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Application of Intelligent Computer Aided Teaching System in Aerobics Teaching

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Abstract

With the rapid development of information technology, the application of multimedia technology has spread into all areas of society, not only changing our work and life, but also changing our education and learning methods, greatly improving our work, as well as the learning efficiency. In view of this, this paper will use intelligent computer technology to assist in aerobics teaching research. The experimental investigation method is used combined with computer and aerobics teaching knowledge to discuss the computer-aided teaching system for aerobics teaching. At last, based on the experimental results, the study was reconsidered. Through this study, we can help aerobics teaching improve the teaching level and provide a reference for the development of curriculum resources.

Keywords: *computer; aided teaching; aerobics*

1. Introduction

Aerobics has many features, such as variation, variety of movements, strong compositionality, and many difficult movements. In the teaching process, it is necessary to use multimedia and other technologies to aid teaching. In addition, in the process of using multimedia teaching, a new teaching environment where students can also contact with the learning content more closely can be created to stimulate students' interest in learning, and even further enhance students' aerobics enthusiasm, so that students have a holistic and multi-perspective sense of learning. In general, the use of multimedia technology for teaching aids can constantly explore novel teaching methods in the teaching process, allowing students to more intuitively accept learning content, so as to achieve better learning results. However, relevant data shows that the effect of some college aerobics teachers using multimedia technology to assist teaching is not significant, and many problems remain to be solved.

2. The advantages of introducing CAI system into aerobics teaching

With the advancement of science and technology in China, computer hardware has been universally popularized, and teaching resources are gradually enriched with the development of science and technology. In particular, with the rapid development of the Internet, most universities in China have a campus network. Aerobics intelligent computer-aided teaching is opened based on the campus network. It's more concerned with the coverage of the campus network and the degree of setting up the campus sports website about whether it can smoothly develop and expand the sports intelligent computer aided teaching.

2.1 Helping students develop self-learning habits

The Third Plenary Session of the 18th CPC Central Committee states in the *Decision of the Central Committee of the Communist Party on Several Major Issues Concerning Comprehensively Deepening Reforms* that it is necessary to strengthen the reform work in the education field and further implement related work in physical education and extra-curricular exercises so that the youth in our country can develop healthily and enhance their health. Students' physique ensures that students are strong and healthy. In 2015, the Ministry of Education re-emphasized the sports-related work in schools and promulgated the *Implementation Opinions on Strengthening Physical Education Classes and Extra-curricular Exercises to Deepen Reform of School Physical Education*, which proves that our country attaches great importance to it. The physical and mental

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health of youngsters in our country and their comprehensive physique are very concerned about the future development of young people. As college students who hold high the banner of the motherland in the future, they must actively respond to these tasks and implement them.

2.2 Helping raise the awareness of online education for schools and teachers

People's subjective consciousness directly affects the production of problems. In the teaching process, the leaders and teachers of most schools generally follow the traditional teaching methods and do not realize the importance of development and reform. Teachers of physical education in particular follow the traditions of compliance and they believe that physical education classes are not suitable for intelligent computer-aided instruction. The main reasons for these problems are that they do not have a thorough understanding of this teaching model, and do not have a general understanding of the methods, process and efficiency of intelligent computer-aided teaching either. In the development of intelligent computer-aided instruction, the support of school leaders and teachers will enable this work to be carried out smoothly. Therefore, relevant experts and scholars have a long road of theoretical and practical research to follow in carrying out intelligent computer-aided teaching.

3.3 Helping effectively extend teaching time

One of the distinguishing features of intelligent computer-aided instruction is the rich variety of materials. Without specific time limits, teaching can be conducted asynchronously. Therefore, in the process of physical education, it can lay the role of extra-curricular guidance which can be used as an auxiliary teaching function. Extending the knowledge of physical education from the classroom to the outside allows students to learn more relevant knowledge. Using this kind of intelligent computer-aided teaching, teachers can also use the network interaction technology to asynchronously guide students in physical education after class learning and exercise, which extend students' learning time and allow them to gain more knowledge. At present, in the process of physical education teaching, the implementation of online education is not yet in place. To vigorously develop school network education, the problems of too few school physical education curriculum arrangements and single forms can be effectively solved.

3. A detailed analysis of the needs of intelligent computer aided instruction in aerobics

The implementation of intelligent computer aided instruction needs to be established on an open platform. It can be relatively flexible and non-restrictive in terms of time and place. At the same time, it does not have huge data flow pressure and is relatively safe. Therefore, it is scientific and reasonable to develop using the B/S three-tier structure model.

