Method of Sports Assistant Teaching Based on Multimedia Network

Ning-ning Zhang(✉)

Liaoning Petrochemical Vocational and Technical College, Jinzhou, China
znn961@163.com

Abstract. In view of the poor teaching effect of the traditional sports teaching method, this paper designs the sports auxiliary teaching method based on the multimedia network. By introducing extended knowledge, using visual method and language method, improving teaching means, making multimedia courseware with flash, combining the teaching content and teaching needs of sports, changing teaching mode, applying advanced teaching facilities, and completing the design of auxiliary teaching method of sports based on multimedia network. The results show that, compared with the traditional teaching methods, the application of multimedia network in physical education teaching, its teaching effect has been significantly improved.

Keywords: Multimedia network · Sports · Auxiliary teaching

1 Introduction

As an important tool of modern information processing, computer has played an important role in many fields, of course, it is also applied to the field of education. With the application of Internet and the design and application of various course software, multimedia technology has entered the daily teaching and learning. The making and application of multimedia courseware has also become one of the important skills that teachers and educators must master [1]. Physical education includes not only the basic knowledge of physical education in the classroom, but also the technical skills of physical exercises in the gym and the combination of classroom and playground. This requires physical education teachers to explain the technical essentials with concise language, demonstrate and demonstrate the process with standard actions, so that students can understand and see clearly, and perceive the technical process from it, otherwise it will directly affect the learning effect of students. In the use of traditional teaching methods, influenced by many factors, to effectively solve these problems in the actual teaching has become the key to the reform of sports teaching. As a modern teaching method, multimedia teaching is a vivid intuitive teaching, which enriches the teaching methods, and its superiority is much greater than the role of intuitive teaching aids. Wu ying [2] proposes the application of autonomous learning based on multimedia network environment in universities Taking students as the center, cultivating students' autonomous learning ability, making students really improve their English application ability and improving the quality of college English teaching, has an important influence on our future English teaching work. Duan Zhenya et al. [3] took

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the process equipment and control engineering course "process equipment design" as an example to introduce the online classroom construction and practice process based on superstar web teaching platform, and summarize the results of process equipment design in 2014. In 2015, as an evaluation indicator, students analyzed and summarized the effect of using online classroom assisted teaching in order to provide useful help and reference for the online classroom teaching of professional courses and the current classroom teaching reform. With the enrichment of material level, modern teaching methods become simple and easy. Many students have mobile phones, many mobile phones have clear video recording function. Students' actions are recorded in class, and then analyzed by teachers, so that students can clearly see the good and bad of their actions, and correct them. After class, the students can also copy the exercises into the computer, carefully analyze and recall the demonstration actions of the physical education teachers at that time. When the details of the actions and the key areas of the actions cannot be displayed, they can use such means as playing movies, videos, watching TV, computer demonstration, etc. Because movies, videos and televisions can slow down or freeze screen the details and key points of the movements, let students observe the movements carefully, deepen their understanding of the movements, reduce the difficulty of movement learning, and help them to master the movements faster.

The overall framework of the article is:

1. Design the teaching structure, improve the teaching means, make multimedia courseware, summarize the feedback of evaluation after class, and train the ability of multimedia application to realize the assistant teaching of physical education under the multimedia network environment.
2. Early preparation, survey results, the completion of multimedia network-assisted teaching research.
3. Through the experiment contrast, the proposed method has obviously improved the teaching effect.

2 Sports-Aided Teaching Method Based on Multimedia Network

Using multimedia network technology to improve teaching quality, expand teaching scale, promote teaching reform, increase teaching efficiency and stimulate students' interest in learning. The details are as follows (Fig. 1):

