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Retraction

Retracted: Multimedia Image in Physical Education

Wireless Communications and Mobile Computing

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] X. Hu, C. Peng, and M. Li, "Multimedia Image in Physical Education," *Wireless Communications and Mobile Computing*, vol. 2022, Article ID 9646261, 16 pages, 2022.

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Research Article

Multimedia Image in Physical Education

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With the progress of society and the rapid development of science and technology in the world, the 21st century will be the multimedia era. Therefore, physical education teaching in colleges and universities should take the initiative to seize the opportunity, adapt to social needs, change traditional teaching concepts, introduce modern teaching methods into physical education teaching, enrich physical education teaching content, stimulate students' interest in sports knowledge and sports technology learning, broaden knowledge horizons, improve teaching quality, and promote the development of physical education. The traditional teaching mode restricts the development of physical education (PE) in many aspects, and one of the important contents of modern teaching methods is to master and use modern teaching equipment and means. Therefore, it is necessary to timely change the educational thought, update the educational concept, and actively explore and research new teaching methods that are suitable for the educational concept of the times, to ensure the adaptability, scientificity, and creativity of teaching methods. Based on the above background, the research content of this paper is the application of multimedia CAI technology in PE teaching. Using the methods of document interviews, analysis and induction, and online retrieval, on the basis of reading a large number of professional theoretical books on physical education, multimedia technology, and modern teaching and reform, the application of multimedia technology in physical education teaching in colleges and universities is analyzed. The application is researched at the theoretical level. This paper takes PE college 2019 students as the simulation object. The results show that the pass rate of professional English after the experiment is 15.33% higher than that before the experiment.

1. Introduction

With the popularization of computers and networks in China and their wide application in scientific research and teaching, it has become increasingly important to study the application of multimedia technology in the field of education. Multimedia technology has become a driving force for change in education in western developed countries such as Europe and the United States, especially in the past few decades. In teaching, teachers are no longer erasers and blackboards but are equipped with various multimedia devices such as multimedia computers, audiovisual equipment, and a large number of network resources. This sea change is like a modern soldier on today's battlefield, fully armed with high-tech facilities. In the field of education, a computer is not only science but also a powerful tool for effective teaching media and teaching management. It has changed the current teaching methods, teaching concepts and forms, classroom teaching structure, educational thoughts, and teaching theories. Therefore, a new research field, computer-aided education, is formed. Especially in recent years, computer multimedia technology is becoming more and more mature, which has pushed the research and use of CAI to a new level.

Multimedia CAI is software that takes computers as the main medium to teach. Root et al. use criteria from group experiments and individual case studies to determine quality. From the content, background, and specific teaching practice, this paper further analyzes the research of high quality and appropriate quality [1, 2]. Based on the intact standard, Root et al.'s systematic review established CAI as an evidence-based practice to teach ASD students academic

knowledge with the support of 10 high-quality or sufficient quality single cases and two groups of design studies and put forward suggestions and practical significance for future research [3, 4]. Keyes et al. intervened in reading fluency, comprehension, and generalization of second-grade students who were at risk of reading failure through CAI. Six students were treated with natural reading software three to four times a week for 7 to 12 weeks. Keyes et al.'s multibaseline study using the embedded change standard strategy showed that the ORF of all six participants increased, and five of the six participants improved the ORF on both generalization measures [5, 6]. Soliman and Hilal aim to compare the learning effect of the two groups: the control group (CG) and the experimental group (EG). Soliman and Hilal study the differences in learning outcomes and mathematical attitudes between CAI and traditional teaching. The results show that the total score of CAI is significantly higher than that of traditional teaching methods. In the EG, CAI is more effective to improve students' mathematical understanding and application ability. The factors related to the overall attitude development of mathematics enjoyment, mathematics values, mathematics learning, and mathematics attitude are beneficial to the EG. The significance test supports Soliman and Hilal's hypothesis that CAI can effectively promote the development of teaching methods, help to improve students' mathematics performance, and increase their positive attitude towards subjects [7, 8]. Nweke explored the effect of CAI strategies on achievement and retention of hearing-impaired students. The Nweke study used a quasiexperimental design with 25 students with computer learning hearing impairment from the education areas of Onitsha and Oka as samples. Gender also has a significant impact on the achievement and retention scores of students with hearing impairment who use CAI strategies and sign language teaching [9, 10]. Yuchareon compared the effect of computer-aided teaching and traditional teaching on the training of nurse assistant students in the nursing of patients with a nasogastric tube. Yuchareon randomly divided the nurse assistant students into the CAI group and CG. Yuchareon's research shows that for nursing assistant students, the CAI of nursing NG tube patients is not good for the whole examination. However, CAI provides some help for teaching, especially for theoretical courses [3, 11]. This makes UML difficult to understand because of the limited time in class. Therefore, it is necessary to design a kind of CAI based on a learning aid [12, 13].