In selecting the database, we use the SQL Server2000 database. It allows the system to run stably. In the interface of the platform, the aspx developed by C# is used. Regarding hardware, the server requires a processor frequency of higher than Pentium IV2.0 G Hz, a RAM of 512 MB or more, and a hard disk of 40 GB or more. The operating system uses Microsoft Windows 2003 Server with Microsoft NET Framework 1.1 or above.

Before the system is developed, it is necessary to analyze the functional requirements in detail so that the system users can fully understand it.

Starting from the intelligent computer aided teaching system, it is usually applied by administrators, teachers and students. It has a unique function for each use object, as shown in Figure 2-1.

Figure 2-1 Functions that the system user role needs to implement

System user role	Functions to be realized
Student	Register, log in the system; modify information and password; check the information of courses; select courses, withdrawal and modification; participation in asking questions, investigations and discussion; evaluate the teaching effect; make comments and leave messages; take exams, inquire the scores; upload and download related material.
Teacher	Register, log in the system; modify information and password; upload and download related material; answer questions; set investigation projects; participation in related discussions; give a mark for students' comments and posts; set exam questions.
Administrator	Manage the information and password of the users; manage all the messages, comments, questions, posts; manage the opening time of the system and sub-system; manage all the uploaded material; manage the question bank; check and output the statistics and analysis results.

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3.1 Establishing aerobics intelligent computer aided teaching system

To establish a complete aerobics computer-aided teaching system, first of all, different sections and related functions in each section must be designed. The entire organizational structure of the teaching system is divided into seven sections.

3.1.1 Course selection

The course selection module is a common functional module, which is included in the overall physical education. However, in the process of teaching aerobics, multiple classes are usually set up. Overall, aerobics is extracted as a subsystem for specific analysis.

3.1.1.1 Specific course information

The function of this section is the information of class. The specific content mainly includes the information of teacher, course, place of class, class time, number of classes and the remaining places. The course information also includes the content of lecture and the progress of course. According to the information provided by this section, students can independently choose classes according to actual conditions.

3.1.1.2 Course (class) selection

After students have selected a course (class), they can use this system for detailed selection. If the student's information and course requirements are not in compliance, or if the number of students enrolled in the class is full, this course cannot be selected.

3.1.1.3 Withdrawal and modification

When students want to choose another course, they can use this system to make changes and withdrawals.

3.2 Teaching module

This module does not include all modules for teaching activities. Instead, it translates traditional teaching methods into the Internet. For example, students can download courseware. In the traditional teaching method, students and teachers conduct classes in the same classroom, teachers give lectures to demonstrate courseware, and students listen. In this section, the courseware and content demonstrated by the teacher can be downloaded.

3.2.1.1Courseware download

The function of this module is that students download courseware for teachers during the class, including all teachers and students, and they can upload and download courseware.

3.2.1.2Theoretical material

In addition to the teacher's courseware, aerobics also have many documents and papers, etc. These contents can be directly output in HTML. At the same time, students can also download and browse the files in PDF or CAJ format. At the same time, in this section there are related aerobic website links, which can effectively help students to expand aerobics related knowledge.

3.2.1.3Video pictures

The aerobics teaching has its special characteristics. Text teaching cannot achieve significant teaching effects. Videotapes and pictures are more vivid and intuitive for students to learn. During the teaching process, teachers can organize the pictures into a booklet for students to make flexible adjustments, save and browse. Video recording uses rstp and mms streaming media. In case of network speed, many video tapes can be watched online. When the internet speed is very slow, it can be downloaded.

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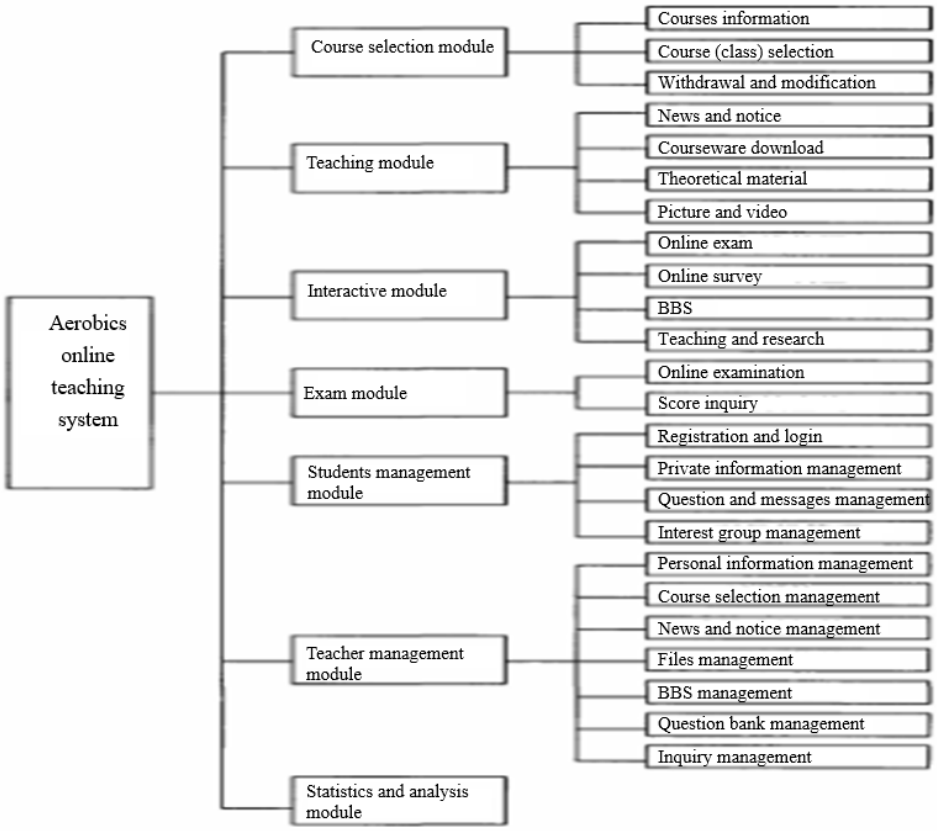

