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Research Article

Physical Education Resource Information Management System Based on Big Data Artificial Intelligence

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With the rapid development of artificial intelligence technology, the combination of physical education and modern technology has become the development trend of today's physical education. Especially in the context of the reform of the education system, the connection between artificial intelligence and physical education is getting closer and closer and it has penetrated into all aspects of physical education. In terms of sports management, the sports management method based on big data artificial intelligence has gradually replaced the traditional manual management method and promoted the development of physical education. Strengthening the information management of physical education teaching and providing high-quality and efficient physical education information for physical education managers and teachers are an important part of the current school physical education teaching work. The establishment of sports resource information big data platform is the key to the integration and sharing of sports resources. This paper discusses the relevant theories of artificial intelligence and studies the current status of the application of sports resources. A physical education resource information management system based on artificial intelligence is constructed. The feasibility of the system is verified by the number of system visitors and the distribution of user populations, and the real-time information, effectiveness, students' learning initiative, and teachers' teaching initiative of this system and the original system are compared and analyzed. The results show that the average score of the real-time information of the original system is 74.28 points, the average score of effective information is 82.29 points, the average score of students' learning initiative is 74.97 points, and the average score of teachers' teaching initiative is 82.98 points. The average score of real-time information in the new system is 92.05 points, the average score of information effectiveness is 93.34 points, the average score of students' learning initiative is 82.69 points, and the average score of teachers' teaching initiative is 90.46 points. The real-time information and information effectiveness scores of the new system are higher than those of the original system, and the scores of students' learning initiative and teachers' teaching initiative are higher than those of the original system.

1. Introduction

As an emerging discipline with broad application prospects, artificial intelligence is an important topic in the current field of computer science and technology. The in-depth application of artificial intelligence technology has become an inevitable choice for the modernization of national governance capabilities, opening a new digital era, and technologies such as big data and cloud computing have emerged. Big data is a collection of massive amounts of data. General software cannot process it in a short time.

Sports is a manifestation of the overall strength of a country. Previously, the Chinese education department has listed physical education as the main teaching content at all stages. With the increasing number of course management and course evaluation, the traditional teaching methods cannot meet the requirements of the new era. In the face of massive sports management data, the requirements for school sports information management are also increasing. Manual management of these complex data is not only labor-intensive, but also prone to errors. This requires the use of scientific and technological means and information technology to standardize and manage these data. In the context of the development of artificial intelligence technology and big data technology, the management system of school sports information is becoming increasingly intelligent. Artificial intelligence uses information technology to manage, plan, and evaluate courses. It can accurately and quickly allocate teaching tasks reasonably for managers and can automatically give modified results according to changes in tasks. Therefore, it is necessary to combine the multidisciplinary knowledge and methods such as information network technology and educational technology to establish a system suitable for the characteristics of physical education teaching. Digital technology can provide educational big data information for education authorities and provide reference data for future physical education work. Through the information management of school physical education teaching, the administrator can flexibly and accurately control the students' sports situation. At the same time, teachers can also develop a scientific teaching plan for students. It is found that the intelligent management method of school sports information is of great significance. Under the premise of ensuring the maintainability, stability, and compatibility of the system, each functional module is designed for different objects, the management structure of the data structure in the system is described, and its composition is analyzed in detail.

2. Related Work

With the development of social economy and the rapid development of big data and artificial intelligence technology, it has been widely used in all walks of life. Through the systematic retrieval of eight electronic databases, N. Lander learned about the types and number of teachers' training in school physical exercise and basic sports ability, as well as the impact of teacher training on the effect of intervention and evaluated the influencing factors of school sports activities, including sports intervention provided by school teachers, including quantitative evaluation of FMS ability and PA. The results show that teachers can significantly improve students' performance in PA and FMS [1]. Sun et al. studied physical education from the perspective of self-determination theory. They explored the impact of self-determination theory on students' physical education learning from the areas of cognitive, psychomotor, and affective learning. They also illustrated the relationship between students' perceptions of the nature of autonomously supportive or controlled learning environments, needs satisfaction, and autonomous motivation [2]. Liu et al. explored the impact of conceptual physical education courses on the health quality of college freshmen. They conducted an experiment with 50 freshmen at a US university. The experiment found that students' aerobic, upper body, endurance, and abdominal muscles have been significantly improved, and body fat percentage was reduced. Conceptual physical education courses can significantly improve the health quality of freshmen [3]. Escrivaboulley et al., based on the cluster random control experiment, discussed the role of teachers' incentive factors in college students' physical exercise. They studied 15 primary school teachers and 293 students. Teachers in the experimental group participated in four seminars in a school year, while teachers in the control group carried out normal teaching activities. The experiment shows that, during school, the teachers in the experimental group increased the support for students' psychological needs, and the students in the experimental group spent significantly more time on physical activities [4]. Mooses et al. measured physical activity for 1 school year in 504 first-grade (7–9 years) and second-grade (10–12 years) children. This analysis uses the linear mixture method. According to the data, compared with time without physical activity, it has been confirmed that physical education can significantly increase physical activity and reduce sedentary time [5]. Sato and Haegele described the practical experience of mentoring severely disabled students in physical education. Using a descriptive qualitative approach, the research is conducted on real case studies and explained through the lens of occupational socialization theory. They studied three themes: the role of teachers in guiding physical education for analysis of vocational skill needs of disabled college students, and the resistance encountered in reality [6]. Silverman studied the attitudes of teachers and students in physical education. He used regression models in attitude research for analysis and discussed parameters and measurement issues in attitude research. He graded the attitudes of teachers and students and evaluated the impact of attitudes on sports performance [7].