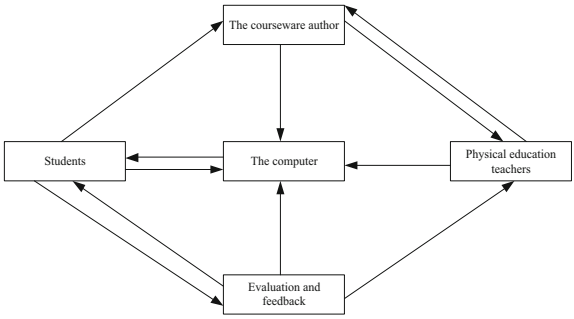

Fig. 1. Application of multimedia-assisted teaching

Sports activities are rich and colorful, and different levels have different actions and different difficulties. It is difficult for teachers to demonstrate every level or set of actions, and the action specifications are not necessarily high, and it is also impossible to remember every sports theoretical knowledge. There are difficulties in the process of demonstration and explanation for students. Multimedia assisted teaching has the advantages of teaching resource sharing, learning resource rich and colorful, rich forms of expression, not limited by time and space, multi-directional interaction and interaction, learning personalization, support for independent learning, creation of equal learning environment, teaching management automation, etc. Make full use of multimedia technology teaching means and can reasonably cooperate with traditional teaching methods to effectively improve the teaching quality and effect of sports.

2.1 Design of Teaching Structure

The overall structure of sports multimedia network teaching is determined by the teaching objectives, teaching contents and the nature of interaction. The essence of sports multimedia network courseware is the organization structure of multimedia information, which reflects the main framework and teaching function of sports multimedia network courseware. The overall structure of courseware is divided into two parts: teaching content and online interaction. Due to the introduction of online teaching methods, a large number of extended knowledge related to the main teaching content of the course can be linked into the teaching content, thus forming a specific teaching resource environment to support the personalized learning of students with different interests and hobbies. Due to the introduction of extended knowledge, the content of courseware is greatly enriched [4]. The content of Sports Multimedia Network Courseware certainly includes theoretical knowledge and practical technical knowledge. The contents of the online interactive part of Sports Multimedia Network Courseware include the overall learning objectives, assessment methods, class arrangement, learning progress and learning methods. Lecture points include teaching tasks, technical action points, difficulties, error prone and correction methods, practice methods, course discussion, teacher's Q&A, course announcement, assignment handling of each project [5].

2.2 Improvement of Teaching Means

Teaching courseware, pictures, videos and audio are combined to deliver to students, which makes the delivered information vivid and intuitive, gives students strong sensory stimulation, stimulates their desire and interest in learning, and makes them more truly experience the teaching situation. The specific comparison between multimedia courseware and single machine courseware is as follows (Table 1):

Table 1. Comparison between multimedia courseware and single machine courseware

	Multimedia courseware	Stand-alone courseware
Environmental conditions	It can be used in network environment It is no need to install and maintain courseware on the client side	The scope of use is limited It is necessary to install and maintain courseware on the client side
Interactivity	In addition to human-computer interaction, students and teachers can interact with each other and interact with others online	Limited to local human-computer interaction
Autonomy	Students have more autonomy and flexibility, and can choose their learning content freely and carry out exploratory learning	Students lack autonomy and flexibility
Resource sharing	Realize the sharing of teaching resources and link the network information resources	Can only use local resources, can not share teaching resources, small amount of information

In the teaching of physical education, visual method and language method are usually used. Because of the relationship between the technical level and age of physical education teachers, the demonstration action is not necessarily standard and standard. If only the language method is used for explanation, the effect may not be ideal. If we need to fully reflect the initiative and enthusiasm of students, and then give full play to the main role of students, we can solve these problems by using multimedia technology to repeat, change the playing speed, freeze frame playing sports courseware and so on. With the development and progress of information technology, physical education should change the teaching mode which is teacher centered, textbook centered and classroom centered, to the teaching mode which is teacher led and student-centered, and use modern education theory and information technology, so as to realize the theory and practice of teaching optimization [6].

2.3 Multimedia Courseware Production

In order to diversify the teaching content of physical education, the application of multimedia network courseware is introduced. In the process of making network courseware, we need to consider the writing and design of text, graphics, pictures, sound, animation, video and other materials, as well as the link between these different