Figure 3-1 The structural diagram of the application of functional computer aided teaching system in the aerobics teaching system

3.3 Interactive module

The interactive module is very similar to the traditional teaching method. It enables teachers and students to interact with each other flexibly.

3.3.1.1On-line answer

With this feature, students can ask questions at any time and put questions online, after which the teacher answers. There is a lot of flexibility in the process of asking questions. For example, a student can specify a teacher to answer the question. The visibility of questions and answers can also be set. Even when the teacher is designated, the teacher may not be able to hand over the questions, making the entire system relatively easy and flexible.

3.3.1.2Teaching evaluation

The function of this section is to allow students to evaluate teachers' teaching methods, contents and attitudes. There are five levels of evaluation results. They are very good, good, general, poor, and bad. The final result will be counted and the pie chart or histogram will be presented. The results will be counted in the teacher's performance assessment.

3.4 Exam module

The function of this section is to allow students to take online exams. The content of the exam is randomly selected from the bank of questions and the students answer the questions online within the prescribed time. Students can also be organized to answer questions in the computer room. After completing the exam, the system will automatically give a score. After students evaluate the teachers, they can check their scores.

3.5 Students management module

3.5.1.1Registation and login

In addition to browsing, students must log in to the system to use other functions. The system will record the students' use of each login, such as login time, online time and so on.

3.5.1.2Managment of private data

In completing the information, students must fill in the correct name, student number, gender, class, and email address. These contents will affect the course selection. These contents, login password can be modified, and the password can also be retrieved.

3.5.1.3Leaving messages for questions

The format of this section is that in an interface, students can see their posts, messages, and questions raised, and the integration of these content effectively reduces the operating time. In addition to viewing features, posts, comments, and related questions can be deleted and modified.

3.6 Teachers management module

3.6.1.1Personal data

When teachers use the system, they must also fill in the correct information in the system. The teacher's information will be displayed in the content of the taught

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course to facilitate the students' course selection. In this section, teachers can delete their own data.

3.6.1.2 Course-selection management

The function of this section is to perform teacher assignments and set up courses. This section is targeted and is only open to system administrators. The main contents of the course selection information are: name, place, time, number, teacher and other information. After the setting is completed, the course schedule will be generated automatically. When all students have selected the courses, it will automatically generate an elective list, and the teacher can print.

3.6.1.3Matetial file management

Using the upload function of the system, teachers can upload corresponding courseware, document materials, pictures, or video data to the server for students to download and use. The uploaded file can also be deleted.

3.6.1.4 Test base management

This section is included in the section of exam. The question type of the test base is usually a judgment question and a multiple choice question. The teacher can add or delete specific content, or edit the specific content.

3.6.1.5 Statistical analysis module

The main function of this module is to evaluate students' effectiveness of using the online education system, which will be described in later chapters.

4. Coordinating the relationship between traditional teaching and aerobics computer aided teaching

4.1 The relationship between traditional teaching and aerobics computer aided teaching

There are continuous attempts to reform during the teaching process, but not all changes are correct. To improve the efficiency and correctness of reforms, first of all, you must look at the current trend of world education reform, understand the advantages and disadvantages of the traditional education model, and thoroughly understand the characteristics of the reformed teaching model compared to the previous. In 1993, a number of experts and scholars in the United States put forward a report: *Using Educational Technology to Support Educational Reform*. The report constructs a guiding framework that points out the direction for how to use modern technology to reform basic education and clearly reflects the concept of reform education of international education world today. According to the description in the report, we can find the difference between traditional education and sports online education, as shown in Figure 3-9.