School PE is a curriculum with the core of imparting special knowledge and mastering technology and skills, which has strong practicality and diversity of information dissemination methods [14, 15]. The teaching and learning of sports knowledge and fitness methods also need to be closely combined with practice and experience to achieve a good learning effect [16, 17]. Landi et al. use the perspective of social criticism to reflect on the model-based sports teaching practice. Landi et al. connected the new liberalism movement in education with the critical method of body and thought that the model is a useful tool, which is worthy of being included in PE, but we are worried that they should redefine the purpose of PE [18, 19]. The purpose of Kilborn et al.'s research is to contribute to international discussions on PE by expanding previous interpretations of the Canadian PE curriculum and addressing other aspects that may be overlooked [20, 21]. Kilborn et al.'s analysis of PE courses in 10 provinces of Canada shows trends and themes related to the allocation of teaching time, the types of courses organized, and the presentation of learning outcomes [22, 23]. The Yarmak et al. study is aimed at exploring the influence of health promotion methods on the physical condition of girls aged 17-19 in the process of PE. Yarmak et al. found that training 2-3 times a week over a nine-month period improved health because of the work of a large number of muscle groups, mainly the energy supply mechanism of aerobic exercise. On the basis of teaching experiments, Yarmak et al. explored the influence of fitness methods on physical development, functional state, physical fitness, and preparation, as well as psychological and emotional states. In the process of determining the relationship between psychological and emotional state indicators and individual health indicators studied, Yarmak et al. have established a large number of reliable correlations [24, 25]. Due to the importance of PE and the maturity of CAI technology, this paper attempts to explore the application of CAI technology in PE [26, 27].

Through the teaching experiment and the students' evaluation of the teaching effect, this paper analyzes the effect of the application of multimedia-assisted teaching in basketball tactics cooperation. In order to improve the teaching conditions and give full play to the potential of multimedia-assisted teaching, multimedia technology and flexible teaching organization are used to arouse the students' interest in learning and stimulate their enthusiasm for learning. The main innovation of this thesis is to systematically discuss the auxiliary function of multimedia technology to physical education, including its limitations and countermeasures, and also to systematically discuss the application of multimedia CAI in physical education.

2. Multimedia Image and PE

2.1. Multimedia Image. Multimedia CAI includes two application fields: multimedia technology and CAI, that is, the application of multimedia technology in CAI. A multimedia computer is integrated into the whole computer teaching system, forming a variety of teaching activities. Therefore, multimedia CAI can be described as follows: multimedia CAI is an activity way of teachers and students to support teaching and learning by using the technology of computer integrated storage, processing, and multiform presentation of information. Courseware development plays an important role in a computer system, which is the basic condition of developing CAI. However, the design of multimedia courseware is system engineering, which is a high and new technology combining modern education theory and software engineering technology. Therefore, it is necessary to understand both aspects to design excellent multimedia courseware and to form the ability to control the integrated system. The multimedia architecture diagram is shown in Figure 1.

