REVIEW ARTICLE

DESIGN AND IMPLEMENTATION OF COMPUTER-AIDED PERFORMANCE TESTING SYSTEM FOR SPORTS EQUIPMENT

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ARTICLE DETAILS

ABSTRACT

To study the application of education informatization in physical education and realize the informatization of volleyball teaching, the relevant information of volleyball teaching was collated and analysed. Combined with computer database technology. Using C# and Access2007 as development tools, relevant information was collected into the database in the form of database tables, so as to retrieve and query volleyball teaching information. In this system database, the volleyball teaching information was used as its data source, including the origin and development status of volleyball, volleyball tactics, volleyball competition rules, teaching objectives, teaching methods, action essentials, action demonstrations, organization teaching, training problems and correction methods. The system interface was friendly and easy to use. Users did not need computer expertise, and the main function buttons were displayed on the interface, which was simple and easy to use. It was proved that the data retrieval equipped with pictures and videos can enhance the intuitive effect and illustration. In addition, the system was easy to maintain. It is concluded that the database is maintained to ensure the integrity of the system information according to the development and update of information.

KEYWORDS

Teaching information, teaching preparation, information retrieval, database.

1. INTRODUCTION

Computer-assisted system, literally speaking, is the auxiliary role of computer. At this time, the computer should be indispensable or can increase the corresponding efficiency [1].

At the end of the 20th century, information technology developed rapidly. Open education in China is transformed from one-way, non-real time correspondence and radio and television education to two-way modern distance education based on network technology. Most universities have established teaching resources, including media material library, multimedia courseware library, electronic teaching case library, teaching case library and question bank. They generally use information technology to improve teaching methods, actively adopt modern distance education methods, and initially explore a new model of lifelong learning organization construction under the conditions of information technology. With the development of the application of information technology in education, educational software has also embarked on the track, including lesson preparation system, evaluation and examination system, teaching and educational management system, online on-demand system, question bank system, resource management system, simulation system, and discipline. resource library, research learning platform, courseware production platform and other software. The current hot-selling educational software displayed on major websites mainly involves English learning, children's fun learning, call learning, and new curriculum teaching package. Special software for disciplines rarely appears [2].

2. LITERATURE REVIEW

In her "Design and Implementation of Sports Featured Video Database", Wang Yi collected video resources through such channels as television recording, video tape conversion, optical disc conversion, network download, and network integration. After the format conversion, a design was made through the integration of these resources. Sports video integration platform integrates various sports videos of various disciplines and professions, playing a reference role for teaching and research [3].

She Minke and Shu Weiping applied the principles of computer science and artificial intelligence in the "Study on the Intelligent Textbook Preparation System for Volleyball Technical Teaching" and designed the logical model of the lesson preparation system. Functional simulation method is used to learn the specific expert's teaching experience knowledge and the reasoning and thinking decision-making mode that regulates the teaching process. As a result, the volleyball technology teaching graphics and intelligent lesson preparation system are designed and developed. Through teaching experiment and technology mastery assessment, the effect of lesson preparation system is tested. The results show that the auxiliary effect of the preparation system is significant [4].

The United States "Project 2061" proposed the idea that information technology should be integrated with various disciplines. The goal of this plan is to enhance the scientific and cultural qualities of the entire American people. Through the research and development of various teaching materials and related teaching resources by the "2061 project" expert group, the "2061 Plan" is provided to primary and secondary school teachers all over the country in two forms of printed and electronic publications. This kind of teaching material can be used as a reference for them in teaching, so that they can consciously integrate disciplines. Since the mid-1990s, the practice of integration of information technology and curriculum across the Canada and other countries has also been increasing, and good results have been achieved [5].