3. Artificial Intelligence and Physical Education

3.1. Artificial Intelligence. Artificial intelligence is a combination of artificial science that integrates acting, development, simulation, and expansion of human beings. It has been used in machine and software development for a long time. It is moving in the direction of strong artificial intelligence and super artificial intelligence. The so-called strong AI is a human-like artificial intelligence that can think, plan, and solve problems. And it can understand complex concepts and learn quickly. Super artificial intelligence has far more intelligence than humans. Some scholars believe that super artificial intelligence will be the ultimate invention of human beings. From now on, all inventions will be done by it [8]. Artificial intelligence technology originated at the Dartmouth Conference in 1956. At the conference, scholars discussed a series of related issues in simulating intelligence with machines, marking the birth of the concept of artificial intelligence [9]. Academia has conducted in-depth research on knowledge representation, reasoning, and other issues. Artificial intelligence technology is very popular, covering fields such as education, physiology, medicine, logic, automation, and cybernetics. Its research scope includes information identification, acquisition and processing, search engine optimization, intelligent robots, and automatic learning and reasoning.

Google's R&D personnel successfully developed the first self-driving car in October 2010 and successfully tested it on the streets of California [10]. The application of intelligent driverless vehicles in the market has become more and more extensive. Tencent obtained the test license for ICVs in May 2018 [11], marking the cross-industry development of artificial intelligence technology to a mature stage. The artificial intelligence Go master (AlphaGo) defeated the Chinese

Go player with a score of 3:0 in May 2017 and won the high praise of the world for artificial intelligence technology [12]. Artificial intelligence technology is being combined with technologies in multiple industries, and its development prospects are worthy of in-depth exploration.

3.1.1. ANN. ANN is not only a calculation model, but also a data model. It mainly uses the biological neural network construction principle and function [13] and uses this topology to study the relationship between nodes or objects. The schematic diagram is shown in Figure 1. The idea of artificial neural network comes from the functional operation of biological neural network. It is an adaptive system that is not affected by external data information. Each node represents an excitation function, and the links between nodes are represented by weights. This weight can be understood as the memory of the neural network [14].

3.1.2. RBF Neural Network Algorithm. RBF neural network is a feedforward neural network with good performance [15]. Interpolation is an important part of function approximation. Its characteristic is to obtain an unknown continuous function under the constraint of discrete point set M. The function is defined on a continuous set S $(M \subseteq S)$ to obtain the overall regularity. The interpolation problem can be defined as follows.

Given datasets X and Y, where X is a set with N data points, and the dimension n of each data point in X, that is, $\{X_i \in R^n \mathrm{I},\ i = 1, 2, ..., N\}$, Y is a set $\{Y_i \in R^m \mathrm{I},\ i = 1, 2, ..., N\}$ with N m-dimensional data points. Find a function F: $R^n \longrightarrow R^m$ that satisfies the following condition:

$$F(X_i) = Y_i, \quad (i = 1, 2, ..., N). \tag{1}$$

Strict interpolation requires that all known data points lie on the constructed interpolation surface (i.e., function F). In the final analysis, RBF neural network technology is to construct such a function F. The function has the following form:

$$F(X) = \sum_{i=1}^{N} w_i \phi\left(\left\| X - X_i \right\|\right). \tag{2}$$

Here, $\{\varphi(X - X_i)\}$ is the set of N RBFs, and $\| \cdot \|$ represents the Euclidean norm. Take the known data point $X_i \in R^n$ defined as the center of the RBF, $i = 1, 2, ..., N$.

Bringing the interpolation conditions of formula (1) into formula (2), a set of linear formulas about N unknown weight coefficient vectors w_i can be obtained:

$$\begin{bmatrix} \phi_{11} & \phi_{12} & \cdots & \phi_{1N} \\ \phi_{21} & \phi_{22} & \cdots & \phi_{2N} \\ \cdots & \cdots & \cdots & \cdots \\ \phi_{N1} & \phi_{N2} & \cdots & \phi_{NN} \end{bmatrix} \begin{bmatrix} w_1^T \\ w_2^T \\ \cdots \\ w_N^T \end{bmatrix} = \begin{bmatrix} Y_1 \\ Y_2 \\ \cdots \\ Y_N \end{bmatrix}. \tag{3}$$

Here, $\varphi_{ji} = \varphi(X_j - X_i)$, and $w_i = [w_{i1}, w_{i2}, ..., w_{im}]^T$, where $i, j = 1, 2, ..., N$

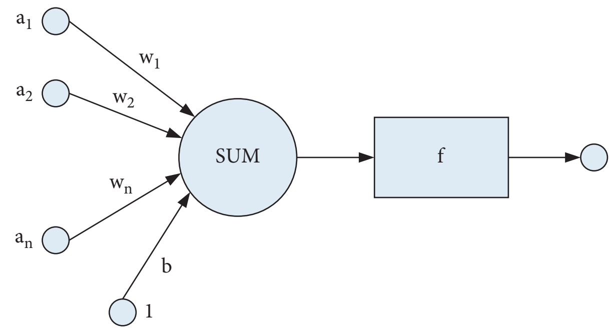

Figure 1: Schematic diagram of the artificial neural network.