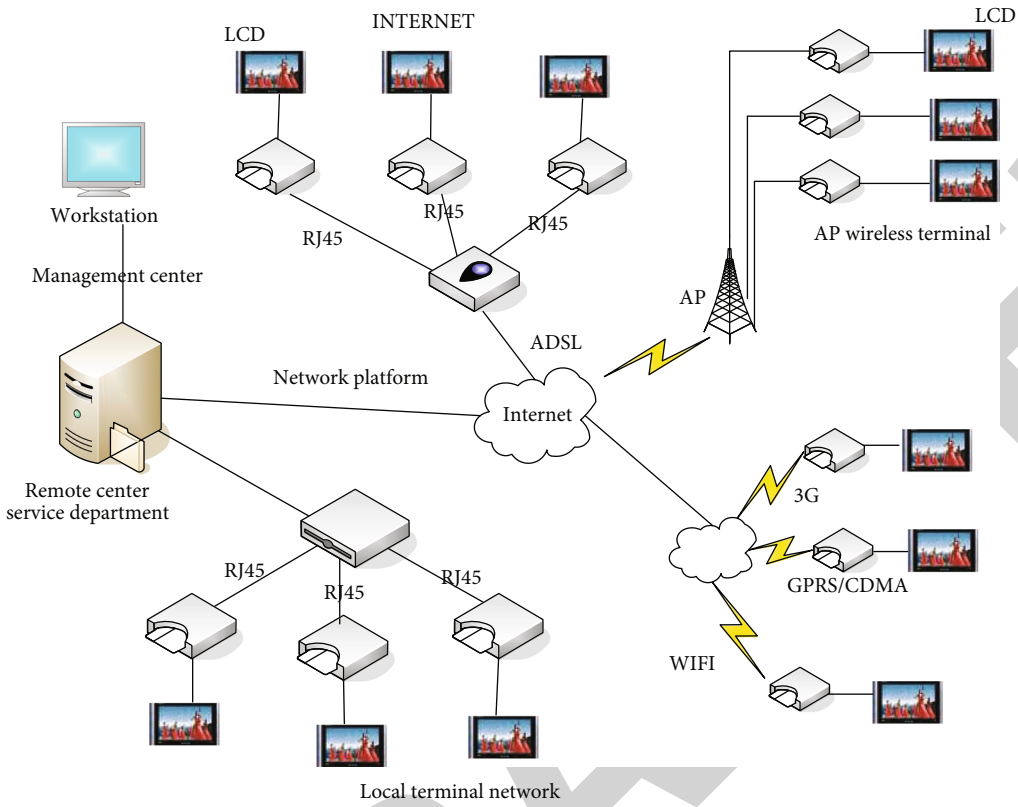

Figure 1: Multimedia architecture diagram.

The production of multimedia courseware emphasizes creativity and expression methods and requires the synthesis of various knowledge. Excellent multimedia works should be the perfect combination of computer technology, professional knowledge, and personal art accomplishment and should follow certain principles in the design of multimedia courseware. Any teaching must be around a certain teaching goal. Therefore, CAI courseware should have a clear teaching goal and play a good role in promoting learners to master the basic knowledge and basic skill training, develop learners' intelligence, and improve teaching quality; scientificity is one of the important standards of courseware evaluation, the basic requirement of scientificity is that there is no knowledge error, and simulation should conform to physical principles. The words, symbols, formulas, charts, concepts, and laws displayed shall be accurate. In order to reflect scientific knowledge and modern science and technology correctly, it is required that CAI courseware should be highly scientific. The content of teaching is the reflection of scientific knowledge and technology. Therefore, all aspects of multimedia courseware should be based on scientificity to ensure its correctness, accuracy, and definiteness. On the premise of ensuring education and scientificity, the compilation of courseware is mainly reflected in the integration of various media information carriers, so that it has strong expressiveness and appeal. This is the key to arouse learners' interest in learning and improve their enthusiasm for learning.

The mode of multimedia-assisted instruction based on LAN is developed with the emergence of network technology. By connecting computers to a network, the advantages of CAI human-computer interaction function and audiovisual technology of teaching towel are concentrated. At the same time, the system can be connected to the campus network, through the school network and other network multimedia systems, so as to facilitate the supervisors to supervise the teaching content and teaching process online and achieve a wide range of resource sharing and information exchange, to meet the diverse needs of individual learning resources. The application of multimedia images in teaching is shown in Figure 2.

2.2. Multimedia Image and PE. The modernization of teaching means includes the improvement and renewal of traditional teaching means, as well as the development and utilization of modern education means. CAI is the integration of teaching information from various media, which provides students with a colorful, lively, convenient, and flexible interface, accomplishes various teaching tasks through human-computer interaction, and optimizes the teaching process and objectives. It not only includes all the functions of the former teaching media but also edits and arranges the graphics, audio, and video according to the actual teaching situation, so that people's different senses can receive the same information source at the same time and achieve the effect of "virtual reality." Teachers can also comment and explain for students in the same time and space and control the time and rhythm of information dissemination, which are difficult to achieve by "premedia."

