ISSN 2618-1576 Vol. 5, Issue 1: 52-55, DOI: 10.25236/FSR.2023.050110

Research on the Development Path of Sports Informatization Based on Big Data and Cloud Computing

Ruodi Wang

Xi'an High-tech Zone No. 5 Junior High School, Xi'an, Shaanxi, 710075, China
1981893432@qq.com

Abstract: *Big data and cloud computing have improved information technology applications in the physical education industry. After learning big data and cloud computing, this paper discusses the status of China's physical education industry. We conclude the important role of big data and cloud computing in the construction of physical education informatization based on China's national conditions and current economic development level. In addition, this paper proposes the construction method and implementation plan of physical education informatization platform based on big data and cloud computing technology to give some reference opinions to other research scholars.*

Keywords: *Big data; Cloud computing; Physical education; Information construction*

1. Introduction

In recent years, high-tech technologies have entered people's fields of vision. They have been widely used in many industries, such as big data technology, artificial intelligence technology, cloud computing technology, and so on. These technologies have brought significant changes to all walks of life and far-reaching impacts. In sports, the application of high and new technology has promoted the informatization of the sports industry.

Big data technology and cloud computing have provided many conveniences for physical education. Sports information construction is not only related to the sports industry but also closely related to people’s daily life. In the post-epidemic era, the Chinese people pay more attention to their physical condition, and the nationwide fitness campaign is thriving. In the process of construction, big data technology and cloud computing technology are quietly changing people's lifestyles and the way people carry out the exercise.

When it comes to physical education, information technologies penetrate it and provide a great convenience for teachers and students to carry out physical education activities. In this way, we can promote the fairness of educational resources, solve the problems such as insufficient storage of resources, and further promote the development of physical education toward intelligence [1].

2. Theoretical Basis

2.1 Big Data

Big data is composed of various kinds of data, and its scale is enormous. It is not easy to analyze and process them by traditional technical means. Hundreds of millions of data information are generated every minute and second in today's society. But not all of the data is valuable. To search and collect valid data and excavate the value behind the data information, big data technology emerges as the times require.

Physical education data primarily includes student physical activity information, such as name, gender, time of sports activities, heart rates, times of participating in physical activities, performances, and so on. They show the students' physical quality directly and can facilitate the school to strengthen the unified management of physical education workers [2].

ISSN 2618-1576 Vol. 5, Issue 1: 52-55, DOI: 10.25236/FSR.2023.050110

2.2 Cloud Computing

Cloud computing is a huge storage center, and this storage center saves much space for users. When the user puts the data information to be stored in the cloud, the system can apply cloud computing technology to analyze and process these data. Moreover, users can view this data information and password at any time. It is of great significance to enterprises and individuals. By greatly simplifying the process of storage and data calculation, the complex calculation and analysis are completed in the cloud, significantly reducing the costs.

3. Application Prospect of Big Data and Cloud Computing in the Construction of Physical Education Informatization

3.1 Promotion of Equity of Physical Education Information Resources

In the application and development of cloud computing and big data, the problem of regional education has been further solved. Students with relatively poor economic conditions can use information resources for physical education in areas with more developed economic conditions [3].

With a small amount of capital and research costs, according to the needs of teachers and students in economically backward areas, the Chinese government can contact professional third-party providers to build a physical education platform based on cloud computing and big data. Besides, the government hires experienced technicians to integrate physical education data stored in the cloud for all regions. Finally, they will build a China physical education information data platform with a large storage capacity, strong computing power, and low cost.

This method can enhance communication and exchange between teachers and students in different regions, promote exchange between teachers and students in underdeveloped regions, and enhance sharing between developed and underdeveloped regions. In addition, teachers and students in each region can upload their personal sports information and download their sports interest resources through this data platform [4]. As a result, the platform will facilitate the sharing of sports resources in various fields and make China's sports education resources more equitable.

