Application of Network Curriculum Platform Based on Cloud Computing in Physical Education Teaching

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Abstract. With the rapid development of information courses, there are problems in the construction of educational resources, such as huge total resources, serious alienation of resource structure and weak sharing and application. Students are often lost of teaching resources. In order to use cloud computing technology to build a network curriculum resource sharing platform, which can realize the physical education, suitable for college students' cooperative learning and achieve better physical education teaching results.

Keywords: Cloud computing · Network courses · Resource sharing · Physical education

1 Introduction

With the construction of a series of network courses such as excellent courses, excellent resource sharing courses and excellent video open courses widely carried out by the Ministry of education, various colleges and universities have widely carried out and built various forms of network courses, which provides a very good platform for students' autonomous learning. However, with the in-depth development of online courses, there are also problems such as repeated construction of curriculum resources in Colleges and universities, low utilization rate and difficult sharing of structural alienation, which hinder the development of educational modernization and are difficult to meet the increasing needs of students for online self-help learning. Based on the above problems, it is of great significance to build a fully open online course resource sharing platform [1].

Cloud computing technology has the characteristics of low cost, high efficiency and can deal with massive resources. It is very suitable to be used as the sharing platform of network curriculum resources. The cloud platform can realize the effective construction and management of massive teaching resources. The realization of platform functions is placed in the cloud, which is conducive to give full play to the work efficiency of programmers and facilitate the use of users. In addition, cloud computing can minimize the cost of educational institutions to purchase equipment and independently develop

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systems [2]. Cloud computing has the characteristics of distribution, collaborative work, co construction and sharing. It is very suitable for students' personalized learning, independent inquiry learning, team cooperative learning and innovative practical learning, which are in line with the development of modern educational learning methods.

Sports has existed since ancient times, but it can develop rapidly only under the conditions of modern society. For nearly half a century, information technology based on Microelectronics has developed rapidly. The application of many new and advanced technologies, new technologies, new materials, new energy and biotechnology has brought mankind from the industrial society to the so-called "third direction" of the information society. This fundamental change has accelerated the development of social productive forces and the pace of working life [3]. On the one hand, it has brought more benefits and convenience to mankind, extended leisure time, greatly improved living conditions and lifestyle, and continuously improved the quality of life. On the other hand, due to the improvement of mechanization, electrification, automation and intelligence, as well as the tension in the workplace and home environment, the threat to health is becoming increasingly obvious. In the 1970s, the institutions of the United Nations Educational, scientific and cultural organization called for the provision of modern education for teachers to meet the needs and needs of society. "Good health, high morality, rich scientific and cultural knowledge." The level of physical education was recognized as one of the most important standards of "triple" training for the first time. This has greatly improved the important role of physical education in the education system and attracted the attention of sports. In addition, a series of reviews and reforms have been carried out on the content, teaching materials and teaching methods of physical education [4]. These include Japan's "sports for fun", the inclusion of sports textbooks into sports textbooks, research group teaching methods, etc. At a new starting point, we should improve the internal relationship between sports and personality shaping, guide physical education, promote physical and mental harmony and improve simple movement skills.

2 Related Work

2.1 Overview of Cloud Computing

It is a supercomputing mode. In the remote data service center, a large number of computers and servers are connected into a computer cloud, which can integrate computing, parallel computing and grid computing in the form of services Storage and video are provided to users by certain means, such as computers, notebooks, mobile phones, etc. [5]. Its computing power can be circulated as commodities, which is convenient to use and cheap. It is like the centralized power supply mode of power plants. From the above definition of cloud computing, we can get two meanings of cloud computing, that is, the infrastructure of building applications and cloud computing applications based on it.

The architecture of cloud computing is very large. Through the analysis of the existing cloud computing system, it can be regarded as a set of services. The basic architecture of cloud computing is shown in Fig. 1.