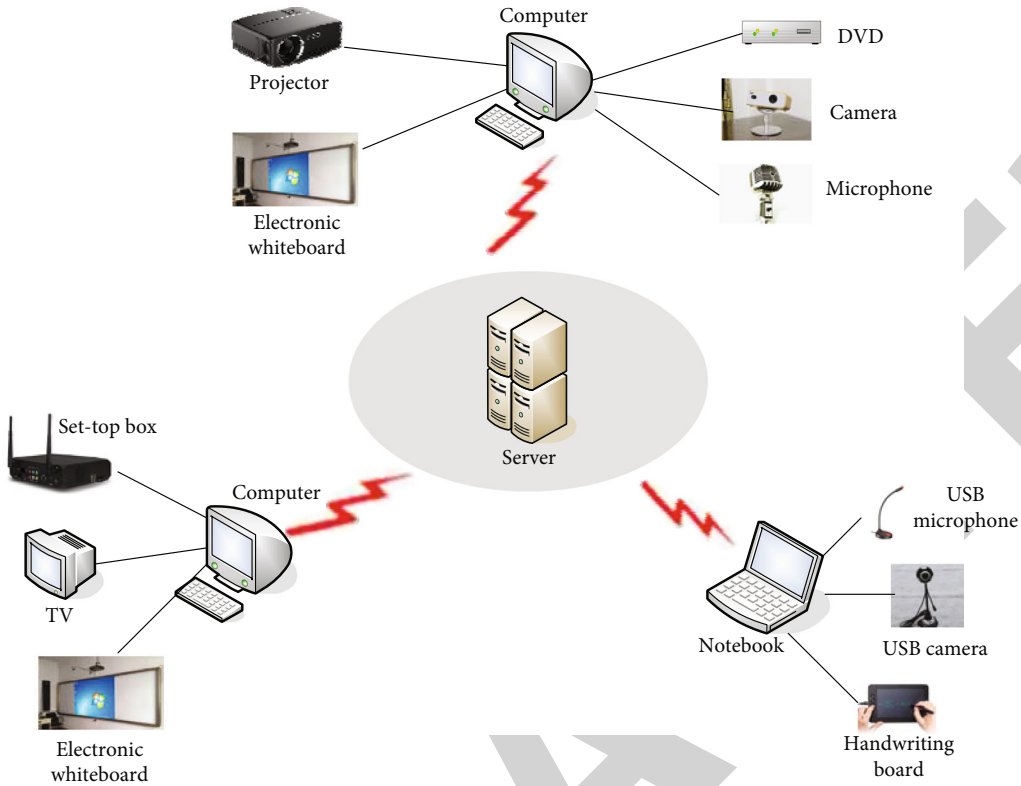

Figure 2: Application of multimedia in teaching.

On the one hand, CAI courseware can replace part of the teaching functions realized by teachers through language; on the other hand, students can choose what they need to learn through simple computer program operation according to their own situation. This is not only conducive to the cultivation of students' self-study ability to grab knowledge but also conducive to the cultivation of students' practical operation ability, so that students can enhance the awareness of borrowing modern scientific and technological achievements and boldly innovate in the tangible or intangible. The situational teaching mode supported by multimedia is shown in Figure 3.

The main purpose of CAI teaching in mathematics, chemistry, and other subjects is to visualize and materialize abstract contents such as the principle of motion of matter and object and its content attributes, laws in various phenomena, and theorems and axioms, so as to make students from shallow to deep and from ignorance to knowledge. The purpose of multimedia CAI is to decompose and sketch the application process. It can also reproduce the nonimmediate and noncurrent images or sounds in front of students through processing, create a situation to stimulate students' senses, render the classroom atmosphere, and expand the classroom teaching capacity, so that students who have never participated in the competition can experience the feeling of participating in the Olympic Games. The main function of the multimedia CAI mode of PE is to restore the artistic image in the technical action. The driving force of multimedia in physical education is shown in Figure 4.

3. Research Object and Method

3.1. Research Object. This paper takes the application of multimedia CAI technology in the teaching of basketball basic tactics cooperation as an example. Class 2 of the general basketball course is the CG, and class 4 is the EG. There are 60 students in total.

