Teaching and Application Research of Cloud Computing Technology

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Abstract: Under the background of the era of big data and cloud computing, the traditional education and teaching mode of colleges and universities is difficult to adapt now, and the traditional education and teaching mode of colleges and universities is facing unprecedented severe challenges and very feasible development opportunities. To improve the education in colleges and universities teaching gradually transition to digital, intelligent, modernization, this article fully write the big data influence on many aspects of education teaching work in colleges and universities, promote the education career and big data, all-round, multi-angle combination of cloud computing technology, in order to promote the overall level of higher education teaching, for the stability of the era of large data, cloud computing on lay a solid talent base.

1. Introduction

Cloud computing is a pattern of adding, using, and delivering internet-related capabilities, using the Internet and its virtualized resources. The so-called cloud, in the topology diagram represents the telecommunications network, and in the cloud computing represents the Internet and the corresponding underlying infrastructure. At present, the professional field have multiple claims to the concept of cloud computing, which for most people is approved by the American institute of technology and national standard: the definition of cloud computing is a use them to pay mode, this mode can provide users with use, convenient, on-demand network access, enter the configurable network resources Shared pool, able to quickly retrieve the resource needed, and minimal input on the management side, or very few interactions with operators. The foundation of cloud computing technology is virtualization. However, virtualization is only a part of cloud computing technology. Specifically, cloud computing is actually the application of several resource pools to obtain information resources on the basis of virtualization. Virtualization is the foundation of cloud computing technology and the underlying infrastructure for designing cloud computing. More than one logical computer program can be run in one technology at a time, and each logical computer program can run a different operating system and do its own work through these applications without interfering with each other, thus increasing the speed at which the computer can process data. The application of virtualization technology and cloud computing technology can more flexibly respond to the technology needs of a variety of industries.

Modern 4g, 5g and other communication technologies, the rapid development of computer, big data, cloud computing and other information technologies, continue to promote the arrival of the era of big data, cloud computing. At the same time, the era of big data and cloud computing also provides a steady stream of internal power for the large-scale transformation of the information technology industry, which has a deeper and deeper impact on the daily life, work and study of modern people. In recent years, with the growing maturity of big data and cloud computing, the state has classified it as one of the national key construction projects and introduced several supporting policies. The development of big data and cloud computing industries cannot be separated from high-level, high-quality technical and applied talents. As the main battlefield for the cultivation of reserve talents in the socialist modernization drive, colleges and universities shoulder

the major task of cultivating excellent talents for the society and the country.

2. Cloud Computing Concept

2.1 Cloud Computing Definition

Cloud computing is defined as a pattern of use, increase, and interaction of related services on the Internet. It can also be understood as a resource platform for network exchange virtualization. "Cloud" is just a symbol, representing the meaning of network, Internet and system. Although modern society there are as many as thousands of kinds of definition of cloud computing, but the most authoritative and widely accepted is the U.S. national research technology: the definition of cloud computing is a kind of according to the usage to calculate the cost of network resource sharing model, this model gives people can use, convenient, the network access space, information resource sharing computer in cyberspace, the network information resources can accurately and quickly by Internet users to explore and link, only a small amount of network management and network service providers can be achieved. Since the birth of cloud computing, the application sharing service of this kind of network resources has swept the world.

2.2 Cloud Computing Features

Cloud computing has an important computing distribution feature, which is mainly accomplished by using distributed computing functions on distributed computers. Some public institutions, colleges and universities, and cloud computing network operation mode and the mode of the Internet, make the information needs of departments and units will be required for these information resources needed to switch to the application on the device, according to their own needs further access computer and storage equipment, processing of this application sharing as commodity circulation and management.

The network service of cloud computing has already had quite large scale, network server alone has as many as 1 million, do not include the server of some department, unit and enterprise, the number of "cloud" is tens of thousands.

Cloud computing is a virtual computing service through the network. As long as it is within the reach of the network, users can use cloud computing related services in any location and field. At the same time, countless network resources on the cloud can be shared by users without worrying about the location of the resources. As a result, the information network technology has been able to achieve the ability of a computer or mobile phone to achieve all the service requirements, even many large super service projects.

Cloud computing is an application-oriented concept of Shared and compatible computing. In the field of cloud computing, one cloud computing can support many different applications at the same time.

3. The Significance of Big Data Technology and Cloud Computing Technology to the Reform of Teaching and Education Methods in Colleges and Universities

3.1 Big Data Technology, Cloud Computing Technology to Promote the Pace of Higher Education and Teaching Reform Deepening

Big data technology and cloud computing technology provide a solid guarantee for the improvement of talent training quality. Under the background of the era of big data technology and cloud computing technology, the level of open sharing of information resources has been greatly improved, and the frequency and depth of contact between a series of employing institutions such as colleges and universities and social enterprises have been continuously improved. Colleges and universities can have a more comprehensive understanding of the basic requirements of employing units on talent cultivation. Then, in the most timely adjustment of colleges and universities of science related personnel training plan, training plan, and substantive changes to upgrade to the education teaching content, using university-enterprise cooperation, integration production and

education, such as teaching mode, more targeted for the enterprise training high level talents, promote the quality of talent cultivation, talent training efficiency of substantial growth. At the same time, big data technology and cloud computing technology provide a good development platform for the modernization and internationalization of education. The popularity of new teaching methods such as MOOC and micro-lessons is rapidly increasing. In the process of promoting the open sharing of educational resources, traditional education concepts are constantly changing.