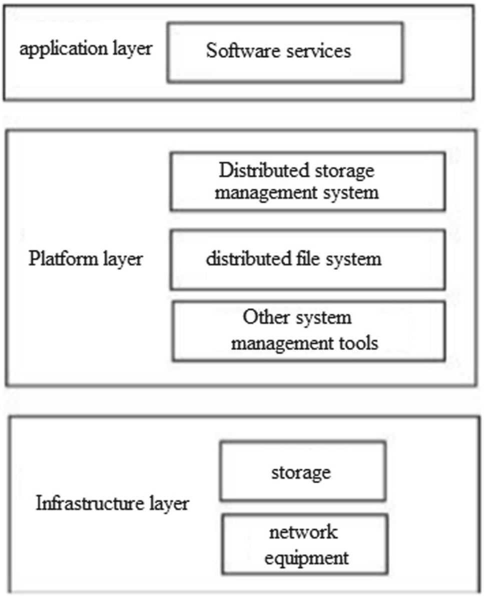

Fig. 1. Basic architecture of cloud computing

2.2 Shared Learning Mode Based on Cloud Computing

The traditional learning mode has not adapted to the rapid. The shared. This model makes full use of resource sharing and interactive communication to realize collaborative learning, reflect students' personalized development needs, and ensure learning activities that can effectively achieve teaching objectives. Cloud computing provides a platform support for collaborative learning [6]. Under this platform, students can easily share files, software, teaching content and other resources, and support online editing, user evaluation and learning resource sharing [7]. As shown in Fig. 2.

The shared learning mode based on cloud computing has the following typical characteristics:

(1) High efficiency and economy. Cloud computing technology can greatly reduce the cost of network course construction in Colleges and universities, especially the investment and maintenance cost of hardware equipment, and there is no need to arrange professionals to be responsible for maintenance. The software and hardware equipment of cloud computing are provided by a professional third party, which can ensure the efficient operation of the system. Therefore, cloud computing technology with high efficiency and low cost has obvious cost advantages.
(2) Collaboration and sharing. With the support of cloud computing technology, teacher users can cooperate to complete the development and construction of resources, and student users can also carry out distance cooperative learning. All users can share their high-quality resources on the cloud platform. The idea of cloud computing co construction and sharing of high-quality resources [8].

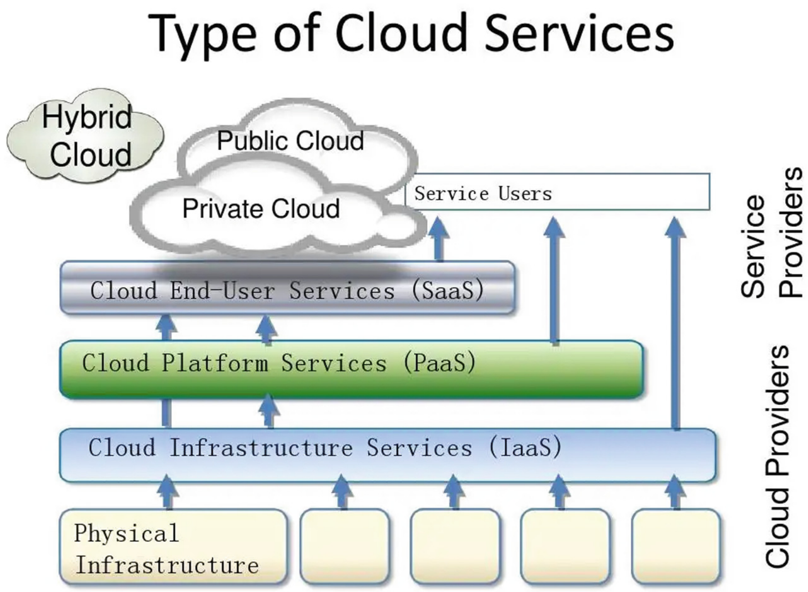

Fig. 2. Shared learning mode based on cloud computing

(3) Convenience and flexibility. Convenient operation. Users can use the high-quality resources and services provided by cloud computing without understanding the working principle and operation mechanism of cloud computing. Only a computer or smart phone that can connect to the Internet can obtain all the resources on the platform and enjoy various services provided by the platform.
(4) Energy saving and environmental protection. At present, the whole society is advocating energy conservation and environmental protection. The shared learning mode based on cloud computing has low requirements for equipment configuration and does not need the support of high energy consuming server equipment. It can not only help energy conservation and emission reduction, but also save costs. Users can enjoy the services brought by cloud computing only by terminal devices that can access the Internet.