3.2. Research Method. Courseware, also known as course software, is a computer-aided teaching software with certain teaching functions. Courseware is a kind of teaching system, which should include all kinds of information in teaching and its processing. Broadly speaking, any teaching software with certain teaching functions can be called courseware. In order to achieve effective teaching, the courseware should not only include the teaching content of certain disciplines but also include various information transmission and information processing between computers and learners. In this paper, a questionnaire was sent out to the students who participated in the experiment to understand their attitude towards using multimedia courseware to assist bilingual teaching. In the process of analysis, the weighted statistical method is used to obtain the comprehensive attitude coefficient for the attitude tendency of specific indicators. Through the practical operation, the materials needed for the courseware are photographed and edited, and the multimedia CAI teaching courseware is made and translated in person. Using sspsl3.0 for Windows to deal with the data obtained from the questionnaire provides an empirical basis

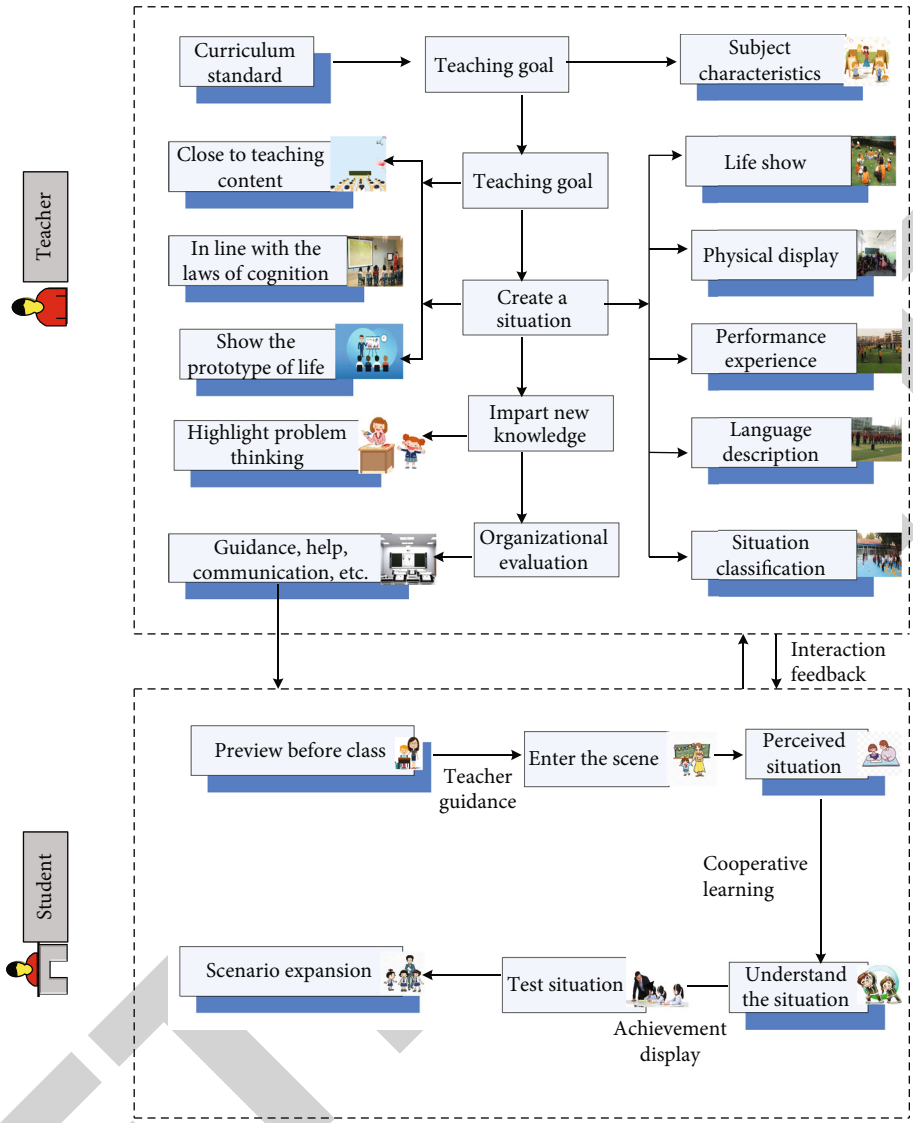

Figure 3: Situational teaching mode supported by multimedia.

for this study. The formula for the mean and standard deviation is as follows:

$$\mu = A_n = \frac{a_1 + a_2 + a_3 + \cdots + a_n}{n},$$
$$\sigma = \sqrt{\frac{1}{N}\sum_{i=1}^{N}(x_i - \mu)^2}. \quad (1)$$

In the formula, the values $X_1, X_2, X_3, \cdots, X_N$ (all are real numbers), the average value is μ, and the standard deviation is δ.