Let $\Phi = \{\varphi_{ji} \mathrm{I}\ (j, i) = 1, 2, ..., N\}$. W denotes an $N \times m$ connection weight matrix. Y represents the desired output matrix. Φ with dimension $N \times m$ represents an $N \times N$ interpolation matrix. Formula (3) can be written in compact form:

$$\Phi W = Y. \tag{4}$$

Commonly used basis functions are as follows:

$$\begin{aligned} \phi(x) &= \exp\left(-\frac{x^2}{2\sigma^2}\right), \quad (\sigma > 0, x \in R), \\ \phi(x) &= \left(c^2 + x^2\right)^{1/2}, \quad (c > 0, x \in R), \\ \phi(x) &= \frac{1}{\left(c^2 + x^2\right)^{1/2}}, \quad (c > 0, x \in R). \end{aligned} \tag{5}$$

These functions are all radially symmetric. One of the most widely used is the Gaussian function, which has the form:

$$\phi_i(x) = \exp\left(-\frac{\left\| x - c_i \right\|^2}{2\sigma_i^2}\right), \quad (i = 1, 2, \ldots, m). \tag{6}$$

Among them, i determines the width of the center of the RBF; $x - c_i$ represents the distance between x and c_i and i.

Unlike strict interpolation problems, RBF is used when designing neural network structures. If a basis function is introduced for each sample point so that the number of neurons is equal to the number of input samples, the network structure will be too large, resulting in overfitting or network paralysis [16].

Continue to make adjustments through network training until you get really close to the data sample. This improved network input-output mapping model is expressed as

$$F(X) = \sum_{i=1}^{h} w_i \phi\left(\left\| X - C_i \right\|\right). \tag{7}$$

Here, $C_i \in R^n$ is the base function center; h represents the number of hidden layer units. On this basis, this paper gives the topology of RBF network, as shown in Figure 2.

The gradient training method is selected to learn the RBF neural network. This is a supervised learning algorithm that minimizes the objective function that the network learns.

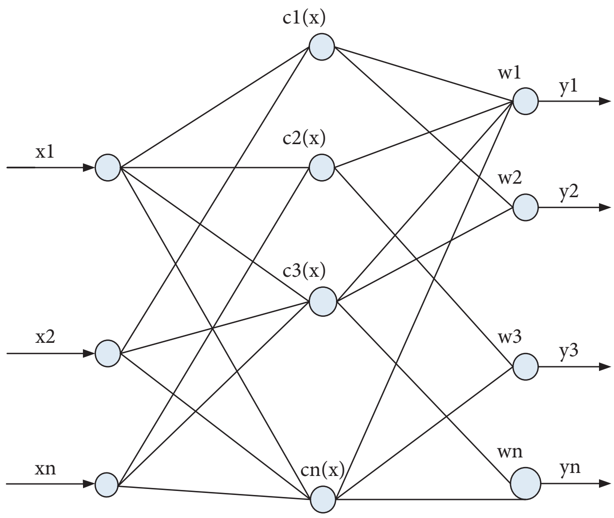

Figure 2: Topological structure of RBF neural network.

The iterative method is used to adjust the basis function center, the number of hidden layers and output layers in RBF neural network. Assuming that the one-dimensional network is the first output, the training gradient can be described in detail.

The objective function of neural network learning is

$$E = \frac{1}{2}\sum_{i=1}^{N}\beta_i e_i^2. \tag{8}$$

Here, β_i is the forgetting factor. This method is a training method with forgetting factor. The error function e_i is defined as

$$\begin{aligned} e_i &= y_i - F(x_i) \\ &= y_i - \sum_{j=1}^{h} w_j \Phi_j(x_i). \end{aligned} \tag{9}$$

The partial derivatives of the error function to the RBF center c_i, width σ_i, and output weight w_i are

$$\begin{aligned} \frac{\partial E}{\partial c_j} &= -\sum_{i=1}^{N}\beta_i e_i w_j \frac{\partial \phi_j}{\partial c_j}, \\ \frac{\partial E}{\partial \sigma_j} &= -\sum_{i=1}^{N}\beta_i e_i w_j \frac{\partial \phi_j}{\partial \sigma_j}, \\ \frac{\partial E}{\partial w_j} &= -\sum_{i=1}^{N}\beta_i e_i \phi_j. \end{aligned} \tag{10}$$

The partial derivatives of RBF with respect to center c_i, width σ_i, and output weight w_i are, respectively,

$$\begin{aligned} \frac{\partial \phi_j}{\partial c_j} &= 2\phi_j(x_i)\frac{\left\|x_i - c_j\right\|}{\sigma_j^2}, \\ \frac{\partial \phi_j}{\partial \sigma_j} &= 2\phi_j(x_i)\frac{\left\|x_i - c_j\right\|^2}{\sigma_j^3}, \\ \frac{\partial \phi_j}{\partial w_j} &= \phi_j(x_i). \end{aligned} \tag{11}$$

Then, the update formula of the hidden layer center c_i, width σ_i, and output weight w_i of the RBF neural network is

$$\begin{aligned} \sigma_j(k+1) &= \sigma_j(k) + \Delta\sigma_j = \sigma_j(k) + \eta_2\frac{\partial E}{\partial \sigma_j} \\ &= \sigma_j(k) - \eta_2\sum_{i=1}^{N}\beta_i e_i \phi_j, c_j(k+1) \\ &= c_j(k) + \Delta c_j = c_j(k) + \eta_1\frac{\partial E}{\partial c_j} \\ &= c_j(k) - \eta_1\sum_{i=1}^{N}\beta_i e_i w_j\frac{\partial \phi_j}{\partial \sigma_j}, w_j(k+1) \\ &= w_j(k) + \Delta w_j = w_j(k) + \eta_3\frac{\partial E}{\partial w_j} \\ &= w_j(k) - \eta_3\sum_{i=1}^{N}\beta_i e_i w_j\frac{\partial \phi_j}{\partial c_j}. \end{aligned} \tag{12}$$

Here, η_1, η_2, η_3 are the learning rates, which generally take different values.

