A Probe into the Integration of Computer Technology and the Development of Aerobics with the Goal of "Two in One"

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Abstract. With the rapid development of computer technology, the application of computer technology in every corner of people's production and life has become a general trend. At present, in order to achieve national fitness, improve the physical quality of the Chinese people and strengthen their physique, China is paying more and more attention to aerobics. As computer technology can effectively improve the shortcomings of traditional aerobics training methods, it is very necessary to apply computer technology in the development of aerobics. This study discusses the development process and characteristics of Chinese aerobics, the basic information of computer-aided instruction system and the way of applying computer technology in aerobics training, which provides a boost for realizing the goal of "two in one".

Keywords: Computer Technology, Aerobics, Multimedia

1. The Development process and characteristics of Chinese aerobics

1.1. The characteristics and development significance of aerobics

Under the accompaniment of music, aerobics is a kind of sports which takes physical exercise as the basic means and aerobic exercise as the basis to improve health, shape physique and entertainment. Aerobics is a new sports project with comprehensive characteristics, which spans the three major fields of sports, art and education, and integrates gymnastics, music and dance. Its development is deeply influenced by neighboring projects. With its strong, vigorous strength, novel and unique movements and beautiful and harmonious music, it has become one of the favorite sports of contemporary people. It embodies the comprehensive ability of the human body in many aspects, such as strength, flexibility, coordination, sense of rhythm, aesthetics and expression. [1]

There are also many styles of aerobics: General aerobics, fighting aerobics, yoga aerobics and so on. According to the form of practice, aerobics can be divided into three categories: unarmed aerobics, light equipment aerobics and special field aerobics.

Compared with other ways of physical exercise, aerobics has its own characteristics, including the timeliness of fitness, strong sense of the times and rhythm, high and artistic and extensive applicability and so on. Especially in recent years, aerobics has made rapid development not only in the form of practice, but also in the scientific combination of movements and the sense of rhythm of music. There
are more and more kinds of aerobics, people have more and more opportunities to choose, and their understanding and love of aerobics are also deepening.\[^{[2]}\]

The main purpose of body-building aerobics exercises is to "exercise to keep fit". The movement of body-building aerobics is simple and practical, and the speed of music is slow, and in order to ensure a certain exercise load and the comprehensiveness of exercise, there are many repetitions, and all appear in the form of symmetry. The practice time of body-building aerobics can be long or short, and the requirements of practice can also be changed according to individual conditions. It strictly follows the principle of "health and safety", prevents the emergence of sports injuries, and achieves the purpose of physical exercise on the basis of ensuring safety.

1.2. The development of Chinese aerobics

Aerobics in China has sprung up since the early 1980s and has experienced more than 20 years up to now. With the increase of domestic and foreign competitions, the improvement of rules and the hot development of mass aerobics, aerobics is becoming more and more mature.

(1) the stage of universal development:

From 1997 to 2005, Chinese aerobics started from scratch, started hard, and was in line with international standards in a decisive and timely manner. After six years of hard work, the group event aerobics stood on the podium for the first time at the 2004 World Championships, and the event won the championship at the Seventh World Games in 2005.

(2) mature and growing stage:

The Chinese aerobics team won the six-man gold medal in the men's grass and team event at the Ninth World Championships in 2006. China has won five consecutive championships in the team event, and won all the individual championships in the Asian Championships and the Asian Indoor Games.

(3) Golden stage of development:

Since 2011, the Chinese aerobics national training team has won a total of 97 gold medals, 45 silver medals and 30 bronze medals in the World Championships, the World Games, the World University Games, the World International Invitational Championships and the Asian Championships.

2. An overview of the application of computer technology in education

2.1. The concept of computer-assisted instruction

Computer-assisted instruction (CAI) is a modern information technology characterized by multimedia, networking and intelligence. It integrates information technology as a tool into the organic whole of the subject curriculum and becomes an integral part of the curriculum. It leads to that many kinds of teaching resources and teaching links are arranged and combined by information technology tools. Mutual integration, to achieve overall optimization.\[^{[3]}\]
2.2. *Advantages of computer-assisted instruction*[^4]

(1) Optimize the teaching effect and control the teaching rhythm.