materials. Script includes text script, sound script, graphic design, animation design, video design and function design. The function design of Sports Multimedia Network Courseware includes the selection of interface and level, the determination of selection button and function button, the display mode of course content, the link mode of different types of materials, the design content of navigation mode, the determination of file structure of courseware, etc. The purpose is to use multimedia network means to complete the auxiliary teaching of specific content as much as possible. Generally, according to the requirements of the overall structure, the interface is designed as a three-level structure, namely, the main interface, content selection interface and content explanation interface [7]. The home page divides the content selection button into two groups, that is, the teaching content group and the online interaction group. In order to reduce the number of interface switching and improve the running speed of courseware, not only the selection buttons of each section but also the switching buttons of each chapter are set in the content selection interface. Around a certain teaching content, there are many kinds of teaching methods, such as text introduction, graphics, pictures and video clips, animation explanation. In addition, you can also provide other hypertext link buttons, such as "enjoy" links with other websites. The function buttons of the interface comprehensively consider the various needs of students, and appropriately increase the dynamic effect and interest of the buttons. Before making courseware collectively, we should collect, arrange and edit all kinds of materials used in the courseware, and try to avoid grasping materials temporarily in the process of courseware making. Material preparation includes two processes, one is the selection of original material, the other is the processing of material. The acquisition of original materials can be realized by image acquisition through scanner, recording and video recording by software, and can also be obtained from the Internet and various material discs. Many original materials can not be directly used in the courseware. They are modified according to the requirements of sports courseware or the purpose of teaching, which is mainly realized by media editing software. In order to improve the efficiency of courseware making, we should make use of the available material resources as much as possible [8].

In the script of courseware, according to the teaching design, the process of making courseware should be expressed in written form with words and figures in advance to guide courseware makers to collect materials and integrate courseware. The textbook is the blueprint of courseware development. A deep understanding of the knowledge structure and content system of the textbook is conducive to the compilation of courseware manuscript. Flash mx 2004 software is used to make the animation file with the extension of SWF. The human body is divided into head, trunk, left upper arm, left small arm, right upper arm, right small arm, left thigh, left calf, right thigh, right calf and other parts, and these graphic elements are established. Because in the middle of doing the movement, we need to turn the body and see different sides of the body, so we need to do the head, trunk, calf and other components. That is to say, according to the needs of the whole action, components are built to make the animation vivid. Build a complete "human". According to our action needs, set the shoulder joint, elbow joint, skeleton joint and knee joint of this person to be movable when making graphic components. Its sports interface is shown in the following figure (Fig. 2):

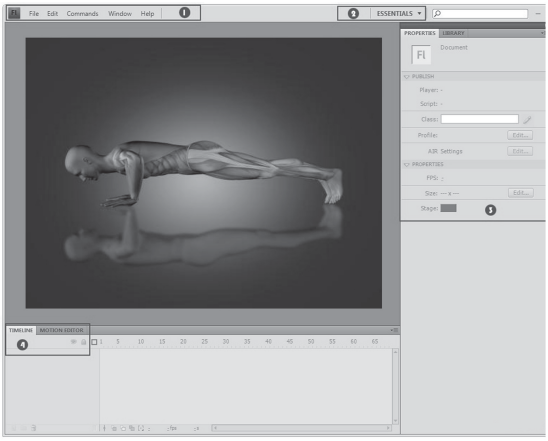

Fig. 2. Flash sports interface

Combined with the teaching content and teaching needs of sports, the network courseware of sports can be divided into teaching network courseware, testing network courseware and simulation network courseware. Teaching network courseware focuses on the teaching of sports technology and theoretical knowledge, which can provide students with self-learning. This kind of courseware simulates the steps and procedures of traditional classroom teaching or autonomous learning, usually provides the contents of teaching materials to students, teaches them various concepts and skills, and arranges exercises and assignments. Generally speaking, there should be action demonstration, explanation, action essentials, teaching methods, students' error prone and correction methods, theoretical knowledge, etc. The test-based network courseware focuses on providing repeated practice opportunities for the theoretical knowledge of sports, or evaluating the teaching effect after the completion of teaching activities. This kind of courseware should be the earliest and most extensive one. However, the simulation courseware is relatively complex and not widely used in sports, which needs the design and completion of computer professionals [9].

As a teacher in the 21st century, he should master the production technology of electronic teaching plan which integrates various media and technologies. Based on the sports multimedia network courseware, it can solve the problem that the time of theoretical explanation is tight and not systematic in the sports practice class, and the teaching content of sports can be completely and systematically taught on the Internet. In sports teaching, we should make full use of network courseware and electronic teaching plan, and use them reasonably with traditional teaching methods. We can use the courseware to explain the action essentials vividly, so as to achieve the purpose of assisting extracurricular exercise. We can use the conditions provided by the network to guide interested students to discuss and answer questions.