3.2 Speeding up the Sharing and Integration of Sports Information Resources

With the implementation and application of various high and new technologies, the sports field is developing in the direction of informatization, which is conducive to sharing and integrating sports information resources in schools in various regions.

In the past, sports information resources could not be integrated, and the communication and interaction between teachers and students in various regions were challenging. However, with the application and development of big data and cloud computing, the physical education information resource platform of cloud computing and big data has been gradually established, enabling users to store rich and diverse sports information resources in the cloud. Then, teachers and students in various regions will upload and download all kinds of educational resources to further integrate the information resources of physical education. At the same time, cloud computing technology also provides technical support for the integration of physical education information resources in various regions, enabling users in multiple regions to upload resources to the cloud, accelerating the sharing of sports resources in various areas, and further promoting education equity and development [5].

3.3 Great Changes in Physical Education Informatization

With the influence of high-tech on physical education, physical education is developing in the direction of informatization and intelligence, which further sets off significant changes in physical education and has a profound impact on physical education. In addition, it has changed traditional physical education and provided new strategies and techniques for modern physical education activities.

Specifically, after establishing a physical education information platform based on big data and cloud computing, more and more school physical education courses will develop towards informatization. Because the original physical education teaching mode is no longer in line with the current information age background, physical education, and other disciplines move towards informatization, leading to significant changes in the education industry. This change has not only great challenges but also contains

ISSN 2618-1576 Vol. 5, Issue 1: 52-55, DOI: 10.25236/FSR.2023.050110

great opportunities. The introduction of big data and cloud computing into physical education makes big data technology and cloud computing technology become the auxiliary of physical education. They can not only enable physical education teachers to have a more comprehensive understanding of students' physical fitness and exercise but also help students understand where they need to improve, thus improving the overall quality of Chinese physical education [6].

3.4 Effective Solution to the Shortage of Resource Storage Space

The generation of big sports data will inevitably lead to the demand for large-scale storage space for sports information resources. If we still use the traditional way to store sports information resources, such as hard disks, personal computers, etc., we are vulnerable to viruses and may lose data. Through cloud computing technology, people can solve this problem. Users can upload sports data information to the physical education resource platform based on cloud computing technology. In this way, we do not need to worry about the invasion of the virus, nor do we need to worry about hardware damage, let alone the lack of storage space.

4. Implementation Scheme of Physical Education Informatization Development Method Based on Big Data and Cloud Computing

4.1 Method of Big Data Generation, Collection, and Cloud Computing Storage

Through big data and cloud computing technology, people can transform the physical education teaching places in schools and improve the information level of teaching places. At the same time, big data technology mainly processes and analyzes data in various wearable devices and regional control devices. In contrast, cloud computing provides large-scale storage space for massive physical teaching resources and data.

We can collect and store students' exercise, heart rate, body temperature, and blood pressure in physical activities through big data and cloud computing technology. We can also analyze students ' daily sleep and record their GPS movement trajectory, fitness frequency, and habits. According to each student's physical quality, the machine analyzes the specific situation of students' sports to inform students about their physical condition. In addition, it is also convenient for physical education teachers to intuitively and comprehensively know students’ physical fitness, formulate different exercise programs for each student, and then improve the physical fitness of Chinese nationals.

4.2 The Construction of Big Data and Cloud Computing Storage, Transmission, Operation, and Maintenance Platform

People can build a physical education information resource platform in China through big data and cloud computing technology. They use big data technology to collect massive basic physical education data. Afterward, they screen data information and integrate physical education information to store it in a data warehouse based on cloud computing technology. Furthermore, they apply big data and cloud computing technology to analyze and study data information and use intuitive graphs to display. Then, feedback on the final analysis results is conveyed to users.

In short, the physical education information platform based on big data and cloud computing can distribute data processing tasks to different system modules. The new mode is carried out at the same time, which can make full use of the cluster resources in the system and also facilitate users to supervise and schedule data acquisition and processing in real-time. At the same time, this information data platform can support multiple nodes running simultaneously. Users only need to set up workflow and operation instructions to make the platform run automatically and receive feedback results. Moreover, users can view the processing progress of data information in real-time and operate it.

