Research on the Construction and Operation of Professional Teaching Resources Based on Cloud Technology

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Abstract: With the continuous development of modern science and technology, the application of cloud technology is becoming more and more common, which plays a very important role in the construction of teaching resources. Based on this, this paper briefly expounds the problems existing in the construction of professional teaching resources, analyzes the construction of professional teaching resources based on cloud technology, and points out the role of cloud technology in the operation of professional teaching resources.

1. The Present Situation of Specialized Teaching Resources Construction

The education resource bank was introduced into China by the United States in 1994, and then set off a wave of construction of the teaching resource bank. In recent years, the infrastructure of the teaching resource bank has become more and more perfect, but the construction of teaching resources still has the problem of non-standard, the network teaching mode only stays in the form, and the degree of education informatization is not high. To this end, the author combines their own experience, put forward the following thinking.

In the cloud technology has not appeared, the previous professional teaching resources in the construction and practical use of many technical problems, more difficult. First of all, the sharing of hardware facilities can not be realized, and colleges and universities have invested a lot of manpower, material resources and financial resources in the process of information construction, but because they can not realize the sharing, the utilization rate of information infrastructure is particularly small, and some schools may not even reach 50%. Secondly, the repeated construction of campus resources. The resources of teaching are only used for school personnel, and it is difficult for other school users to use or share, and most schools reflect the situation of resource duplication. Third, the management and maintenance of resources is not highly professional, failed to form a unified standard. The teaching resources of each university are independent of each other, and special personnel maintenance equipment is arranged, and the professional quality of some maintenance workers is not high enough to give full play to the function of the teaching resource bank, as shown in figure 1. Fourth, the level of intelligence is not high, the interactive and personalized service is seriously inadequate, if you want to provide a higher level, personalized, digital teaching resources services, but also need to create software and hardware platform for the audience. Finally, the interfaces between systems of each resource base are different, so the security of resources is not high, it is not easy to extend, and it is impossible to achieve wide access, so it is difficult to deal with these problems by using the existing technology [1].

Figure 1 Information islanding in traditional mode

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2. Construction of Professional Teaching Resources Based on Cloud Technology

2.1 Overall structure analysis

The construction of professional teaching resources based on cloud technology can expand the scale according to the actual needs. The storage space of the platform is especially large, and there is also the technical guarantee and maintenance of the professional team, and the safety of use is high. The user can use the terminal device to get the required data and share it with other users. Because cloud technology has the characteristics of sharing, openness, and can cross platforms and devices, it lays a good foundation for the sharing of data resources. For the professional teaching resource base, cloud technology is a transformation technology, only by changing the external environment and internal environment of the resource base, can the development of cloud service be promoted. The construction of professional teaching resources based on cloud technology should be integrated into the server, cloud platform and technology equipment in the cloud, and the management platform should be used to centrally manage the cloud management platform to provide corresponding services to the client. The application of cloud technology in the resource bank can enrich the service resources, reduce the waste of human and material resources, pay more attention to the teaching resources or lack and share, which means the need to provide experiential services, can be integrated to adopt aggregation technology, creators technology and SMS platform construction, etc. to provide users with better service. construction of the user layer. Users use radio mobile devices and are able to share digital classroom anytime, anywhere. In the context of cloud technology, the teaching resource base needs to have the ability to establish archives, according to the characteristics and preferences of users when using the resource base to search, to create personalized use platform and work log for users, and to record, organize and analyze these behaviors to provide humanized services.

2.2 Function of professional teaching resources

In order to ensure the smooth operation of the professional teaching resource base, it is necessary to further strengthen the management, such as the management of the media material library, the management of the courseware library, the management of the FAQ database and the management of the literature database, etc. In addition, it is necessary to strengthen the management of users on the cloud service platform, performance management, security management, charge management and fault management, etc.

2.3 Cloud service deployment of professional teaching resources

The professional teaching resource based on cloud technology construction is a platform of resource sharing, which needs to adopt the mode of cloud service to carry on the deployment work, the pattern diagram is shown in figure 2. With the support of cloud service mode, the teaching resource base mainly plays the function of storing and managing the teaching resources, mainly has the norm of making the resource information, connecting the network of other teaching resources, and ensuring the resource sharing on this basis. Colleges and universities can obtain the cloud services provided by the resource bank at any time and anywhere according to their actual needs, and make scientific deployment of different service nodes and management platforms in the campus according to their own needs, so as to ensure that the resource bank can operate independently in the campus network [2].