2.4 After-Class Evaluation Feedback

The end of classroom teaching does not mean the end of teaching activities. In the teaching process, teaching evaluation and feedback is also an essential link. The implementation of this link enables teachers and students to recognize their own shortcomings from different aspects, and to correct and improve in the subsequent teaching activities. Teachers use the link function of wechat group and QQ group to convey the learning situation of students to students in time after each PE class. After class, students should make full use of the broadcast function of mobile phone, computer or iPad and other media tools to watch carefully the sports action video displayed by themselves in class. Students can compare their own actions, which places are easy to forget, whether the steps are correct, whether the arm movements are coordinated, how the amplitude and strength of the actions are, what are the shortcomings of their peers, how to avoid the same mistakes in the future study, and whether they can imitate the teaching video to further improve the details of the actions after mastering the correct actions. In view of these self-awareness and learning problems, teachers can regularly organize students to conduct self-evaluation and mutual evaluation in wechat group [10]. Finally, the teacher should correct the wrong actions of the comments, fully affirm the learning advantages of the students and praise the students who have made great progress in completing the actions, and privately communicate with the students who have poor mastery of the technical actions or poor learning attitude.

2.5 Multimedia Application Ability Training

Change the teaching concept of physical education teachers, keep learning advanced teaching methods and means, give full play to the role of multimedia network teaching, and realize the modernization of physical education. We should pay attention to the training of modern educational technology for sports teachers, give more opportunities for teachers to continue learning about computer application technology and hold modern teaching competitions regularly. To increase teachers' motivation of learning computer and promote the improvement of information quality of physical education teachers. Strengthen the communication among provinces, regions and schools, learn from each other, reduce or avoid low-level repeated practice, improve the starting point of practice, broaden the vision of making courseware; encourage the communication and cooperation of teachers in different disciplines to make high-quality teaching courseware. The teaching decision-making departments and schools at all levels should pay enough attention to the practical teaching of physical education and sports, have a long-term development perspective, invest a certain amount of education funds in the development of multimedia assisted teaching, equip with high-level hardware equipment, software materials, and reasonably arrange the use of existing electric classrooms. If possible, improve the multimedia equipment in the venue to facilitate teaching or training. In addition, as a teacher, we should not only constantly study and innovate teaching methods, but also use heuristic teaching to let students participate in and play their main role. Students and teachers should pool their ideas and ideas and integrate into teaching together to create a harmonious environment and sufficient

conditions for teaching. Teachers should not use multimedia in order to reflect the so-called modern teaching, but should not only retain the advantages of traditional teaching, but also play the advantages of multimedia teaching. Teachers have accumulated a lot of valuable teaching experience in long-term teaching activities. On the basis of traditional teaching experience, with the help of multimedia assistance, we should grasp the problem of "degree" and "quantity" between traditional teaching and multimedia assisted teaching, so as to make teaching more effective with less effort.

3 Investigation on Multimedia Network Assisted Instruction

In order to verify the effectiveness of the multimedia network-based teaching method, a questionnaire was designed.

3.1 Early Preparation

According to the stratified random sampling method of social survey, 20 schools are randomly selected from the first tier cities, which basically represent different economic level areas and various types of schools to send out questionnaires and collect data. Before the questionnaire design, according to the content and purpose of this study, we consulted many books about social investigation, which made full theoretical preparation for the questionnaire design of this paper. Before the formal investigation, after several modifications, 50 experts of scientific research in the field of were invited physical education and sports teaching management to carry out the consultation and test of the validity of the questionnaire. The validity of the questionnaire meets the requirements of this study. The details are as follows (Table 2):

Table 2. Validity test results of questionnaire

Inspection result	Overall design evaluation		Overall content evaluation		Overall evaluation of structure	
	Number of people	%	Number of people	%	Number of people	%
Very appropriate	48	96	47	94	48	96
More appropriate	2	4	3	6	2	4
Ordinary	0	0	0	0	0	0
Inappropriate	0	0	0	0	0	0
Very inappropriate	0	0	0	0	0	0

The data in the above table can show that the questionnaire has good reliability, stability and high consistency, and the reliability meets the requirements of this study. The specific procedures of this questionnaire are as follows ① According to the purpose of the study, the type, factors and level of the study were determined; ② Determine data characteristics and sample size; ③ The corresponding type of statistical data should be judged correctly, and the correct statistical value should be calculated according to the appropriate conditions of statistical method.