4.3 The Establishment of a Core of Supervision, Control, Management, and Decision-making for Big Data

Through big data technology and computer technology, people analyze and study the collected data information, further explore the valuable physical education data information obtained, and establish a data information model to comprehensively monitor students' physical fitness in physical education teaching activities. The model is established according to the indexes of students' physical quality.

ISSN 2618-1576 Vol. 5, Issue 1: 52-55, DOI: 10.25236/FSR.2023.050110

Moreover, we can also introduce artificial intelligence technology to establish the evaluation standard of each student's physical quality and to study the individual differences between students. In addition, teachers can also combine the comparative analysis method and the cluster analysis method to implement the strategy of teaching students by their aptitude, comprehensively improve the quality of physical education, and strengthen the accuracy of teaching, so that students can choose sports events, and realize the all-round development of moral, intellectual, physical, aesthetic and labor.

4.4 Enhancement of Big Data and Cloud Operations, Services and Upgrades

Currently, China is in the stage of rapid upgrading of high-tech, and high-tech influences all walks of life. Various industries are developing with intelligence, and high-tech is constantly being practiced and developed. Therefore, as has the physical education industry, profound changes have taken place in the industries. The physical education information platform based on big data technology and cloud computing technology mentioned above is in the process of promotion and innovation. After constructing a set of relatively perfect physical education information platforms, we can run a series of processes, such as data collection, data storage, model building, analysis and guidance, effect evaluation, and so on.

Thanks to big data and cloud computing technology, users can quickly spot problems and report them. They can also extract valuable insights from the data and report them in a timely manner. In addition, relevant personnel can exploit valuable physical education resources and teaching data to continuously improve physical education in China, providing data support and guidance for physical education, etc.

5. Conclusion

To sum up, the emergence of big data technology and cloud computing technology is driving industries to become more and more intelligent. At the same time, big data and cloud computing show strong vitality. We need to note that the current high-tech applications in various fields are at the exploratory stage and need further improvement. Therefore, there is still much room for improvement in the combination of physical education and high-tech.

Big data technology has the ability of data acquisition and process, which can mine and analyze data in a short time. The combination of big data and physical education brings many benefits. First, teachers and students better understand the individual's physical fitness, record physical information, and upload and download a variety of rich physical education resources. Secondly, it greatly promotes the sharing of physical education resources and promotes the fairness and justice of physical education in China. On the other hand, cloud computing technology has powerful storage and computing capacity, and extraordinary transmission functions so that data can be stored in the cloud at low cost, and people can call data information at any time. As a result, teachers get a rich teaching experience at a lower cost. Teachers and students store massive physical education data in the cloud for viewing. These technologies make remote sharing and interaction come true.

References

[1] Li Yuanbo. Research on sports information development model in the era of big data [J]. Industry and Technology Forum, 2022, 21 (12): 18-19.
[2] Yang Xiaoyan. In the context of big data, the innovative model of smart physical education is constructed [J]. Journal of Inner Mongolia University of Finance and Economics, 2021, 19 (02): 21-23.
[3] Yuan Xiaolu. The use of network information resources in colleges and universities [J]. Youth Sports, 2018 (03): 72-73
[4] Bailey R, Armour K, Kirk D, et al. The educational benefits claimed for physical education and school sport: an academic review [J]. Research papers in education, 2009, 24(1): 1-27.
[5] Kholmirzaevich A J. Innovations in Fitness Works and Physical Education [J]. Texas Journal of Medical Science, 2021, 2: 4-5.
[6] Goad T, Towner B, Jones E, et al. Instructional tools for online physical education: Using mobile technologies to enhance learning [J]. Journal of Physical Education, Recreation & Dance, 2019, 90(6): 40-47.