3.3. Network Performance Parameters. Under normal circumstances, QoS mainly includes parameters such as delay, jitter, and packet loss, which have different effects on video quality. The literature shows that delay will only delay the overall arrival time of video packets and will not produce subjective video evaluation results, with important influence.

For the RTMP protocol, the transport layer adopts the reliable transport protocol TCP, which will retransmit even if the data packet is lost, thereby ensuring end-to-end reliable transmission. In the course of the experiment, it was found that with the increase of the network packet loss rate, the video did not appear blurry, mosaic, and other video damage phenomena like RTP transmission, but stuck with different lengths of time. When the packet loss rate is slightly higher, the stuttering phenomenon is very obvious, and the client and the server cannot even shake hands successfully, which seriously affects the user experience. Taking BTH, Cable Car, and BBB videos as examples, the relationship between subjective evaluation scores and jitter and packet loss is shown in Figure 5.

Network jitter refers to the time difference between the maximum delay and the minimum delay. For example, if you visit a website with a maximum delay of 10 ms and a

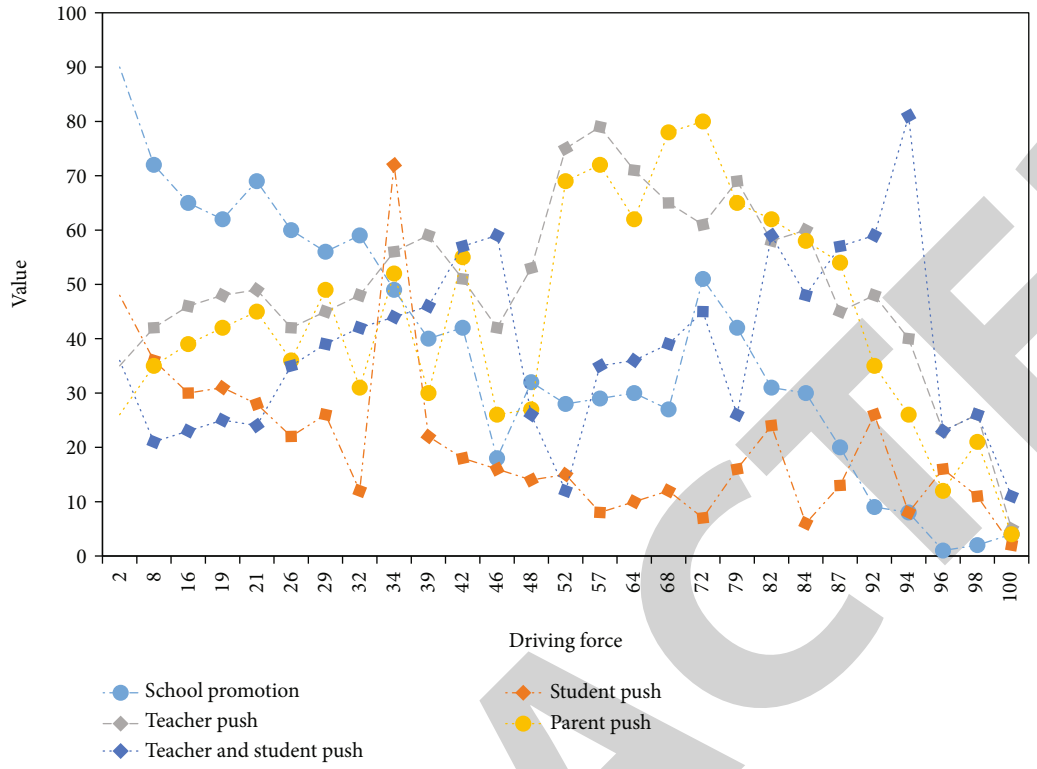

Figure 4: The driving force of multimedia in physical education.