Through the demonstration of multimedia courseware, it not only helps to realize the teaching effect, but also arranges the classroom teaching plan reasonably, so that the teaching process can move forward according to the preset train of thought. Especially for a lot of theoretical knowledge which cannot be tested, multimedia courseware teaching highlights its great advantages. In addition, the use of multimedia technology to replace the operation of some demonstration experiments can also effectively control the rhythm of the classroom. Because many factors of the experiment may lead to the experiment phenomenon is not obvious, the experiment time can not be controlled, while the multimedia courseware completely avoids these possible factors, so that the teaching time can be arranged methodically.

(2) Stimulate interest and fun in learning.

The application of multimedia technology in teaching can enable students to see the interactive integrated information with both pictures and text, audio-visual integration, and can read the teaching content in the multimedia courseware and listen to the sound information related to classroom teaching, watch the process and principle of the experiment. This new form of information breaks the dull learning atmosphere, changes the boring and single way of learning, and enables students to understand information more vividly, generate interest and fun in learning, and obtain information
actively and in a timely manner. Students focus their attention, stimulate their desire to express, and interact with teachers, instead of being passive receivers of classroom teaching. This is a new way of expression that can not be given by the traditional teaching mode.

(3) Make full use of classroom time and pay close attention to students' developments.

Teachers all hope that in the limited time of classroom teaching, we can improve the density of information dissemination, impart as much knowledge as possible, and improve the effect of classroom teaching. In the traditional teaching environment, classroom teaching often wastes a lot of time because of dealing with events that are not directly related to teaching. The application of modern multimedia technology makes a lot of preparation work ready in advance, which makes effective use of the precious time in the classroom, greatly improves the opportunities for students to participate in teaching, and optimizes the design of classroom teaching as a whole.

3. Applying computer technology to the development of aerobics.

The influence of computer technology on the development of aerobics is mainly reflected in the teaching of aerobics. Whether it is the multimedia courseware in the classroom, or the use of computer editing software to optimize the design of aerobics music, can reflect the important role of computer technology in the development of aerobics. Next, take the combination of computer calculation and aerobics teaching as an example to explore the steps of establishing a computer-aided aerobics teaching system.

(1) Determine the framework of the system.

The determination of the frame structure needs to clarify the purpose and task of aerobics teaching, and design the overall framework on the basis of the syllabus. In order to carry out aerobics teaching activities more effectively, the design of the overall frame structure should be concise, intuitive, clear and interrelated. Combined with the aerobics teaching materials, the design of this computer-aided instruction system is divided into four main modules:

a) basic theory module of action: Aerobics technical movements commonly used research methods, sports teaching theory, training methods.

b) Teaching venue and evaluation principle module: Aerobics formation layout, clothing specifications and related decorations, adjudication standards, referees' duties, analysis of common mistakes in aerobics referees and troubleshooting units in the form of human-computer interaction.

c) Action teaching and difficult action playback module: Basic teaching method unit, technical action analysis unit, essentials analysis unit, important and difficult action analysis unit and action video decomposition teaching unit.

d) Evaluation module

(2) Prepare material

Computer-assisted instruction system contains a wealth of teaching resources, including text, animation, images, sound and pictures and so on. The following steps should be followed in the preparation of the material:

a) Carry out the screening of materials according to the teaching tasks and objectives, and write the design text, record the sound and select the appropriate background music.

b) Shoot video teaching resources, including standard action videos and wrong action videos.

c) Shoot the referee video of the aerobics competition, and assemble the materials into teaching resources with the help of three-dimensional animation technology and image processing software.

(3) Establish a teaching system. The establishment of intelligent computer-aided instruction system overcomes the problems of monotonous traditional teaching mode and low teaching effect.

The aerobics intelligent computer-aided teaching system can easily classify the teaching modules of aerobics and store the corresponding teaching resources. Then the navigation icon is used to convert between different modules, and the framework is used to turn the pages of different teaching contents. Whether they are students or teachers, as long as they use the corresponding module, they can acquire the teaching resources they would like to use on the corresponding window. All these improve the
interest of aerobics teaching, attract students to keep exploring and make progress in the process of exploration.

4. Conclusion
At present, computer technology is developing rapidly. The application of computer technology in all aspects of life has become a general trend. In recent years, computer technology has been widely used in sports, including aerobics, swimming and so on. In aerobics training, the computer-aided system can ensure that the movement parameters of athletes are mastered at the first time, and various teaching plates can also help students check their training results, analyze their own problems and improve them after class. Therefore, it is very necessary to form a "two-in-one" state between computer technology and the training process of aerobics.

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