3 Design and Implementation of Physical Education Resource Sharing Platform Based on Cloud Computing

3.1 Design Idea

The theoretical research and technical practice of foreign online course platforms are very rich. A considerable number of platforms adhere to the concept of open source software, open source code to users free of charge and absorb users to participate in the development of final products. After research and testing, the better ones are Sakai and blackboard in the United States, Moodle in Australia, bodington in the United Kingdom, atutor in Canada, and web CT, virtual-u, learning space, etc., which are called network teaching platforms. These platforms belong to the third generation of online course design products, in addition to providing learners with teaching materials through web pages, relevant educational network connections, and asynchronous two-way communication through e-mail, electronic bulletin boards, online exercises and measurements; It also realizes the function of synchronous two-way communication through online conversation room, teleconference, video conference or muds (Moos) system. Take Moodle in Australia for example, in moodle The official website of www.org has registered 171 countries and 21830 sites using the platform, including 3130 in the United States, 477 in Australia, 128 in Chinese Mainland, 305 in Taiwan, 46 in Hong Kong, 47 in Singapore and 240 in Japan. From this data, we can see the development of educational informatization application around the world, and it is enough to make us feel that there is a long way to go [9].

Based on the shared learning mode of cloud computing, puts forward the way of collaboration and sharing, the wisdom of users, makes teaching resources under the cloud platform, and develops a teaching resource sharing platform based on cloud computing under the guidance of this idea. The specific design ideas are as follows: first, the platform resources should be highly open and shared. Teachers and students can fully share and exchange, and jointly build and share curriculum resources. Secondly, the platform should fully reflect the service and efficiency. The platform must reflect the powerful resource management and service advantages of cloud computing and provide users with convenient, fast and efficient services. Finally, the platform should be able to support collaborative learning. At present, students like communication and interaction and are difficult to complete tasks alone. Therefore, the platform must provide interactive functions to facilitate the interaction between students, teachers and teaching resources, and run collaborative learning through the whole sharing platform.

The subject of physical education is students The effect of sports should be shown in students Students are highly malleable Every idea and link of physical education teaching directly affects the growth of students. The correct education for students lies not only in the fluidity of lateral muscles and muscle lines, but also in the healthy development of bones and organs.

The comprehensive sports system embodies the regularity and integrity of sports development.

Consistency: it shows the “consistency” of students’ physical development and the “consistency” of main organ development.

3.2 Architecture of Physical Education Resource Sharing Platform Based on Cloud Computing

Combined with the characteristics of B/S structure and cloud computing, this paper constructs the architecture of physical education resource sharing. The characteristic of B/S (Browser/Server Architecture) structure is to make full use of the browser to facilitate users’ operation and hand over cumbersome application programs, data calculation and task processing to the server. However, with the expansion of resource scale, it brings heavy pressure to the server, especially it is difficult to realize a large number of user interaction. Therefore, it is very necessary for us to build a physical combined with advanced cloud computing technology. As shown in Fig. 3, the platform is composed of presentation layer, the user uses the terminal device to send access request information to the cloud computing service pool through the browser [10]. The business layer is responsible for handling the business application logic of various teaching resource sharing platforms. The data layer is responsible for the unified storage and maintenance of data. The log and Statistics Center is responsible for data statistics, and distributed services run through the whole business layer and data layer.

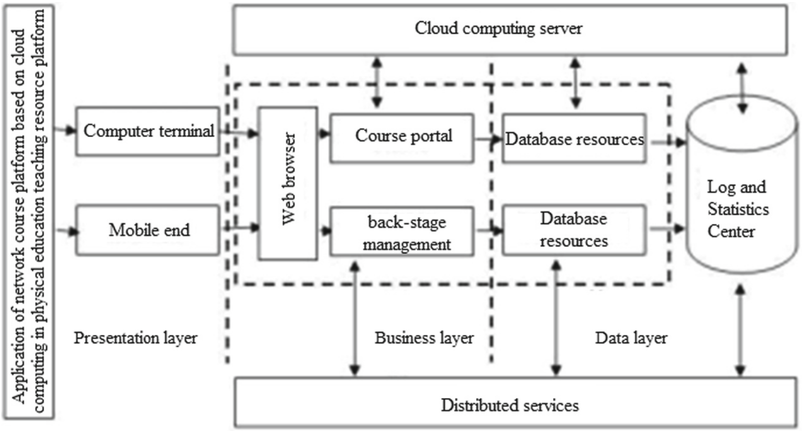

Fig. 3. Architecture of physical education resource sharing platform based on Cloud Computing

4 Application of Network Course in Physical Education

4.1 Pay Equal Attention to the Design of Teaching Content and Teaching Environment, and Give Full Play to the Potential of Teaching Resources