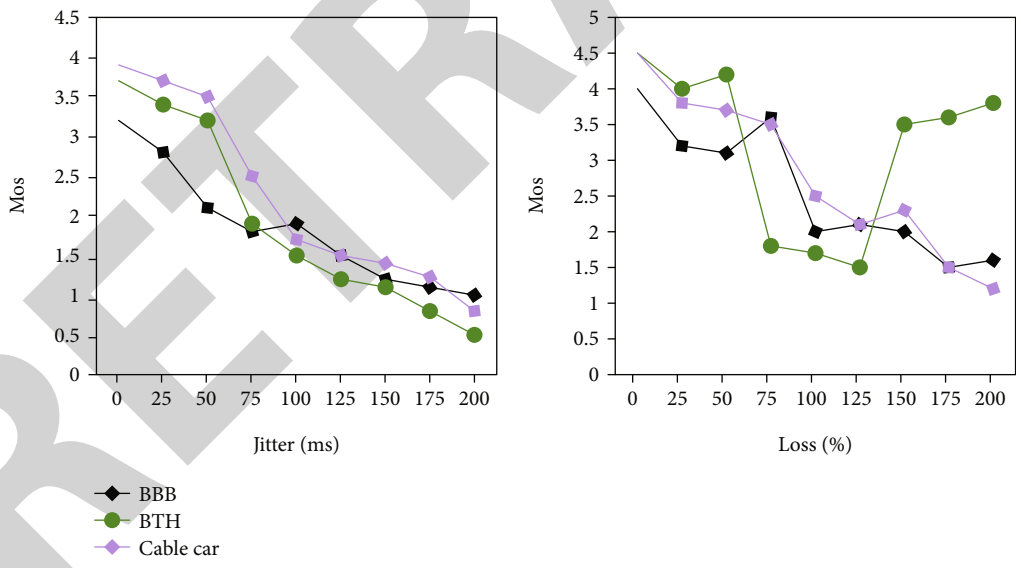

Figure 5: The relationship between jitter and packet loss rate and MOS.

minimum delay of 5 ms, then the network jitter is 5 ms. Jitter can be used to evaluate the stability of the network. The smaller the jitter, the better the network jitter. The more stable, especially when we are playing games, we need the network to have high stability; otherwise, it will affect the game experience. Regarding the cause of network jitter, if the network is congested, the queuing delay will affect the end-to-end delay, which may cause the delay from router A to router B to be large and small, resulting in network jitter. Packet loss refers to one or more data of each data packet not reaching the destination through the network. If the receiver finds that the data is lost, it will send a request to the sender according to the queue sequence number to retransmit the lost packet. Through the above analysis, it is determined that the quantization parameters, the number of skipped macroblocks, the packet loss rate, and jitter have a certain functional mapping relationship with real-time streaming media QoE. However, due to the large number

of parameters and the inability to clarify the relationship between them and the results, mathematical methods cannot be used to model them. Usually, in this case, the relationship between parameters and results can be described by establishing a BP neural network prediction model. This method can train the BP neural network through input and output data, so that the network model can express the unknown relationship model to the greatest extent. The BP neural network is a multilayer feedforward network trained by error back propagation (referred to as error back propagation). Its algorithm is called the BP algorithm. The mean squared error between the actual output value and the expected output value is the smallest.

3.3.1. The Forward Propagation Process of the Signal. Input net_n of the nth node in the hidden layer:

$$\text{net}_n = \sum_{l=1}^{K} Q_{nm} S_n + \beta_m. \tag{2}$$

Output x_n of the nth node in the hidden layer:

$$x_n = \beta(\text{net}_n) = \beta\left(\sum_{l=1}^{Q}\sum_{l=1}^{K} Q_{nm} S_n + \beta_m\right). \tag{3}$$

Input net_b of the bth node of the output layer:

$$\text{net}_b = \sum_{k=1}^{e} w_{nb} x_c + b_n = \sum_{j=1}^{e}\left(\sum_{l=1}^{K} Q_{nm} S_n + \beta_m\right) + \nu_n. \tag{4}$$

Output Q_k of the kth node in the output layer:

$$Q_k = \alpha(\text{net}_c) = \partial\left(\sum_{l=1}^{c} t_{kn} x_\nu + s_c\right) = \partial\left(\sum_{l=1}^{c} d_{mn} s_x + \beta_n\right) + x_\nu. \tag{5}$$

3.3.2. The Back Propagation Process of Error. Back propagation of error, that is, the output layer starts to calculate the output error of each layer of neurons layer by layer and then adjusts the weight and threshold of each layer according to the error gradient descent method, so that the final output of the modified network can be close to the expected value.

