Design and Implementation of the School Sports Management System Based on WEB

Guanghui Sun(✉)

Zhengzhou University of Science and Technology,
Zhengzhou 450064, Henan, China
sunrenjin@126.com

Abstract. With the continuous improvement of the levels of the sports informationization, the sports information management system is more and more widely used in school sports, competitive sports and social sports. From the single-machine system to the file/server model-based system, to the client/server (C/S) model-based system to the browser/server-based system, various forms of the management information systems serve the sports management work at the same time. With the development of the network technology, the Browser/Server-based system has become the mainstream network system.

Keywords: WEB · School physical education · Management system · Design idea · Implementation mechanism

The school physical education management system based on the WEB fully combines the massive resources of the Internet web and the data mining analysis technology, which can carry out the real-time analysis of the students' learning stages and results, provide a basis for the students to master their own learning progress and for the teachers to develop their teaching promotion programs, and promote the improvement of the sports teaching levels [1].

1 Web and the Database Interconnection Technology

1.1 Web Technology

The Web technology, invented by the Geneva Particle Physics Laboratory, belongs to the hypertext technology. It can link any point of a file to any point of another file, so as to achieve the rapid information browsing. The Web technology has two standards. One is the Hypertext Transfer Protocol (HTTP) and the other is the Hypertext Markup Language (HTML). With these two presentation layer grammars, the clients of the Web are traditionally called the browser, and the text written in the HTML is the home page [2]. The next home page is transmitted through the HTTP protocol. In this case, the use of the CGI technology can make the application of the Web broader.

Z. Xu et al. (Eds.): CSIA 2019, AISC 928, pp. 49–54, 2020.
https://doi.org/10.1007/978-3-030-15235-2_8

1.2 Database Technology

The database processing is an important part of the computer applications. Data can be processed through the data collection, storage, processing and dissemination. The data management refers to the classification, organization, coding and storage of the data. The structure of the database system is constantly developing, and various unused structures meet different needs. First of all, we must determine the system architecture mode, and the most basic are the C/S structure and the B/S structure [3]. The advantage of the B/S is to simplify the system maintenance and upgrade, reduce the costs and expand the choice opportunities, but it may make the server run with the heavy data load. The C/S structure should go through at least three layers. The first layer is the client, and the second layer is the business logic server, while the third layer is the database [4]. The advantage of this structure is that it can store the data centrally, and the business logic and the security rules can be defined once on the server, while the backup and the recovery are easier, and the network traffic is reduced.

1.3 Interconnection Technology

There are many kinds of the Web and the database interconnection technologies, including the general gateway interface, the PHP, the dynamic server pages, and the ASP.NET and other technologies. The CGI is the interface between the Web and the database. The main function of CGI is to transmit the customer requirements to the database form the homepage, and then send it to the customers by the Web server [5]. This kind of the intervention makes the Web more powerful and can build the dynamic Web pages. Although it is inefficient, it is the first one to use this technology. The PHP can support multiple platforms. The extended PHP can communicate with other network teaching. The dynamic server pages are abbreviated as ASP, which can support a variety of the scripting languages. Therefore, they can quickly complete the application of the website. They are compatible with many languages. They use the simple text editors and contain six built-in objects. The ASP.NET provides the powerful functions, which can be used to develop the programs to support the exception control and the type safety and so on.

2 Design Background of the School Sports Management System

The WEB teaching plays an important role in the physical education. According to the different levels of students, it can make the appropriate WEB teaching mechanisms to meet the needs of the students at different levels. You can learn without occupying the class time, and as long as you can surf the Internet, you can learn the knowledge and skills of the relevant parties. The technical, tactical and physical training, the practice methods, the competition methods and the refereeing issues can be more comprehensively learnt and understood. Therefore, we can greatly increase the enthusiasms and initiatives of the sports enthusiasts, so that we can consciously and voluntarily use

their knowledge to guide them to be engaged in more extracurricular physical exercises, improve their own sports levels and play the purpose of fitness.