According to the above formula, the network parameters are continuously cyclically corrected, and the final network performance will reach the required performance index. Compared with feedforward neural networks such as perceptrons and BP neural networks, the topology of RBF neural networks uses radially symmetric kernel functions. In particular, the Gaussian function greatly accelerates the efficiency of e-learning, avoids the problem of local minima, and has the ability to approximate the global optimum [17].

3.2. Physical Education Teaching. "Artificial intelligence + physical education" is a new teaching mode that transforms teaching resource structure and feedback evaluation mechanism into intelligent teaching. Through artificial intelligence technology, the resources and information connection between teachers and students can be realized, so as to form a new teaching system of "artificial intelligence + physical education" with multiple levels, wide fields, and multiple elements. The current domestic sports courses in China are mainly guided by digital teaching methods and focus on the diversification and reoptimization of information [18]. Therefore, artificial intelligence is a highly intelligent novel and advanced teaching system constructed by many artificial intelligence devices and information processing centers. Physical education resource information management is the main part of sports management. The normative and scientific nature of its management will affect the teaching effect. In practical application, it is divided into three distinct levels: teaching resource management, teaching operation management, and teaching quality and evaluation management. The coordinated operation of all levels together constitutes the "artificial intelligence + physical education" ecosystem. If you want the intelligent development of physical education, we must comply with the national sports policy and development trend and combine with modern science and technology [19]. The overall design that follows a top-down approach to form an overall operation mechanism model of "artificial intelligence + physical education" was constructed, as shown in Figure 3.

The overall design follows a top-down approach to form an overall operation mechanism model of "artificial intelligence + sports," as shown in Figure 3.

Each course and exercise will provide a lot of information. These materials can not only be used as a reference index for the final results of the physical education class but also provide training guidance for the next physical education class. However, in practice, we ignore data collection and analysis. Physical education teachers only rely on past experience to teach, adjust the teaching content, and lack the collection and analysis of data [20]. After scientific analysis and intelligent processing, managers can effectively understand the academic progress of teachers and students and better formulate overall plans, and teachers can find educational methods that are more beneficial to schools. The big data analysis of classroom teaching can evaluate the quality of the curriculum and reflect the educational goals and tasks of the school. The analysis of heart rate, steps, blood pressure, and other data can become indicators of sports health supervision. The data mining of teaching evaluation can help to adjust the teacher's curriculum and teaching content. Using big data for intelligent management and scientific analysis can become an important index to measure the quality of physical education in campus. This kind of powerful data analysis needs to be linked with the smart information management system for feedback and needs to be continuously optimized and rectified. By constantly using new technologies to support smart platforms, big data analysis information can be more accurately managed and scientifically classified, combining with large numbers to separate the management of physical education teaching mode and management of physical education and the transformation of teachers' functions and effectively reflect the physical needs and actual conditions of the vast majority of students.

This paper constructs the sports information management system into a three-tier structure. They are presentation layer, functional layer, and application layer. They ensure that system users can practically apply the system, ensure that users can rely on the campus network, and ensure that users can conduct real-time anticounterfeiting of the system through the Internet to enhance the use value of the system, as shown in Figure 4.

In the system architecture, it is necessary to ensure that users can click through the different functions of the system through a web browser. Afterwards, based on the response of ASP.NET and the application server, the user's needs can be assigned to different system function modules to ensure that the system can feed the user's demand results back to the user.

The traditional teaching management method is mainly based on filling in forms. Whether it is manual declaration or electronic entry, there are certain defects. Its characteristics are that it needs to fill in and manage a lot of data, the data redundancy is large, the data query is time-consuming, and the data is inconvenient to use. The comprehensive evaluation of the data requires a lot of data collection, classification, calculation, etc., which cannot be fully utilized. The integrated functions such as data statistics and analysis can only realize the completion of a single work task and simple backup. Comprehensive and flexible sports information big data has realized the informatization of educational resources and greatly improves the development environment. The flexible object model and the functions of the classes and subclasses used constitute a new software development program. Its biggest feature is that it can perform remote control in the local database and connect the remote data with the local database.

4. Operation Process of the Physical Education Information Management System

The database management system is mainly divided into teacher end and student end, and each end has its own access and modification authority. The physical education comprehensive information management system is mainly the management model of these two levels. In this way, management and query can be separated, which is convenient for system design and maintenance and more conducive to protecting the security of data. The teacher-side model has functions such as grade entry and grade evaluation. It can manage students' physical education results and physical health test results and enter various types of information through the form mode. The internal form structure is used to store data, and the model is shown in Figure 5.

