Track and Field Teaching Management System Based on B/S Architecture

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Abstract: As long as the computer is connected to the Internet, the data can be transmitted online, realizing real-time data sharing, avoiding people's duplication of work, and then realizing standardized management of track and field teaching, thereby actively improving management efficiency and work level. The purpose of this paper is to study the design and implementation of track and field teaching management system based on B/S architecture. Firstly, the development background of the track and field teaching system based on the B/S structure is introduced, the development history and dynamics of the track and field teaching management information system are summarized, and the development value and significance of the system are explained. Secondly, it analyzes the reasons for the difficulties faced by the teaching of track and field special courses, introduces the principles of the overall design of the track and field teaching management system, and explains the data flow analysis of the system and the detailed structure display of the database design. Finally, the design and implementation of the system are explained, and the key algorithm of system document management and the key code of performance management are realized. The results show that the system can help teachers to manage track and field teaching more efficiently.

1. Introduction

Modern teaching technology is the process of conveying information to students in the integrated form of text, graphics, images, sounds, animations and videos. It not only has a large amount of information, but also can simplify the complex, turn the difficult into the easy, and turn the static into the dynamic; it can turn the boring teaching content into vivid and interesting, and stimulate the interest and enthusiasm of students in learning [1-2]. If a large number of modern teaching techniques are used in the teaching process of track and field technology courses, it can stimulate students' interest in learning, make students change from passive learning to active learning, and establish a correct way of thinking. Apply modern teaching techniques [3-4].
Combining modern teaching technology with track and field technology teaching can make up for the deficiencies in traditional teaching. Some scholars have analyzed the outstanding problems of the current integration of modern information technology and physical education, and on this basis, they have explored to deepen the teaching reform and optimize the structure of physical education through the integration of modern information technology and physical education. It stimulated students’ interest in learning and achieved good teaching effect [5]. Some scholars have expounded the scientific high school physical education quality evaluation through the method of logical reasoning. The research proposed that the implementation of high school physical education quality evaluation must achieve: clarify all track and field teaching ideas, use the latest track and field curriculum goals, and insist on what is an effective track and field. Teaching, establish a scientific high school track and field teaching quality concept, establish a scientific teaching quality evaluation index system and evaluation model [6]. Some scholars have proposed a design scheme of college education management system based on C/S B/S architecture. The realization method is discussed from the aspects of overall system design, system development environment, system function modules, database system selection, and system security assurance [7]. The use of modern teaching technology to carry out teaching is relatively popular in colleges and universities, but the application in the teaching of sports professional track and field technology courses is rare, and modern teaching technology methods are rarely used in the teaching process of track and field technology courses [8].

Aiming at the current situation that it is difficult to use modern teaching management technology in track and field technology classes, this paper proposes a practical and effective multimedia teaching management system. And through the realization of this system, it is proved that a large number of application of modern teaching technology in track and field teaching management can help teachers to analyze and solve problems, so as to improve students’ learning skills and improve teaching effect.

2. Research on Track and Field Teaching Management System Based on B/S Architecture

2.1 The Reasons for the Difficulties Faced by the Teaching of Track and Field Special Courses

With the adjustment of physical education courses, many colleges and universities have excluded track and field sports from the scope of physical education courses; many teachers often focus on the teaching content and the project itself; and their own basic theories are insufficient, and they cannot teach students. Detailed explanation of the basics and practical movements of each project. Finally, in terms of track and field courses, they do not have high attractiveness. Compared with other sports, track and field courses are very simple and boring, which can neither mobilize students’ initiative to participate, nor improve their attractiveness [9-10].

2.2 Principles of Overall System Design

The development of the system in this paper should consider the following basic principles:

(1) Fully consider the problems existing in the management of track and field teaching, and ensure the integrity and openness of the system design;

(2) To maintain a forward-looking system development and future system upgrades and maintenance, the system needs to consider the principles of system scalability and maintenance factors;

(3) The project is based on the advanced nature, realizes the purpose of economy, and ensures the principle of unity of practicality;
(4) The safe and stable operation of the system is the primary condition, and practicality and reliability should be considered in the design.

2.4 System Functions

(1) Physical Education Information Query
Pushing information for students is its most basic function. The pushed information is not limited to track and field, and at the same time, it is necessary to integrate, filter, edit and publish all intramural sports information, so that students can know the information they need through the system, including: recent intramural sports competitions, various intramural sports The use of sports venues, etc. [11].

(2) Athletics Teaching and Learning Database
An important function in auxiliary track and field teaching is to establish a comprehensive multi-media teaching and learning database including: video, audio, image, and text. The database should include: running, jumping, throwing, race walking, all-around events, etc. Details of over forty athletics events. In the daily teaching process, teachers and students can easily call up these data for daily teaching and learning as long as they log in to the system [12].

(3) Push of sports news
In addition to the daily campus sports information, the system updates the latest sports-related news, especially track and field, so that student users can learn more, more comprehensive, and more professional sports news in a timely manner, and can improve students' understanding of sports. The attention of track and field competitions increases students' interest and enthusiasm in learning track and field events, and promotes the sound development of track and field teaching.