In traditional physical education, teachers disseminate the knowledge and technologies to the students. Because teachers always play a leading role and students are in a passive role, the teaching form between the teachers and the students is a relationship of "you tell and I listen, and you do and I practice", so that the students' learning efficiency is relatively low. Compared with the traditional teaching mode, the WEB teaching mechanism of the physical education takes the form of the words and graphics, combines audios, videos and animations, and displays the teaching contents in the three-dimensional way. Its manifestations and means are more abundant and flexible, which can fully reflect its unique advantages. The modern WEB teaching technology, which integrates texts, images, sounds, animations and the interactive network, can make the teaching process vivid and full of pictures and texts. At the same time, the use of the WEB teaching technology can establish the campus network, connect with the Internet, and enter the world teaching sharing system.

The traditional teaching mode divides the educational groups into the educators and the educatees. Educators use their knowledge carriers to convey the knowledge and develop the skills of the educatees by means of the media. Educators themselves participate in the teaching activities as the knowledge carriers. As no one can fully inherit the scientific and cultural heritage of the human beings, the carriers used by educators are limited to books, educational tools and teachers themselves. The way for the educators to acquire the knowledge is relatively simple. Teachers emerge as the main subjects in the teaching process. The control of the knowledge transmission, the selection of the teaching materials and the teaching methods are all decided by the teachers. Students can only passively receive the education under this mode.

With the continuous development of the society and the progress of the science and technology, the management efficiency of the higher education has been greatly improved. Especially with the expansion of the enrollment leading to the expansion of the scale of schools, the improvement of the management efficiency has important and practical significance for our daily operation. As one of the most important compulsory items in our education, and especially the changes of the current national sports system, the requirements of the sports management are also obviously strengthened. Because of the comparative advantages of the disciplines, the trend in the cross-disciplinary research has brought the potential huge room for the improvement of the school sports management. Therefore, how to design and develop an effective management system has become an urgent practical issue for the school sports management departments. The development of the sports management system can make the sports teaching and management informationized, highly efficient and standardized, which can further improve the efficiency of the sports management.

This paper studies how to improve the efficiency of the school physical education management by using the WEB. Through the design and development of the school physical education management system, it can provide an efficient and standardized management operation process for the school physical education teachers, thus helping them to complete the functions and objectives of the sports management. Through the in-depth analysis of the school physical education management, the JAVA technology and the SQL Server2008 database technology are used as the basic tools for the system

development and application, and the system's expansibility and maintainability are improved. In the field of sports, the research of the large-scale management information system based on the B/S mode is less, which hinders the improvement of the overall level of the sports information in China to a certain extent. Therefore, it is necessary to study the management information system based on the B/S mode.

3 Design and Implementation of the School Sports Management System Based on the WEB

The main goal of the system development is to design and build an online course selection system which integrates the information, the network and the automation according to the characteristics of the school physical education. The system is designed in the B/S mode. With the support of the TCP/IP, the client accesses the technology and the structure of the Web server and the background database through the browser. This system mainly includes the design and implementation of the administrator-side functional module, the student-side functional module, the teacher-side functional module and the database design, the three-tier B/S system architecture, the system platform building, the user interface design, and the system security design and so on. The system realizes the office automation of the course selection management and can effectively promote the scientific level of the sports teaching management.

In the process of developing the school sports management system, firstly, we need to enrich the database of the teaching resources, arrange the sports-related resources through the network, books, and expert talks and so on, and store them in the database in a unified format. After confirming the database resources, we should design the functional modules of the school sports management system. Each functional module is an important part of the system, and we can draw the block diagram of the system structure. We design and develop the functions from the aspects of the system management, the course selection, the strengthening exercises, and the user login and so on. The design follows the modular design concept, which can facilitate the expansion and maintenance of the system in the future.

From the point of view of the functional module, the school sports management system uses the multi-level menu options. After the students and the teachers use their respective roles to carry out the system, they can complete the input and opening of the information by clicking on different options, and obtain the corresponding resources from the system. The school physical education management system adopts the web to design, and uses the MVC design concept to separate the display, the control and the model. At the same time, it combines the ASP web page technology to design the human-computer interaction pages, and integrates the physical education and the network organically to form a perfect sports teaching management system. The data mining technology is introduced into the database. By analyzing the data of the students' operation in the system and the results of the daily exercises, the direction and the weak links of the students' interests in sports are excavated, and the sports resources that the students are interested in are precisely pushed forward, and the

differentiated counseling strategies can be formulated for the teachers to make a reference.