The student-side model has functions such as score query, score evaluation query, and teacher evaluation, as shown in Figure 6. Through inquiries, students can know their physical education class results and physical health test results, can inquire about the evaluation results, and can understand the current state of their own physical fitness, so as to take targeted methods to improve their physical fitness, make it meet the requirements of college sports standards as soon as possible, and establish a certain communication mechanism with teachers.

The database is composed of data access component and SQL server to build sports information management system. In practice, the database can be accessed directly through MTS, and the corresponding data can be processed with ADO.Net, or the data interface can be used to access and control the database management system SQL Server. In this system design, its main database table design contents include administrator information table, teacher data sheet, and teaching and student data sheet. Table 1 is the administrator information table in the system.

Table 2 is the teacher information table in the system. This table holds basic information for all PE teachers. The teacher and the job number are uniquely corresponding, so the teacher's job number is used as the system login account and initial password. Teachers have the right to query and modify personal information, and students only have the right to query the teacher's public information. Physical

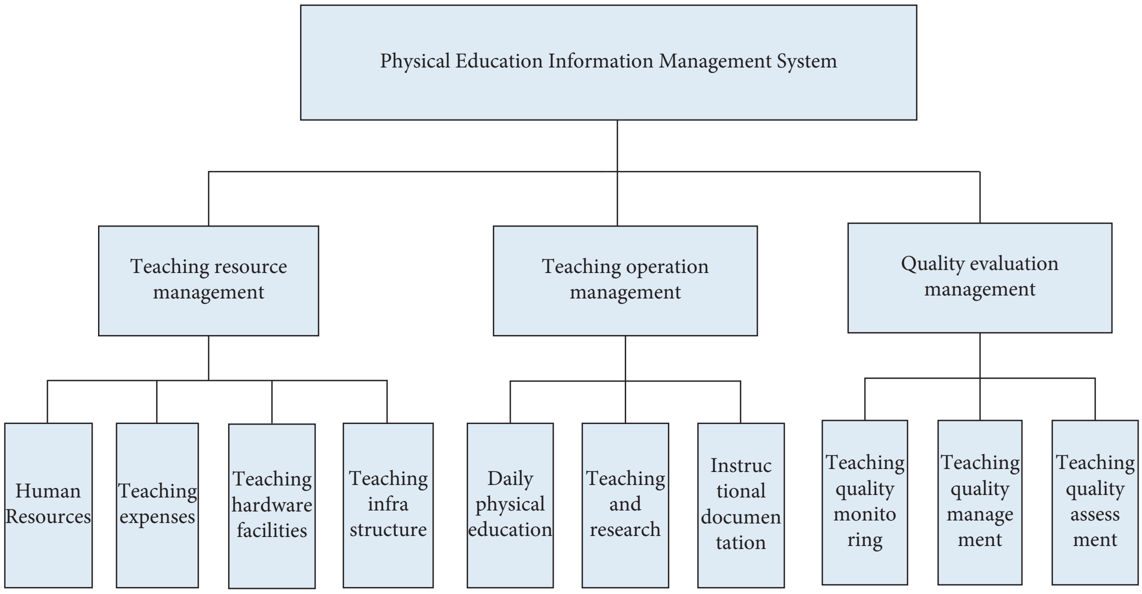

Figure 3: Overall structure diagram of the physical education information management system.

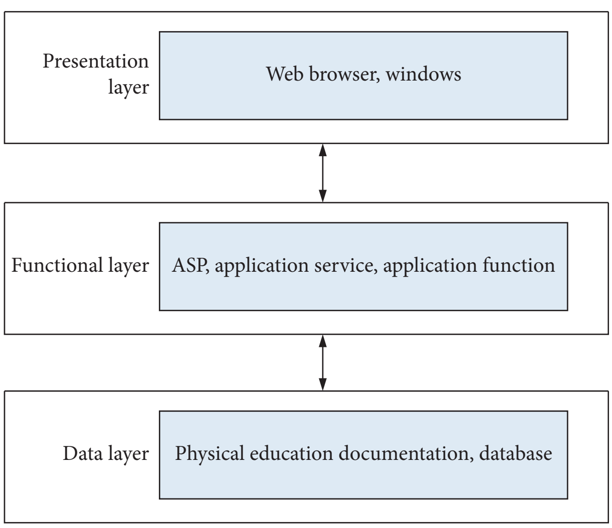

Figure 4: Architecture diagram of the physical education information management design.

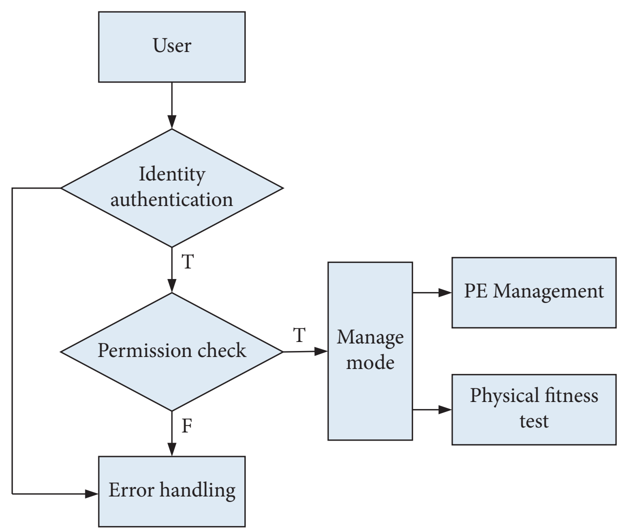

Figure 5: Teacher-side model of the physical education information management design.

education administrators can add, delete, query, and modify information on students and teachers.