At present, in the process of making network courses, producers often invest more energy in the selection and design of teaching related contents, but do not consider enough in teaching design such as teaching situation, teaching organization and so on. Therefore, we cannot make full use of educational resources in the teaching process. Constructivists believe that knowledge is not obtained through teachers' education, but in a specific social and cultural environment, with the help of others, including teachers and learning partners. In the creative learning environment, curriculum design should not only consider the analysis of curriculum objectives, but also create an environment conducive to students' self-esteem, which is one of the important contents of curriculum design.Learning in the network environment requires learners to construct meaning more autonomously, so the creation of situation is particularly important. Online courses not only provide materials, but also cultivate students' ability of autonomous learning, affect students to become their own "teachers", change me to learn, so as to improve learning efficiency to a certain extent. At present, most online courses still emphasize "teaching", it emphasizes the teaching of knowledge, starts knowledge teaching as soon as you enter, and does not give a certain situational guidance. Some online courses are simple presentation of text teaching materials or teachers' speeches. Some courses are empty, do not make a unified plan for the whole course according to the teaching objectives, do not set up simulated real learning situations for learners, and lack some problems for learners to solve Practical problems can not fully reflect learners' initiative.

We should be good at making use of the attraction contained in sports activities, and multiply and enlarge this attraction through reasonable teaching organization. And the independent liberation of personality, so as to make interpersonal relations loose and harmonious, so that students can freely, carefree, and unknowingly obtain the healthy development of body and mind in a relaxed and lively environment and in a happy and cheerful mood.

The unity of physical and mental fitness in physical education teaching is reflected in three aspects:

First of all, when choosing sports textbooks, we should not only pay attention to the positive impact of these textbooks on students' physical conditions, different sports skills and different physical qualities, but also pay attention to the impact of these textbooks on students' psychology. We should work hard from the perspectives of psychology, aesthetics and sociology to make students have a good experience. When I finish the story, I can't help feeling the joy and joy of harmony, breathing, trend and success.

Second, the should focus on overcoming the continuous integration mode that reflects the sports lifestyle, so that students' activities are more free, happy and rich, so as to achieve the purpose of physical and mental harmony, both inside and outside.

In addition, we should also pay attention to changing students' physical exertion and mentality. In physical education and physical education, students engage in sports at the same time In the process of repeated exercise and rest, the changes of students' physiological functions have common regularity. In practice, physiological function began to change and the level of physiological function began to improve. To a certain extent, students' physiological functions change with the difference of waveform exercise and rest. Therefore, students' psychological activities (mainly thinking, emotion, attention and will) also have tendentiousness. The changing law of this form of physical and mental stress reflects the obvious rhythmic and harmonious physical and mental education.

Therefore, in the process of network curriculum construction, we should set up the curriculum from the social needs, and take people's self realization as the core of curriculum design: highlight the emotional basis of the curriculum, root the educational content and methods in the emotional soil, and emphasize the unity of emotional education and cognitive education; pay attention to the individuation of the curriculum, give full play to the main participation role of students and the educational function of the society; emphasize the diversity of the curriculum There are formal academic courses, social practice courses, self awakening courses and self-development courses; it emphasizes that teaching must start from the needs of learners, emphasize the importance of situational creation and collaborative learning, and put the learning goal on learners' problem-solving ability.

4.2 Give Full Play to the Autonomy of Participants and Enrich Learning Resources

Autonomous learning is a major feature of online education. Learners realize the separation of time and space of learning activities through autonomous learning. At present, online courses only reflect learners' own learning in autonomous learning, and do not provide them with all kinds of resources conducive to autonomous learning. Due to the wide range of network users, teachers may not be able to predict the original cognitive structure of online learners Structure and level. For a course, it is impossible to be encyclopedic, so we can only focus on the teaching of this course. In this way, it is difficult for learners who do not know much about the field, especially for some highly professional disciplines, who need an electronic library of relevant knowledge. For all learners, in When they want to check their learning effect, they need to provide a large number of relevant cases in the course, so that they can reconstruct their knowledge in the process of solving cases. However, most of the current network teaching systems do not fully support this aspect, which is not conducive to the full embodiment of learners' learning efficiency.

Therefore, we can learn from the popular and mature model on the Internet, regard the course users as builders at the same time, and take the resources and feelings sorted and accumulated by learners in the learning process as the related resources of the course, as shown in Fig. 4. This not only provides learners with a private space to preserve their learning experience, but also can be converted into course resources through certain technical means Realize the growth of experience system and enrich the content of relevant courses.

