distributed teaching resource storage center through data acquisition, filtering, cleaning and conversion mechanism to form the teaching resource center of the university. It can be accessed by different users of university through data resource access interface. The teaching resource management under cloud computing mode can organically integrate the scattered teaching resources, scattered management and services, scattered facilities and operation and maintenance, and form a teaching resource management platform that conforms to the characteristics of the Internet, thus responding to the requirements of university teaching reform.

3.3 A Basic Cloud Computing Platform.

The construction of cloud computing resource base is the direction of teaching resource construction in all kinds of colleges and universities. According to the characteristics of education, we should establish a cloud computing-centered remote teaching information resource base to serve education. Distance teaching information resource database should be classified according to the subject at first, and it should have content that reflects the characteristics of the subject and suits the teaching requirements. Secondly, it should be classified according to the types of resources. Because the resources in the cloud computing teaching resource database are rich and complex, each kind of resources should be defined, classified, described and managed. Teaching resources can be divided into the following categories according to the types of resources. Media materials are all kinds of information materials which disseminate the basic content of teaching information. Including text material, graphics material, audio material, video material, animation material, software material and so on. The test database contains a typical set of test questions for various types of tests in various disciplines and disciplines, as well as the test papers over the years, which include not only the test materials for academic qualifications examination, but also the test questions for vocational training and vocational qualification examination. Courseware and curriculum resources are relatively complete in the teaching process, the collection of education and teaching software of various disciplines and categories. It includes teaching PPT, teaching video and other resources, as well as quality courses, special courses, micro-courses and so on. The teaching plan includes many kinds of collections of lesson preparation plans of various disciplines and categories, including various formats. Other materials include literature, answers to common questions, index of resource catalogue and various supporting textbooks. The results of various teaching research and curriculum development methods are theoretical research results that can guide students and teachers to study

and develop.

3.4 An Open Teaching Resource Pool.

In order to collect all kinds of rich and high-quality teaching resources and realize the sharing of teaching resources in our university and the whole country, it is necessary to store high-quality teaching resources in the form of multimedia, digital information and application software in the cloud computing data platform and build a unified teaching resources cloud platform. Through cloud computing platform, teaching resources are presented in different ways, providing learners with appropriate information forms, and providing teachers with multimedia and information technology materials for curriculum development. At the same time, cloud platform should have abundant functions to meet the needs of teachers and students, especially the functions of distance learning, online tutoring, online question answering, online experiments, online training and online examination exercises. The various functions of cloud computing service platform are also convenient, fast, simple, easy to learn, and even anyone can learn to operate and use it. It is humanized, convenient for teachers and students to use it, and can be used at any time to realize the sharing of educational resources on the whole platform, so that a large number of educational information resources can be used and play a huge role in education and teaching. Cloud computing education and teaching resources service platform can not only provide users with a number of ways and means of use, but also provide related application software, which can be re-developed. Teachers can select the appropriate teaching resources information and design new teaching resources according to their own teaching purposes.

3.5 An Interactive Teaching Management Model.

With the development of Internet information technology and the popularization and application of mobile internet intelligent terminals, the means for students to acquire knowledge and exchange information become more and more convenient and intelligent. Traditional multimedia teaching methods cannot meet the requirements of the current teaching situation. An important extension of Internet thinking is to provide a classroom form based on the interaction between teachers and students. Its innovation lies in supporting multi-form teaching classes. It not only supports inculcating teaching classes and interactive classes between teachers and students, but also provides a student-centered reverse classroom through the teaching resource management platform under the cloud computing mode, which provides the current university. The urgently needed interconnected teaching environment is a good promotion for the reform of teaching ideas and the innovation of teaching methods. In addition, the teaching resource management platform under cloud computing mode uses advanced interconnected teaching thinking to solve the problems of less interactive means and rigid interactive mode in the current teaching process. It not only provides the interactive function of traditional classroom teaching, but also realizes the interaction of advanced teaching and learning methods such as topic linkage, group discussion, interactive answer, special speech, learning evaluation, review guidance and team cooperation between teachers and students through the traditional Internet and mobile Internet. Management and Service Ecosphere provides managers with such business management and service means as teaching resource management, electronic timeTable management, attendance management, asset management, message notification service, classroom management, teaching evaluation, operation and maintenance service, and large data analysis. It also establishes convenient, intelligent, high-level and Internet-based management around the whole process of teaching and the whole process. Physiological ecosphere.

4. Conclusion

With the development of education and information technology, universities are facing the problems of developing and utilizing high-quality teaching resources, as well as the constraints of personnel training and teaching mode. This paper puts forward the idea of constructing teaching resources management platform under cloud computing mode, which plays a very good role in the

application and sharing of teaching resources. The platform can reflect the characteristics of educational informatization and social progress, and can meet the requirements of the development planning of teaching resources system.

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