At the same time, in the system database, there is also a table of teaching resources, as shown in Table 3. It is mainly used to store various teaching resources. It can store not only "pictures, audios, documents," but also the physical education resources uploaded by teachers. At the same time, it can automatically record this information in the database of the system to fill the loophole of students' download demand and query and browse these files according to their learning.

The student information table is shown in Table 4, which stores basic information such as student ID and name. The physical education administrator logs into the physical education management system, imports student information according to the format requirements, and forms a student information table. Student and student numbers are unique. Therefore, the student ID is used as the account and initial password to log in to the system. Students have the right to inquire and modify personal information. Teachers have the right to query the information of students in their own classes. The physical education administrator has the authority to add, delete, query, and modify the information of teachers and students.

5. Experimental Verification of Physical Education Information Management

Based on big data artificial intelligence, this paper makes a systematic research on sports information management system. At the same time, it also proves whether the system can provide convenience for students. This study takes the Physical Education Department of the middle school

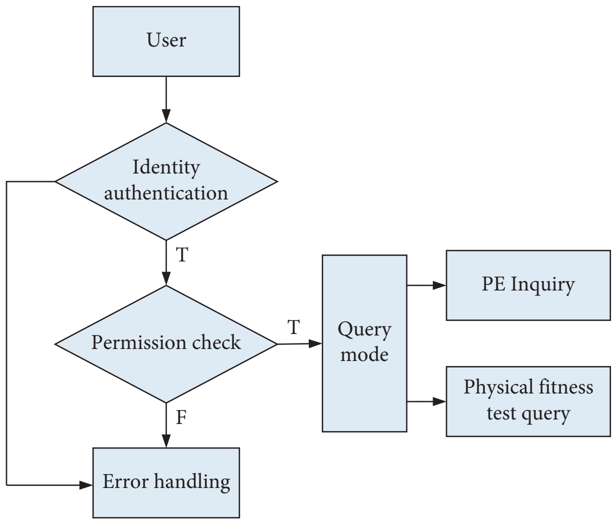

Figure 6: Student-side model of the physical education information management design.

Table 1: Master administrator table in the designed system.

	Column	Type	Length
Username	MasterID	varchar	20
Password	MPwd	varchar	20
Permission flag	PowerFlag	char	4
Name	MName	varchar	50
Department	MDept	varchar	50
Telephone	Mphone	varchar	30

Table 2: Teacher user table in the designed system.

	Column	Type	Length
Teacher	TeacherID	varchar	20
Password	TPwd	varchar	20
Name	TName	varchar	50
Telephone	Tphone	varchar	30

Table 3: Resource of teaching in the designed system.

	Column	Type	Length
Introduction	Remark	varchar	100
Resource name	ResName	varchar	30
Storage address	Resaddr	varchar	150
Resource number	ResID	varchar	30

Table 4: Student user table in the designed system.

	Column	Type	Length
Password	SPwd	varchar	20
Class number	SClassID	varchar	30
Dormitory number	SHouseID	varchar	30
Name	SName	varchar	50
Student number	Student ID	varchar	20
Telephone	Sphone	varchar	30

affiliated to Jiangxi Normal University as the research object and processes the data based on SQL Server database.

Then, through the statistics and analysis of the developed teaching resources, this paper makes a preliminary discussion on the system. By comparing the system visits and user population distribution of the new system and the original system in one day, the comprehensive effectiveness of the new system to complete physical education teaching design resource information management system is evaluated. The specific comparison results are shown in Figures 7 and 8. Figure 7 shows the visits of the old and new systems at different time periods in one day. Figure 8 shows the distribution of user populations in the old and new systems.

As can be seen from Figure 7, the total number of visits of the original system in one day is 36747 times. Among them, 14:00–16:00 has the largest number of visits, 10,248 times, followed by 10:00–12:00, with 9,600 visits. The two time periods of 8:00–10:00 and 16:00–18:00 have relatively few visits, 8225 times and 8674 times, respectively. The total number of visits to the new system in one day was 39,816. Among them, 14:00–16:00 has the largest number of visits, 10,846 times, followed by 10:00–12:00, with 10,420 visits. The two time periods of 8:00–10:00 and 16:00–18:00 have relatively few visits, 9072 and 9478, respectively. The number of visits to the new system in a day is higher than the number of visits to the old system.

As shown in Figure 8, the main user groups of the original system are students and managers, accounting for 42.86% and 34.03%, respectively. The proportion of teachers is 21.91%, and the proportion of sports practitioners who have graduated is the least, which is 1.2%. The main users of the new system are managers, reaching 39.2%. Then, the students and teachers accounted for 32.29% and 23.67%, respectively. Graduated sports practitioners accounted for 4.84%. The proportion of managers and graduate sports practitioners in the new system is higher than that in the original system. Through the research, it is found that the practicability of this system is very high. Then, these two teaching management systems are used to compare the real-time information, effectiveness, students' learning initiative, and teachers' teaching initiative. Figure 9 shows the real-time information and information effectiveness scores of the old and new systems. Figure 10 shows the scores of students' learning initiative and teachers' teaching initiative in the old and new systems.