3.2 Analysis on the Challenges of Big Data Technology and Cloud Computing Technology to the Reform of Higher Education

Big data technology and cloud computing technology pose severe challenges to the teaching and education reform in colleges and universities. On the basis of the traditional education and teaching model, teachers have long played the role of main lecturers of courses. Students are relatively passive in this process, and teachers play an obvious leading role. However, under the influence of big data technology and cloud computing technology, the role play of teachers has changed, from the teacher of courses and the dominant role in class, to the leader of students' learning ability, knowledge and skills, the organizer of education and teaching activities, and the partner of students in learning various subjects. Thus it can be seen that the traditional unitary teaching concept has been difficult to adapt to the basic requirements of modern teaching in the era of big data technology and cloud computing technology, and the teaching concept, knowledge coverage and knowledge structure of teachers are in urgent need of upgrading and updating. To form a good situation of teaching students in accordance with their aptitude and taking students as the fundamental, to learn to tap the advantages of students, to build a kind of education and teaching system to improve and make up for differences. It can be seen that big data technology and cloud computing technology are challenging the education and teaching work of colleges and universities.

4. Cloud Computing Teaching Platform Architecture for Software Engineering Courses Based on Flipped Classroom

Teachers in order to improve the teaching efficiency, often in some tasks assigned students before or after class, such as watching video to preview before class, after class to class to teach or simulation training and test some of the content, in addition to this, the teacher will for follow-up investigation of the students' learning, student achievement evaluation, and carries on the communication between teachers and students, the operation of these matters is inseparable from the network teaching platform. Generally speaking, we divide the cloud computing teaching platform into three levels according to the types of services, including:

Infrastructure services layer, the layer by a computer, memory, and some network infrastructure, database and other virtualization resources will of hardware equipment and other infrastructure services for users, this layer in the core position in the whole teaching of cloud computing platform, through virtualization resources for flip class cloud computing platform computing, storage, network and so on according to the individual needs of dynamic cloud application infrastructure services, one of the biggest characteristic is to be able to let the user dynamic application or release nodes, carried out in accordance with the usage for billing.

Platform as a service level has made a further abstraction to resources, based on the infrastructure services layer, the layer will use some specific programming environment, according to some programming model, to manage the dynamic extension and fault-tolerant resources, that is to say, can provide a good environment for the development of software project support, and development tools support, make the software project supported by special environment, enables the work to proceed smoothly. This level is a software development resources and virtual teaching resources for the construction of the interface, to be able to use a distributed computing environment and a large quantity of storage environment to provide technical support, database system and other information systems such as resources, in addition, you can also use the online open platform the operating system and application development environment using the Web form

to provide support for teachers or students.

Teaching resources application service layer, the layer in the previous two, is the link between teachers, students and cloud computing service of a layer, in this level, some specific software functions will be represented in the document, the purpose is to provide teachers and students with some of the key development documentation, software testing and video broadcast services such as support, teachers and students are not limited by time and space.

The cloud computing teaching platform of software engineering course based on flipped classroom is generally divided into public cloud and private cloud. In general, the public cloud platform can provide a common operating environment and network teaching functions, so students do not have to build their own, which saves costs to some extent. However, the public cloud is not ideal in that users cannot transfer teaching resources to the platform in the form of code, which limits the play of cloud computing platform functions. Only by combining the public cloud with the private cloud, can the cloud computing teaching platform play its role to the maximum and show its own personalized characteristics.

5. University Digital Education Resources Cloud Service Platform Architecture

5.1 A Hierarchy

There are three types of digital education management platform structure: management layer, business layer and user access layer. First, it mainly includes user management, security management, task management, system management and resource management modules. Its main function is to the real information for identification and management of registered users, use the user's information security, as well as the overall efficient and effective resource service, the platform release of task scheduling, managing its life cycle, maintaining the network infrastructure and the use of Internet resources maintenance, the network virtual resource dispatching and so on. Second, main security using basic needs of users, to provide customers with various teaching resources, and coordinate education work, the use of tools, including supporting software and education services, for the use of the user to create a clean environment and high quality teaching software, the integration of all the teaching resources unified management, spending students learning exchanges and assessment tools, etc. Third, it mainly integrates various services involved in the management of digital education in colleges and universities, encapsulates them in a unified standard, pushes all kinds of required data to users based on Web services, makes the user experience transparent, and realizes instant and efficient resource data analysis interface and information sharing.

5.2 Platform Function

The realization of digital education platform can effectively build efficient storage and system service management, user management, resources management and teaching software services and a variety of functions such as resource evaluation platform based on Internet technologies, cloud computing and the close together union of college education, user data upload of cloud computing through its function of calculation and data analysis in the college education resources of knowledge in different areas of the reorganization, screening and classification, analysis from the perspective of learners, targeted to carry out the education resource utilization, and to realize intelligent, high-quality, comprehensive, rich digital education management platform construction goal of colleges and universities.

Summary

Modernization belongs to the information age, so education must be in line with conform to the trend of The Times, to meet the needs of students for learning. At that time, the information age is also a double-edged sword, only reasonable and scientific use of information teaching methods, in order to use it, so that the quality of teaching has a qualitative leap. Comprehensive the above content, this paper discusses the information technology combined with utilities in teaching class, to

give the students present new form of teaching, hoping to help the education workers to better understand the depth of the fusion of information technology and subject teaching value and significance, better use of in practice teaching, create a better teaching result.

All in all, the teaching resources integration based on cloud computing, belong to the age of the Internet under the background of one of the key measures of comprehensive training of university talents, more can help teachers build a platform of Internet teaching effectively. In addition, many in between teachers and students of teaching resources, and also can make sure that the rapid sharing between universities and colleges and enterprises, which make the teaching resource utilization is the comprehensive promotion, eventually to promote the overall education reform in colleges and universities more smoothly.

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