3. DESIGN AND IMPLEMENTATION OF COMPUTER AIDED SYSTEM FOR VOLLEYBALL TEACHING

Volleyball teaching design is a plan for volleyball teaching. Teachers need to carry out a scientific and comprehensive analysis of all factors in the teaching process starting from the goal of volleyball teaching and the way to achieve the goal. Then, they need to design appropriate teaching processes, formulate reasonable teaching strategies, and use appropriate teaching methods and teaching methods. Physical education teaching strategies mainly study the types and structure of courses, the order and rhythm of teaching, the education activities, the methods of teaching and learning, the teaching form, the arrangement of teaching time and space, and the implementation of teaching activities. In teaching design, we follow the principle of "economical and effective" to choose teaching media. The teaching content and teaching method are translated into specific, detailed and operative implementation.
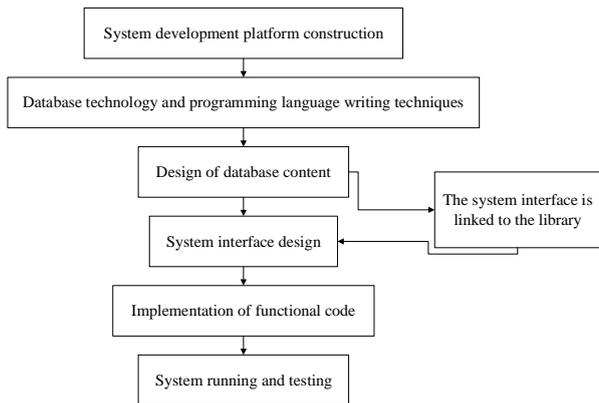

Figure 1: System design flow chart

4. SYSTEM APPLICATION AND DISCUSSION

4.1 System function

Volleyball sports presentation form should provide teachers and students with information about volleyball. The origin, rules and development of volleyball are rich in content.

Technical and tactical table must be able to store the essentials and technical methods of volleyball technology, including related pictures and videos, the formation and playing skill of volleyball tactics. These are information collected in volleyball textbooks and major well-known websites. This information not only provides teachers with rich teaching materials, but also provides students with accurate and clear learning resources.

The teaching strategy table stores teaching steps of various technologies, selects teaching videos and pictures, and provides users with rich resource information.

Celebrity anecdotal table collects the celebrities in the history of Chinese volleyball and summarizes their life and technical characteristics in the form of words and pictures, which can provide teachers with material for theoretical classes and meet the needs of teachers using various means to demonstrate teaching content.

The teacher-student communication table should be able to store information related to teacher-student communication in real time, questions submitted by students, questions about classroom content and suggestions for teaching improvement. Teachers can answer students' questions and appropriately improve the teaching process according to the students' feedback. Both teachers and students can submit ideas and suggestions on the website of this system according to their own needs. The administrator can improve the system website according to the feedback information to better meet the needs of the users.

The password plan stores the lesson plans for the volleyball exquisite courses. Both teachers and students can view the lesson plans and print them out, providing teachers with reference to the lesson plans.

The role management table stores several types of user rights, including super administrators, teachers, and ordinary users. Super administrators can change user rights to facilitate user rights management.

If you scan the user input account and password, the user can enter the system. The administrator can change, add or delete user information, and can improve and maintain the system website based on the number and quality of users.

4.2 Maintenance of database information of computer aided system in volleyball teaching in colleges and universities

After a database is created, the work is called database maintenance. Database maintenance is more difficult than database creation and use. Database maintenance is mainly about updating information in time. In the process of developing the system, we not only ensure the accuracy and scientificity of the information, but also update and supplement the content of the database with the progress of science and technology and the updating of the knowledge. In addition, we also need to update and supplement the database, including the addition, deletion and modification of the corresponding content, the editing of the text information, the update and preservation of the pictures. These functions can be achieved through the function buttons on the interface [6].

4.3 Practical application effect evaluation

To verify the practicality of the auxiliary system, some colleges in Jiangsu province invited some teachers with rich experience in volleyball teaching to go through actual online use and subjectively evaluated the performance of the system. Expert evaluation results are shown in table 1.