As can be seen from Figure 9, the average score of real-time information of the original system is 74.28. Among them, the highest score is 78.4 points, and the lowest score is 70.1 points; the average score of the new system's real-time information is 92.05 points. The highest score is 94.6 points and the lowest score is 89.2 points. The average score of the information validity of the original system is 82.29 points. Among them, the highest score is 84.7 points, and the lowest score is 80.4 points; the average score of information effectiveness of the new system is 93.34 points. The highest score is 96.2 points and the lowest score is 90.7 points. The real-time information and information effectiveness scores of the new system are better.

By analyzing Figure 10, the average score of students' learning initiative in the original system is 74.97. Among them, the highest score is 77.5 points, and the lowest score is

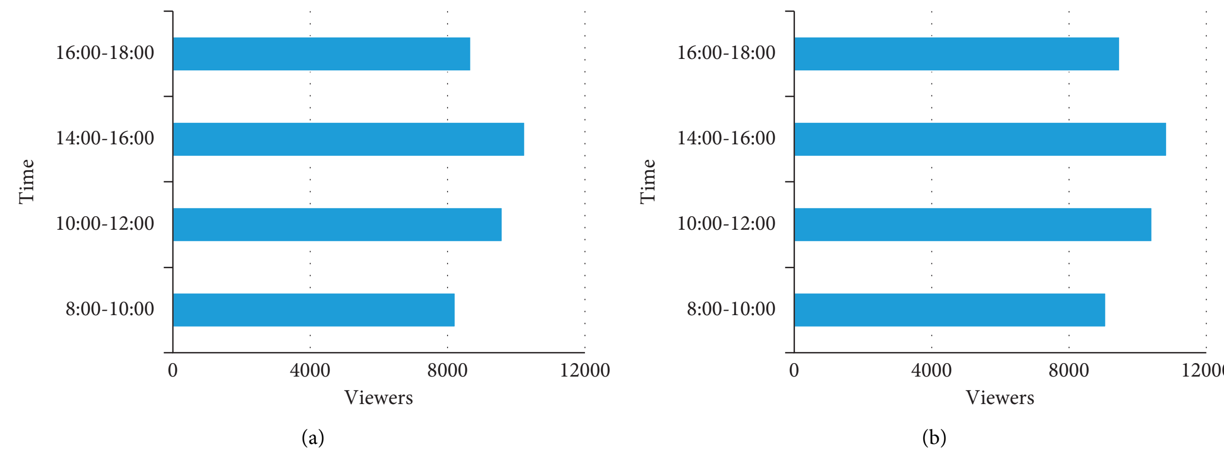

Figure 7: Comparison of the number of visitors to the two systems. (a) The number of visits of the original system in different time periods in a day. (b) The number of visits to the new system at different time periods in a day.

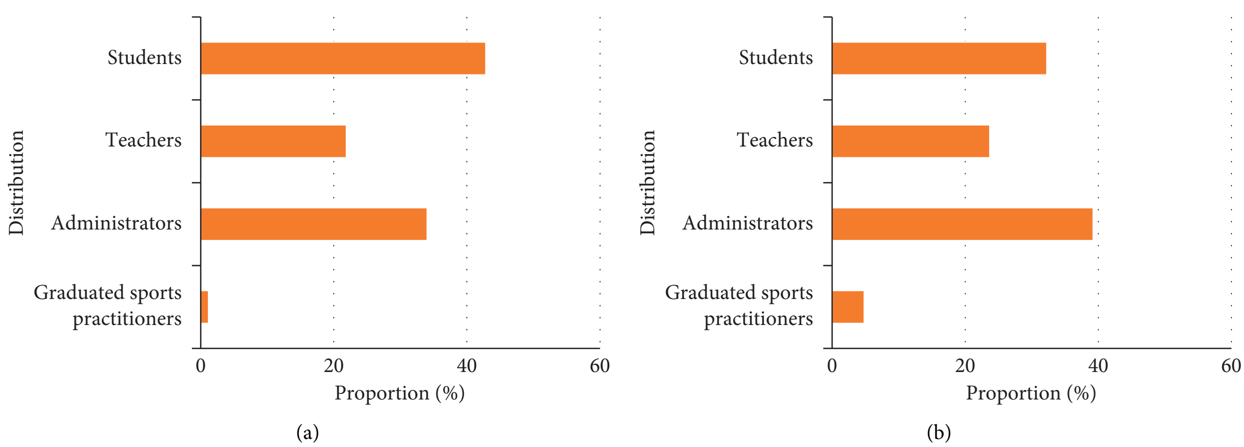

Figure 8: Distribution graph of the user population of the two systems. (a) The user population distribution map of the original system. (b) The user population distribution of the new system.

