Application Research on Higher Vocational College Higher Mathematics Network Teaching Platform Combined with Computer in the Cloud Computing Era

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Abstract. Higher vocational colleges are the place to cultivate talents. In addition to a group of excellent teachers, the school also needs a large number of advanced teaching equipment resources, including hardware facilities and software resources. However, higher vocational colleges are different from ordinary enterprises. They are not for profit, and they are often not as fast as enterprises in equipment updating. At present, most of the teaching equipment in higher vocational colleges is old and aging, the laboratory is scarce, the computer hardware and software can not keep up with the development of the times, the projector pixel is low, the distribution of teaching resources is uneven. With "cloud computing", the network and equipment of the school can be developed in an all-round, sound and fast way, It is easy to connect the server and client in the network into a database. At the same time, this technology can be applied to the teaching of advanced mathematics. It can effectively combine the comprehensive and quick methods.

Keywords: Cloud Computing, Higher Vocational Colleges, Higher Mathematics Teaching

1. The current situation of higher mathematics network teaching in higher vocational colleges

With the continuous development of Internet technology, higher vocational colleges, which focus on training high-tech application-oriented talents, pay more attention to modern teaching concept, actively promote network information teaching and increase the construction of network teaching resources in human, material and financial resources. However, due to the large gap between public vocational colleges and private higher vocational colleges in terms of school running scale and capital investment, there are some problems in higher vocational colleges, such as unbalanced education development level and unbalanced network resource allocation [1]. The lag of higher mathematics network teaching information construction in private higher vocational colleges and the serious shortage of higher mathematics network teaching resources aggravate the gap in teaching level and teaching quality between private higher vocational colleges and ordinary colleges and universities.

In particular, the eastern developed public higher vocational colleges have a large amount of funds to support the investment in higher mathematics network teaching, even excessive investment,
resulting in a waste of funds. However, under the development mode of higher mathematics network teaching, the network teaching construction of Higher Vocational Colleges develops in isolation, and the sharing degree of teaching resources is low, resulting in the information island of teaching resources and hindering the development of network teaching of higher mathematics (Figure 1).

Figure 1. Cloud computing and multiparty collaboration.

2. Advantages of cloud computing in network teaching of higher mathematics in higher vocational colleges
Cloud technology is a service mode based on Internet. Through the integration of cloud technology, various training resources and environment in higher mathematics teaching practice platform of higher vocational colleges can be constructed from the Internet to make it auxiliary teaching. In the use process, through cloud technology, the data generated in the experiment can be recorded and analyzed accordingly [2].

The use of cloud technology can realize the integrated management of infrastructure platform and software, fully integrate and utilize resources such as memory and Internet, and provide the best teaching resources for teachers and students. The higher mathematics teaching platform based on cloud technology can save a lot of hardware purchase cost and human resource cost due to facility update. Cloud Computing supports normal access of hardware equipment with lower configuration. In addition, cloud computing can reduce the dependence on high-performance hardware equipment. In order to save the investment of Higher Vocational Colleges in this respect, the college can also expand by purchasing a part of low-end hardware equipment. Thus, the application of cloud technology can save a huge amount of hardware facilities purchase cost for higher vocational colleges.

3. System design of cloud computing advanced mathematics network teaching platform
Give full play to the characteristics of cloud computing, so that higher mathematics network teaching platform has more powerful interactive teaching function, more abundant teaching resources and comprehensive management function [3]. In the design of the new higher mathematics network teaching platform, we mainly complete the design of interactive link module, resource sharing module and function management module, so as to truly realize the teaching interaction and personalized learning, and provide high-quality services for teachers and students (Figure 2).
3.1. Online self test function

The main functions of this module are: simulation test, result score and data analysis. First of all, students randomly select the advanced mathematics questions, dynamically generate the test interface, and display the answer time and the remaining time. Students can hand in the paper at any time within the specified time. If it exceeds the specified time, the system will hand in the paper automatically. Secondly, students can participate in answering questions not only by clicking the current order of the options, but also through the control buttons of each topic to freely choose the questions to answer. Finally, after the completion of the paper submission, you can check the scores, including the number of questions, the number of wrong questions, the correct rate and score, it can also compare the reference answers to analyze the causes of errors [4]. The design of this module realizes the function of real-time test.

3.2. Online communication function

This module provides an environment for communication at any time. Visitors can not only communicate with other learners according to the problems they encounter, but also consult teachers to make learning higher mathematics more relaxed and happy. In addition, it can also support the timely update of information board, timely release of course information, and access to useful new information. Through the link, the excellent resources outside the station are recommended to students to expand the scope of students’ learning resources. Online interaction breaks the limitation of region and time, and teachers and students from different regions can participate in it anytime, anywhere.

3.3. Resource sharing module

Massive teaching resources are stored in the teaching platform of advanced mathematics. For example: teaching courseware, teaching cases and electronic teaching materials, according to the needs of the project to divide the resource content, integrate resources, keep pace with the teaching link, not only can facilitate students to learn and review, but also can provide course content and download resources for students’ autonomous learning. If these resources are to be stored in the way of self built by the school, and can ensure the normal support of hardware equipment, network bandwidth, etc., it needs a large investment [5]. The era of cloud computing provides us with a new hardware construction mode, which can save the cost, share the resources of Higher Mathematics in a large range, and improve the utilization rate of resources.
3.4. Function management module

Cloud computing technology is applied to strengthen the system control and management of higher mathematics network teaching platform. As long as the browser is installed on the computer, any user can access the teaching management platform through the network. If there is no perfect management mechanism, illegal users can visit at will. Although the security requirements of the platform are not high, the basic information of teachers and students, teaching courseware and other private resources are not allowed to be maliciously disclosed and changed. In this way, it is very necessary to design the network teaching platform of advanced mathematics with a safe and reliable architecture mode, and ensure the data security. The important information of users is stored in the local database server. This control management mode is convenient for real-time monitoring the operation of each module function, setting all kinds of information as a whole, dynamically allocating software and hardware resources, and achieving effective resource balance (Figure 3).

![Figure 3. Application of cloud computing.](image)

4. Problems in the practice of network teaching of advanced mathematics

All operations in the cloud are carried out in the Internet environment. In order to enjoy the instant response speed and require high bandwidth, a large amount of money must be invested in the construction of network infrastructure for advanced mathematics. High performance servers, high-speed storage lines and 10 Gigabit communication have become an inevitable trend. Therefore, the first step of using cloud computing technology is to improve the network.

5. Conclusion

As a new service mode, cloud computing has gradually affected all aspects of people’s daily life. As a key part of digital campus construction, the rapid development of Higher Mathematics Network Teaching Platform in higher vocational colleges is consistent with the internal needs of the school. Combining the two, it is a new education mode to apply cloud computing to higher mathematics network teaching. In this mode, various unfavorable factors existing in the current education system have been solved [6]. At the same time, due to the sharing and reasonable distribution of educational resources in higher vocational colleges, the utilization rate of educational resources is greatly improved. With the advent of the cloud era, more and more people choose to study through the network. We have reason to believe that the network teaching platform of higher mathematics will get better development and be more widely used in teaching, and the network teaching work in Colleges and universities in the cloud era will also usher in new development opportunities.

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