Figure 2 Cloud deployment pattern map

2.4 Technical standards for professional teaching resources

According to the technical specification of the construction stipulated by the Ministry of Education, the teaching resources can be divided into the following important components: examination papers, test questions, case studies, courseware, media material, network courses, resource index and question solving, etc. In the whole teaching resources, the media material base is the main component, and it is also the basis of the teaching resources. You can combine different courseware, test questions database and knowledge with your different courseware to create network courses. For any repository, an index module is required to facilitate data access, browsing, and access.

3. The role of Cloud Technology in the Operation of Professional Teaching Resources

By analyzing the practical application of college education system, the infrastructure of cloud technology can be divided into three categories: public cloud, private cloud and mixed cloud. Cloud computing facilities are mainly composed of software resources and hardware resources, the former mainly includes all kinds of software, programming tools and system software applied during school office and teaching, while the latter mainly includes network equipment, computer equipment and storage equipment. Using the cloud operating system can integrate the resources scattered in the background to manage together, can provide standard, unified service.

3.1 The role of public clouds

The public cloud belongs to one kind of computing model. The service providers of cloud services use the Internet to combine storage resources, application resources and computing power resources to serve various organizations. Enterprises do not need to purchase, install, operate or operate servers and equipment related to operations, but simply pay the standard for the actual computing resources. For users, the application of such computing models is more convenient and flexible, and the cost of public cloud use is lower than that of previous data centers or private clouds.

The public cloud can provide specific services to multiple schools at the same time, and can realize the sharing of teaching resources. Because the public cloud needs to integrate the teaching resources of various colleges and universities together, the government departments should play their own role, actively coordinate the interests of relevant parties, and ensure the smooth construction of cloud platform [3].

During the construction of the professional teaching resource bank, the service providers who choose the public cloud need not only to consider the quality, brand operation and the safety of use, but also to consider whether the public cloud service providers understand the educational characteristics of the school, and it is best to choose the public cloud providers who have experience in the construction of the teaching resource bank.

Because the public cloud is in the cloud, both software and hardware, colleges and universities have no way to control the operation of the public cloud. If the cloud stores sensitive information data, there is no guarantee that it will not be leaked, which is the biggest deficiency of the public cloud, and it is also the most concerned problem in the specific application of colleges and universities.

3.2 Role of private cloud

The private cloud is also called the internal cloud, which refers to the data model created by using cloud technology as a foundation. In essence, private cloud refers to all-round application simulation technology, at present, the main form of cloud computing used in some colleges and universities is the internal cloud.

Its disadvantages are that the cost is higher than that of the public cloud, and it needs to invest more money in the cost of the early stage, the cost of use and the cost of operation and maintenance management. The construction and use of the private cloud requires sufficient financial support, and there is a higher demand for technology and manpower. Using the private cloud, colleges and

universities can use the private cloud to transfer the key data of the school in the internal network, to process the data on the private cloud, and to store the relevant information in the private cloud, thus improving the safety factor of the sensitive information.

Therefore, if the public cloud and the private cloud can be used organically to form a mixed cloud, the sensitive information can be stored on the private cloud, and the price remaining auxiliary information can be stored on the public cloud, which can ensure the effectiveness of the construction of professional teaching resources based on cloud technology and give full play to the proper value of the teaching resource bank [4], Fig .3 is a schematic diagram of the mixed cloud.

Figure 3 Schematic diagram of a mixed cloud

4. Conclusion

To sum up, at present, there are still many problems in the construction of professional teaching resources, such as the inability to realize the sharing of hardware facilities, the repeated construction of campus resources, the low level of intelligence and the poor security of resources, and so on. In the construction of professional teaching resources, it is necessary to give full play to the application value of cloud technology, improve the internal and external environment of the resource base, realize the sharing of data resources, combine the public cloud with the private cloud organically, and provide standard and unified services.

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