Figure 2-3 Comparison of sports traditional teaching and sports computer teaching

Traditional sports teaching	Sports online teaching
Teacher guidance	Students' exploration
Sermonic teaching	Interactive guidance
Single subject, independent teaching module separating from situations	Multiple subjects extension module with pragmatic tasks
Teachers as the knowledge dispenser	Teachers as the promoters
Homogeneous group (ability)	Heterogeneous group
For the factual knowledge and discrete skills evaluation	Evaluation based on the performance (facing process)

From the table, comparing with traditional teaching methods, it can be seen that the use of modern physical online education can help students master the content they have learned better. For aerobics teaching, online education can improve teaching efficiency. However, this does not mean that traditional teaching can be replaced by intelligent computer aided instruction. From the sports point of view, it improves the participation of students in sports activities to allow students to participate in sports activities, making them aware of exercise and enjoy sports. Therefore, intelligent computer aided teaching is only an auxiliary teaching method for the time being. As a sport, aerobics, like other sports, highlights the process of participation and the process of exercise. Today, the practice of traditional teaching cannot be achieved by intelligent computer aided instruction, for example, adjusting the posture of students. (But in the future there may be innovation.) The implementation of intelligent computer-aided teaching of aerobics courses is only a teaching method and process, not the final result. Intelligent computer-aided teaching is only an auxiliary teaching method for traditional teaching. For the selection of courses and examinations, intelligent computer-aided teaching is only to improve teaching efficiency by network and automation. It can be seen that traditional teaching and intelligent computer aided instruction do not have an accurate demarcation line. Instead, they complement each other. In the future teaching process, these two methods should be organically combined.

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4.2 Balance the relationship between traditional teaching and aerobic computer aided teaching

Aerobics teaching is a combination of practice and theory. In the process of aerobics, mastering theoretical knowledge requires certain field exercises. Otherwise, it is impossible to master the entire skills. Therefore, the organizational form of intelligent computer aided teaching must be organically combined online and offline, teaching in the traditional classrooms and on the Internet at the same time. The two teaching methods should learn from each other, taking the best of them to reform, to maximize knowledge efficiency and teaching process. Teachers play a leading role, but also students' role of the cognitive subject should be reflected.The teachers' teaching process and the students' learning process are highly valued at the same time, allowing

teachers and students to maintain the greatest enthusiasm in the process of knowledge dissemination. In the process of teaching, we must realize that traditional teaching and intelligent computer-aided teaching are not opposite sides. Intelligent computer-aided teaching is an extension and assistance of traditional teaching. We must combine traditional teaching with intelligent computer-aided teaching organically and use intelligent computer aided teaching to extend and supplement the traditional teaching content, shorten the distance between the teacher and the student, allow the teacher to carry out timely correction and guidance, use the mode of intelligent computer-aided teaching to enhance the effect of traditional teaching, use the traditional teaching model to manage and supervise the intelligent computer-aided teaching, in this way, maximize the advantages of intelligent computer aided instruction.

5. Conclusion

Specifically, through the study of this paper, the following conclusions are mainly drawn:

Firstly, there are many problems in aerobics teaching in colleges and universities in China today, such as a single teaching content and teaching method, short teaching time, and insufficient teacher resources.

Secondly, under current circumstances, schools have sufficient conditions to carry out computer-aided teaching and development of sports intelligence, but the hardware conditions and software conditions may not be up to standard and need to be strengthened. Scientific and rational setting of aerobics intelligent computer aided teaching system is an important prerequisite for the implementation of aerobics intelligent computer aided teaching, and also a good technical system should be guaranteed. We must transfer the focus to set up the database and the development of related systems.

Thirdly, aerobic computer-aided teaching can be organically combined with related resources to supplement the content of traditional courses. It can also add teaching methods to further highlight the subjectivity of students and allow flexible interaction between teachers and students. As the methods in traditional teaching are too traditional in terms of content, too few classes, and insufficient teacher resources to meet the needs of students, intelligent computer-aided teaching can solve some of the problems and contribute to the schools' study with more advantageous teaching modes. It can also promote physical education innovation in schools.

Fourthly, it can enhance the students' physical fitness and physical and mental health through the organic combination of traditional physical education teaching mode and aerobics network multimedia teaching mode. The final examination results of the control group students and the experimental group students are very different (the pass grade of the mass aerobics is 4.). The implementation of intelligent sports computer-aided teaching can increase students' enthusiasm and positivity for participating in sports and effectively promote students to develop the awareness and habits of physical exercise and learning for life.

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