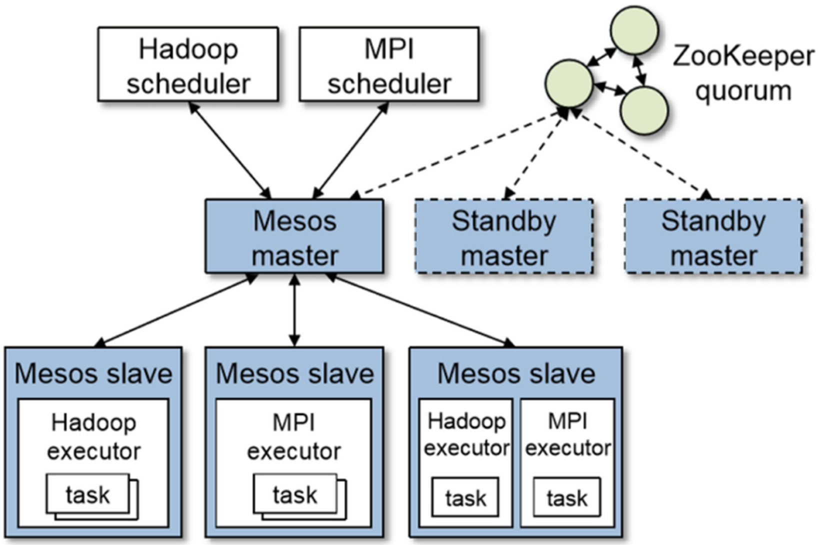

Fig. 4. Resource sharing mode of online course platform

5 Conclusion

The is very rapid. Information technology, and cloud computing is an emerging and revolutionary concept. Cloud computing will change our physical education teaching mode. The network-based teaching method has separated teaching and learning activities in time and space. However, Its application is still in the exploratory stage. So far, there is no unified standard and implementation method of cloud computing. It is a long-term project to apply cloud computing to the construction of network course resource database. However, we believe that, it will construction of network course resource database.

References

1. Shaoli, Z., Xiaoqi, Z., Hui, Z.: Construction and mechanism research of education big data information platform based on resource sharing. Modern Intell. **12**, 90–95 (2017)
2. Huaping, L., Peng, X., Xiaoming, H.: Construction of high-quality teaching resource sharing platform in Higher Vocational Colleges Based on cloud computing. J. Anhui Electron. Inform. Vocational Tech. College **4**, 56–60 (2016)
3. Yang, G.: On the diversification of higher vocational physical education teaching mode under the information environment. Sci. Technol. Inform. **15**(30), 164–165 (2017)
4. Feng, S.: Research and construction on the integration of information technology and higher vocational physical education curriculum teaching. Agricult. Staff **19**, 138 (2017)
5. Ma, Y.: Low-light image enhancement method based on deep learning. Inform. Technol. **45**(1), 5, (2021) View at: Google Scholar
6. Xu, F., Cheng, K., Zhang, J.: Pedestrian re-identification based on the combination of deep learning and attribute learning. Data Collection Process. **33**(4), 7 (2018). View at: Publisher Site | Google Scholar
7. Liu, W., Wen, B., Gao, S.: Research on intelligent image processing based on deep learning. Autom. Instrument. **4**(8), 2020. View at: Google Scholar
8. Zheng, X., Sun, X., Lv, J.: Behavior recognition based on deep learning and intelligent planning. Chin. J. Electron. **47**(8), 8 (2019). View at: Google Scholar
9. Liu, D., Jia, J., Zhao, Y., Qian, Y.: A review of image denoising methods based on deep learning. Comput. Eng. Appl. **57**(7), 13, (2021). View at: Google Scholar
10. Song, L., Shi, L., Wang, P.: Intelligent fault diagnosis method based on dynamic statistical filtering and deep learning. J. Instrument. **8**(7), 2019. View at: Google Scholar
11. Chang, H., Gou, J., Li, X.: Application of faster R-CNN in industrial CT image defect detection. Chin. J. Image and Graph. **23**(7), 11 (2018). View at: Google Scholar
12. Tao, C., Wang, Y., Chen, M.: Hyperspectral image classification with multilayer local perception convolutional neural networks. J. Sichuan Univ. Natural Sci. Edition, **57**(1), 10 (2020). View at: Google Scholar
13. Lu, L., Meng, P.: Recognition of common traffic warning signs in China based on fully convolutional neural network. J. Changchun Univ. Sci. Technol.: Natural Science Edition, **43**(2), 8 (2020). View at: Google Scholar
14. Zhong, F., Yang, B.: A novel deep learning-based single image rain removal method. Comput. Sci. **45**(11), 283–287 (2018). View at: Google Scholar