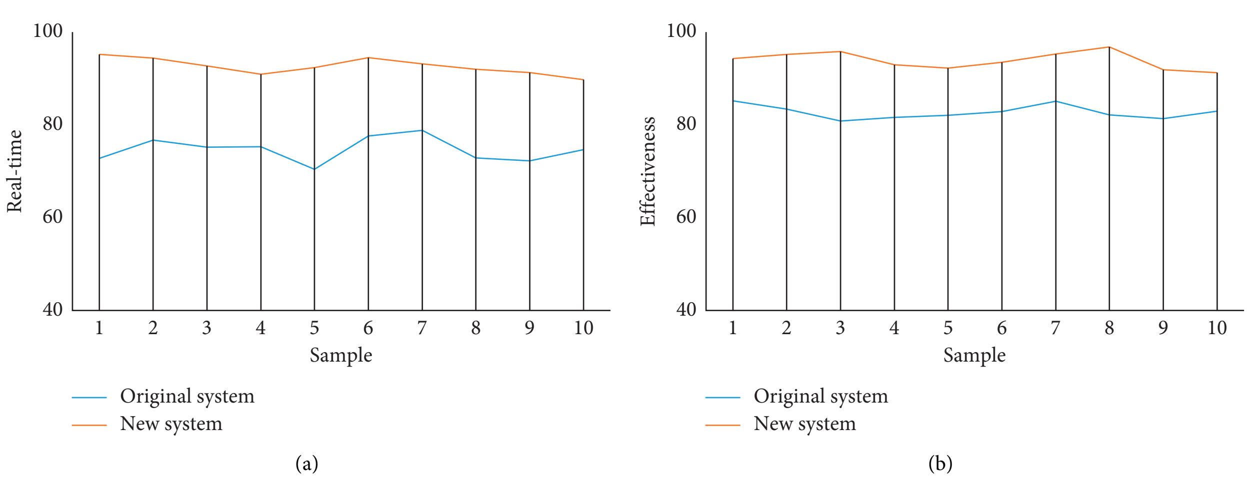

Figure 9: Real-time information and information effectiveness scores of the two systems. (a) The real-time information scores of the original system and the new system. (b) The information effectiveness scores of the original system and the new system.

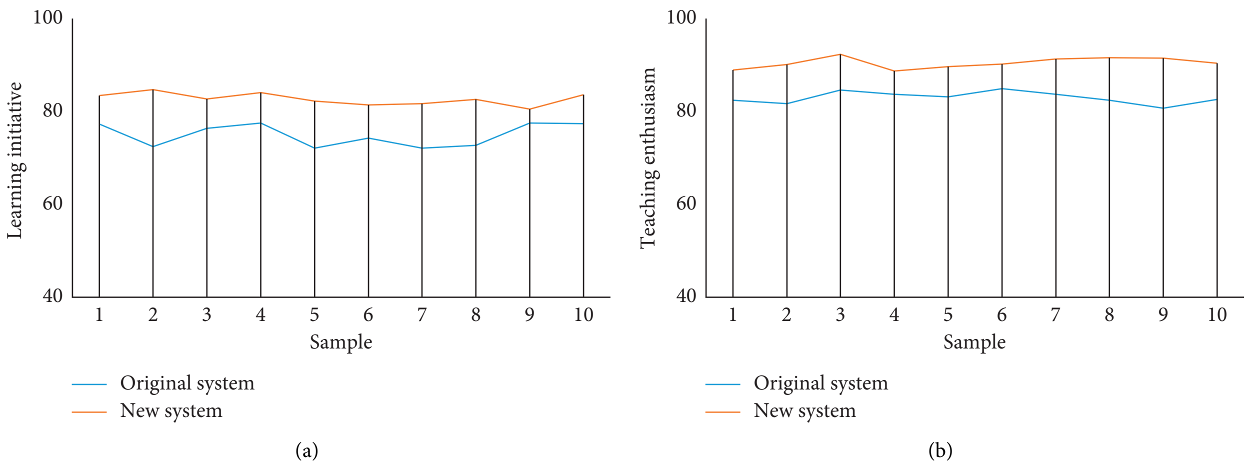

Figure 10: Initiation scores of teachers and students of the original system and the new system. (a) The students' learning initiative scores in the original system and the new system. (b) The teacher's teaching initiative scores in the original system and the new system.

72.1 points; the average score of students' learning initiative in the new system is 82.69 points. The highest score is 84.7 points and the lowest score is 80.5 points. The average score of teachers' teaching initiative in the original system is 82.98 points. Among them, the highest score is 84.9 points, and the lowest score is 80.7 points; the average score of teachers' teaching initiative in the new system is 90.46 points. The highest score was 91.6 points and the lowest score was 88.7 points. Under the new system, students' learning enthusiasm and teachers' enthusiasm are higher than those of the old system.

6. Conclusion

As the development of artificial intelligence has a more and more profound impact on physical education activities, physical education teachers and managers should actively adapt to the trend of informatization and intelligence in physical education teaching and actively introduce artificial intelligence technology. Only in this way can we further strengthen the contents and methods of sports activities and cultivate students' enthusiasm to participate in sports. Using the artificial intelligence technology of big data, the information management of physical education teaching resources is realized, in addition to grades and physical fitness test results. It enables students to easily check their physical education selection, grades, and physical fitness indicators. It achieves convenient management and achieves the function of simple and rapid query, which reduces data redundancy and repeated manual operations in data management. The workload of physical education teachers is greatly reduced, and students can understand and master personal data and information at any time. The development of a comprehensive management system for physical education resources information provides strong support for the scientific, standardized, and computerized implementation of physical education management. On the basis of the design and implementation of the system platform, the relevant functional design can be further improved according to the school physical education curriculum setting and physical education research. It also discusses the effective connection with the school's comprehensive teaching management platform, and the integrated development with other management databases. In this way, the important position of physical education teaching in personnel training is more prominent. This paper studies and analyzes the physical education resource information management system completely. However, the system still has defects in function and data analysis, and there are still many needs to be optimized in practical operation.

Data Availability

The data that support the findings of this study are available from the author upon reasonable request.

Conflicts of Interest

The author declares no conflicts of interest.

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