The users of the school sports management system are mainly divided into three rights, namely administrators, teachers and students. Users with different permissions will have different permissions to operate when they enter the system. For example, administrators are the maintainers of the entire school sports management system. They can operate on the curriculum management, the personnel permission setting, the management of the site facilities, the data addition, deletion and modification, and the group announcement information publication and so on. They have the highest permissions. After entering the system, the students can inquire about the courses they choose, modify their personal basic information, browse the physical education resources, and query the results, which mainly involve the operation of the students themselves. Teachers can grasp the students' learning situations in the real time in the system, and can formulate the different teaching promotion programs to promote the all-round development of the sports knowledge of the students.

The Web teaching assistant platform provides the abundant teaching resources, facilitates the classroom teaching, and also provides the teachers with the sufficient time to pay attention to the students' learning behaviors, and more time to adjust their teaching behaviors according to their learning conditions. Under the Web-assisted platform, "learning to teach" is the main characteristic of the teachers' teaching behaviors. The evaluation of the learning effect mainly uses the form of the self-evaluation or the mutual evaluation to evaluate the completion of the works, to explore the solutions to the typical problems, to exchange and summarize the experience, and to share the excellent works.

The database of the system fully considers the division of the data tables and their relations in the design process. It contains the following database tables: the teacher information table, the student information table, the teacher status, the student status, the curriculum information table, the student selection table, the class curriculum timetable, the grading question bank, the questionnaire question bank, various grading states, the teacher evaluation records, the teacher mutual evaluation records, the teacher self-evaluation record, the student evaluation records, the teacher score statistics, the questionnaire survey records, and the record of the suggestions and opinions. In the trial run stage of the system, the system functional test and the system performance test are mainly carried out. The purpose of the functional testing is to ensure that the functions of the software meet the requirements of the software. Based on different testing purposes, testers need a series of the tests, such as designing the language testing, the database testing, the form testing, the Cookies testing, and the link testing and so on. The performance testing is one of the most difficult steps in the entire testing process, which is aimed at the testing of the entire system, such as the connection performance test, the load test, the concurrent test, and the large data measurement test and so on.

4 Conclusion

With the progress of our society, people have gradually entered the information age. The Web technology not only plays an important role in people's daily life, but also plays an irreplaceable role in our sports teaching. At present, in terms of the teaching and management, the application level of the WEB technology is not very high, and the advantages of this technology in the field of the physical education have not been brought into full play. In order to gradually change this situation and let the Web technology play a greater role in our physical education, this paper focuses on the discussion of the development of the sports management system based on the Web technology.

Acknowledgement. The study is supported by the following projects: (1) "The Chinese disabled person sports culture in the construction of the rule of law practice and promoting research" (2016&ZX062). (2) The topic "independent college physical test study of students in Henan province" from the project of Henan Science and Technology department (2017A004). (3) The topic "Internet+" movement, under the background of mobile phone APP to join the university sports teaching evaluation effectiveness research (SKL-2018-2299).

References

1. Li L, Ma Q (2015) Development and application of the computer comprehensive management system for the school physical education based on network. Electron Test (01):115–116
2. Qiu B, Ding W, Ma Q (2015) Analysis of the development and application the school sports computer integrated management system. New Technol New Process (08):100–101
3. Lu B, Yin J, Gao S, Jin K, Liao Y, Ren Y (2017) Computer science education: opportunities for all – characteristics and enlightenment of K-12 computer science framework in the United States. E-educ Res (03):133–134
4. Zhong L, Luo Z (2016) Design and implementation of the web-based management system for the student attendance – taking the sports schools of Shenzhen City as an example. Inf Technol Educ (08):123–124
5. Kong Y (2017) Development and research of the school physical education computer teaching and the automation management system. Autom Instrum (09):134–135