3. Design and Research of Track and Field Teaching Management System Based on B/S Architecture

3.1 Three-tier Browser/Server Architecture (B/S) Structure

In the choice of the implementation scheme of this system, the developers adopted the three-tier B/S architecture based on the browser, application logic server, database server, which is a relatively mature software development architecture in the current software development architecture, as the software architecture. B/S mode allows users to fully rely on the browser to carry out various data behavior operations; on the other hand, the main transaction of the system is completed on the server side, the user sends the system data request through the browser, and then the server completes the data request sent by the user, and transmit the subsequent data operation behavior to the terminal according to the data information.

3.2 Database Design

In the specific development process of the Honda Path teaching management system, the MySQL 5.5 development version was selected (the subsequent system deployment should be converted to the server version to ensure the stability of the system). The MySQL installation package can be legally downloaded to the free version from the Internet. After the installation is complete, simple settings (set the server name, root password, etc.) can be started. In the process of database development, developers cannot rely on the pure command development method provided by MySQL itself to develop and manage system data. The system developers chose Navicat to develop and manage the MySQL database system, which is a free database management GUI tool provided by a third party.
After the establishment of the MySQL development environment, the database development of the track and field teaching management system cannot be carried out immediately. Developers must first complete the design and optimization of the system database to reduce data redundancy caused by unreasonable database structure in the later development of the system. In the process of database design of the system, the most important step is to summarize and classify the data information that the system needs to process to form a basic table structure, then build the database model, and complete the field association between the data tables during the building process and exclusion of redundant fields works.

4. Realization and Analysis of Track and Field Teaching Management System Based on B/S Architecture

4.1 Implementation of Key Algorithms for System Document Management

In the design work of this system, in the process of analyzing and designing the function realization of the specific function modules, there will definitely be some complicated algorithms that need to be solved by developers. Some algorithms and corresponding codes can be obtained by reference or directly use the research results of others, but in the development process of this system, it is inevitable that developers need to complete the development of specific algorithm applications by themselves. The two main algorithms used in this system are Chinese word segmentation algorithm and application and page data display algorithm and application. The Chinese word segmentation processing algorithm used in this paper is represented by the algorithm flow chart, as shown in Figure 1.

![Algorithm Flow Chart](image_url)

Statistical language models commonly used in Chinese word segmentation are based on Bayesian probability theory. Bayesian formula:

\[
P(B|A) = \frac{P(A|B)P(B)}{P(A)}
\]  

(1)
Applying this formula to natural language processing, B represents a word segmentation result, and A represents the sentence being processed. Since $P(A)$ is the probability that sentence A appears, regardless of how the sentence is divided, it can be regarded as a constant, and the formula can be transformed into:

$$P(B|A) \propto P(A|B)P(B)$$

(2)

In Chinese word segmentation, $P(A|B)P(B)$ can be regarded as the possibility of a participle phrase forming a sentence multiplied by the possibility of this word segmentation method.

4.2 Achievement of Performance Management

The score entry is entered by specialized personnel, and the operation needs to be logged in to ensure the authenticity and validity of the data. According to the selection of the project that needs to be entered, all the team members of the project will be displayed. After entering the results, the ranking will be automatically performed to prepare for the subsequent final admission work. There are three different situations for entry: entry of track race results (non-relay race), entry of field race results, and entry of relay race results. The results of field and track events must be entered in accordance with their respective formats.

Add athlete results, modify results, delete results, when adding sports events, you need to fill in the basic information of the results. If there is any error, it will prompt the system error. Grades just added can be deleted. The following code is the processing logic when adding grades:

```csharp
protected void Button1_Click(object sender, EventArgs e)
{
    string sql;
    sql="insert into chengji(bianhao,xingming,bisaixiangmu,leixing,chengji)
    int result;
    result = new Class1().hssexecute(sql);
}
```

Some grades are entered as shown in Table 1, and the grade management view is shown in Figure 2:

<table>
<thead>
<tr>
<th>Competition items</th>
<th>student ID</th>
<th>ranking</th>
<th>score</th>
</tr>
</thead>
<tbody>
<tr>
<td>sprint</td>
<td>001</td>
<td>68</td>
<td>74</td>
</tr>
<tr>
<td>high jump</td>
<td>002</td>
<td>15</td>
<td>92</td>
</tr>
<tr>
<td>long distance running</td>
<td>003</td>
<td>33</td>
<td>81</td>
</tr>
</tbody>
</table>

Table 1: Partial score entry form
5. Conclusions

Using the track and field teaching management system based on the B/S structure to carry out track and field technology teaching management can give full play to the leading role of teachers, improve teachers' ability to differentiate and teach students according to their aptitude, and improve the efficiency of teaching management. Due to reasons such as time, funds and equipment, this study only introduces the performance management in detail, and has achieved good results. It is hoped that qualified schools will continue to use modern teaching methods, that is, the track and field teaching management system based on the B/S architecture, to conduct testing and research on other modules of track and field, so as to gradually revise and improve. Under the conditions, colleges and universities should try their best to use modern teaching methods, that is, track and field teaching management system based on B/S structure for teaching management, so that it can make up for the shortcomings of traditional management methods, so as to improve the quality of teaching, and in practice, be promoted and applied. Create a teaching environment capable of cultivating high-quality talents.

References