Table 1: Evaluation content and results

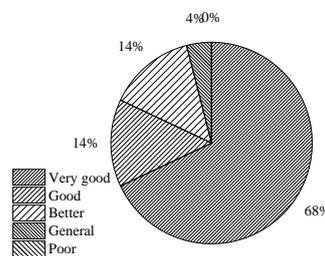|	Comment content	Very good	Good	Better	Normal	Poor
Interface design	Visual appearance	8	10	3	1	
	Navigation directory	12	9	1		
Teaching reference	Introduction of volleyball in China	8	6	6	2	
	Technology and tactics	10	6	6	1	
	Celebrity anecdote	9	8	3	2	
Function	Teaching strategy	15	3	3	1	
	Teacher-student exchange	5	8	4	4	1
	Preparation of lesson plans	9	4	8	1	

Figure 2: Teaching strategy
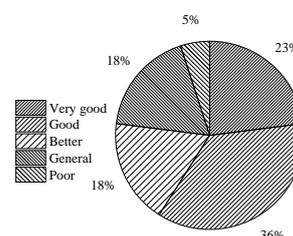
Figure 3: Teacher-student communication

Judging from the overall situation of the evaluation results, the evaluation rate given by the experts is "very good" and "good". This shows that the system can meet the needs of teaching practice and teacher teaching. Among them, experts gave the highest appraisal of the teaching strategy design, followed by the navigation directory. This shows that the design of these functions is more in line with teaching practice and the needs of teachers. Relatively, the teacher-student exchange has low evaluation. In addition, experts also put forward more suggestions for the content of "introduction to China's volleyball sport". These evaluations put forward the need for improvement in the system.
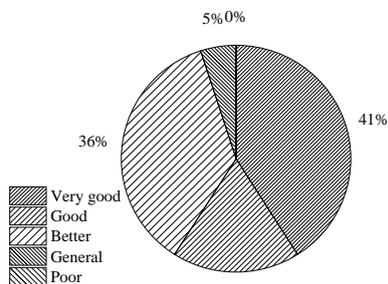

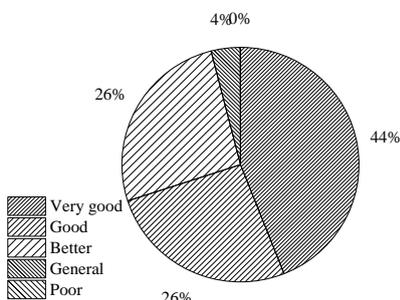**Figure 4:** Preparation of lesson plans

Figure 5: Technology and tactics

The communication function such as student-student exchange needs to be further improved. The design of communication function should be more convenient for teachers and students to communicate, so that teachers can receive student feedback information in real time. "Introduction to volleyball sports in China" belongs to teaching reference materials. The teaching reference material for volleyball sports is almost non-marginal. Therefore, when designing the system, this part can allow users of the system to use according to their own condition. The situation is enriched by the system maintenance function.

5. CONCLUSION

The system has the functions of introduction to volleyball sports, technical and tactical action methods and essentials, teaching strategies, well-known men and women coaches and athletes of Chinese volleyball, fine lesson plans, and related pictures and videos. The purpose is to realize the informatization of volleyball teaching and improve the quality of volleyball teaching. The system is easy to use and the user interface is friendly. Users can use the system without professional computer knowledge. The use of software is interactive and the main function buttons are in a prominent position on the interface. At the same time, pictures and videos can also give users visual effects.

The database tables of this system are independent. Teachers can add relevant information according to their needs. Each application function is also independent, which is beneficial to the user's maintenance and expansion of the system and is easy to maintain. The amount of information related to volleyball teaching is huge. Although the database of this system only realizes the sorting and entry of some contents, the user can update the information in a timely manner as an administrator based on the function of easy maintenance of the database. It ensures that ordinary users can view real-time information. Applying computer technology to physical education teaching practice can make certain contribution to the informatization of physical education.

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