The questionnaire is mainly distributed and collected face to face by myself and the entrusted teacher or students. After the questionnaire is recovered, the questionnaire is eliminated, and the distribution and recovery are as follows (Table 3):

Table 3. Statistical table on the distribution and recovery of questionnaires

Questionnaire category	Teacher questionnaire	Student questionnaire
Distribute questionnaires	100	660
Collect the questionnaire	96	619
Valid questionnaires	96	600
Recycled probability	96%	93.8%
RETEST reliability	100%	96.9%

As shown in the above table, a total of 760 questionnaires were distributed to 20 randomly selected colleges and universities, of which 100 were distributed to teachers, 96 were recovered, the recovery rate was 96%; 96 were effective questionnaires, the efficiency rate was 100%; 660 were distributed to college students, 619 were recovered, the recovery rate was 93.8%. The Retest reliability was 96.9%.

3.2 Findings of Investigation

Through the above preparation process, complete the design, distribution, recovery and statistics of the questionnaire, the results are as follows (Table 4):

Table 4. Statistical table of teachers' attitude towards multimedia network assisted instruction in physical education teaching course

Teacher's attitude	Number of times	%
Very supportive	18	18.7
More support	24	25
Basic support	34	35.4
Grudging support	18	18.7
Nonsupport	2	2.1

The survey shows that 18.7% of PE teachers are very supportive of using multimedia to assist teaching in PE practice class, 25% of them are quite supportive, 35.4% of them are basic supportive, 18.7% of them are not very supportive, only 2.1% of them are not. From the data, we can draw the conclusion that most of the physical education teachers think it is necessary to use multimedia to assist teaching in physical education. They can give full play to the advantages of multimedia and make up for the shortcomings of traditional physical education teaching. Only a few physical education teachers who have fallen behind in the concept of education think it is unnecessary and do not support the use of multimedia assisted teaching (Table 5).

Table 5. Statistical table of students' attitude towards multimedia network assisted instruction in physical education teaching course

Student attitude	Number of times	%
Very supportive	201	33.5
More support	261	43.5
Basic support	57	9.5
Grudging support	74	12.3
Nonsupport	7	1.2

Sports multimedia assisted teaching is an irresistible trend of social development. The survey results show that 43.5% of the students are very supportive of the use of Multimedia Assisted Teaching in sports teaching, 43.5% of the students are relatively supportive, and only a few of the students are not. The above data shows that most of the students have a very positive attitude towards the use of Multimedia Assisted Teaching in physical education.

In order to better verify the effectiveness of the application of multimedia network in sports auxiliary teaching, a questionnaire survey was conducted on its teaching advantages. The results are as follows (Table 6):

Table 6. Statistical table of advantages of multimedia assisted instruction

Advantages of multimedia assisted teaching	Students		Teachers	
	Number of times	%	Number of times	%
Make the demonstration more accurate, intuitive and visual	313	52.2	70	72.9
It stimulates students' interest in learning and improves their enthusiasm for learning	400	66.7	72	75
Resource sharing is achieved	224	37.3	14	14.6
Create a classroom atmosphere	420	70	54	56.3

The results show that multimedia assisted instruction has advantages over traditional teaching methods in Teachers' demonstration, students' interest and classroom atmosphere. Multimedia assisted instruction makes teachers' demonstration more accurate, intuitive and vivid, and enables students to form action image more accurately and quickly in teaching, which is conducive to action learning. Compared with the traditional teaching method, it stimulates the students' interest in learning and improves their enthusiasm for learning. Teachers and students believe that multimedia assisted teaching has the advantages of resource sharing and knowledge broadening. These advantages of multimedia assisted teaching are all impossible in the traditional teaching method, and the exertion of these advantages can increase the teaching effect and improve the teaching quality.

4 Conclusions

Multimedia network application is a new interdisciplinary subject formed by computer science, pedagogy and so on. It has its own gradually formed theory and application category, and has its own advantages. It is feasible to develop multimedia network software and make full use of multimedia network to assist sports teaching, which can improve the effect of sports teaching. Due to the limited time, although this paper proposes a multimedia teaching method of physical education course, it lacks the verification of practical teaching based on theoretical suggestions, which is also my future research direction.

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