For each sample f, the quadratic error criterion function is R_f (1/2 can be reduced by derivation):

$$R_f + \frac{1}{2}\sum_{l=1}^{N}\left(W_c^Q - S_c^Q\right)^2. \tag{6}$$

The total error criterion function of the system for E training samples is

$$R = \frac{1}{2}\sum_{t=2}^{T}\sum_{\nu=2}^{E}\sum_{l=1}^{N}\left(W_c^Q - S_c^Q\right)^2. \tag{7}$$

According to the error gradient descent method, the output layer weight correction amount Δs_{nm}, the output layer threshold value correction amount Δx_i, the hidden layer weight value correction amount Δs_{nm}, and the hidden layer threshold value correction amount $\Delta\beta_\nu$ are sequentially corrected:

$$\begin{aligned} \Delta s_{nm} &= -\beta\frac{\eta Q}{\eta D_{ck}}, \\ \Delta s_n &= -\eta\frac{\nu W}{\kappa s_n}, \\ \Delta f_{nm} &= -\eta\frac{cA}{c\mu_n}. \end{aligned} \tag{8}$$

The output layer weight adjustment formula:

$$\Delta d_{nk} = -\mu\frac{WQ}{WC_{nj}} = -\mu\frac{WX}{W\text{net}_n}\frac{W\text{net}_b}{Ws_{cd}} = -\mu\frac{Q\partial_{kl}}{\varepsilon o_b}\frac{\Re\nu_b}{\eta b_k}. \tag{9}$$

The output layer threshold adjustment formula:

$$\Delta z_c = -\varphi\frac{\nu S_x}{\nu x_{km}} = -\frac{\varepsilon Q}{\Im a_{xc}} = -\eta\frac{EK}{EX_{cv}}\frac{\partial z_c}{\partial\text{net}_c}\frac{\alpha\text{net}_c}{\alpha a_m^l}. \tag{10}$$

The hidden layer weight adjustment formula:

$$\Delta S_{jn} = -\varphi\frac{\kappa E}{\kappa s_{jb}} = -\alpha\frac{\theta E}{\theta\text{net}_b}\frac{\theta\text{net}_a}{\theta a_{ij}} = -\eta\frac{\nu E}{\nu o_x}\frac{\theta E}{\theta s_{ij}}. \tag{11}$$

The hidden layer threshold adjustment formula:

$$\Delta\alpha_x = -\alpha\frac{\mu W}{\mu\text{net}_n} = -\mu\frac{\sigma E}{\sigma\text{net}_n}\frac{\sigma\text{net}_{vc}}{\sigma b_{n\nu}} = -\mu\frac{\varpi D}{\Im A_{ik}}. \tag{12}$$

And because

$$\frac{\sigma\text{net}_\nu}{\sigma o_\nu} = \sum_{\nu=1}^{K}\sum_{c=1}^{V}\left(E_d^l - W_m^C\right), \tag{13}$$

$$\frac{\theta\text{net}_c}{\theta s_{bg}} = \sum_{n=1}^{x}\sum_{b=1}^{F}\left(W_\nu^F - K_x^b\right)\cdot K(\text{net}_x)\cdot a_{lk}. \tag{14}$$

So finally, get the following formula:

$$\Delta a_{xc} = \partial\sum_{z=1}^{A}\sum_{n=1}^{D}\left(T_s^d - O_s^d\right)\cdot\kappa(\text{net}_a). \tag{15}$$

The process of establishing a mapping between QoE and characteristic parameters is the following: first, input a set of quantization factors:

$$s_{cb} = s_{c-1}^{(i)}\frac{p\left(z_n\middle|s_n^{(i)}\right)p\left(s_n^{(i)}\middle|d_n^{(i)}, u_{t-1}\right)}{q\left(x_n^{(i)}|z_c, u_{n-1}\right)}. \tag{16}$$

The number of skipped macroblocks:

$$w(x_i|x_{i-1}, z_b, u_{v-1})s_i^{(i)} = p\left(c_n^{(i)}\middle|c_n^{(i)}, u_{n-1}\right). \tag{17}$$

Packet loss rate:

$$\mathrm{Bel}(x_n) \approx \sum_{k=1}^{x} \omega_i^{(i)} \mu\left(x_t - X_i^{(i)}\right). \tag{18}$$

The jitter parameters are

$$\varepsilon^2 = \frac{1}{m-1}\sum_{n=1}^{h}(x_n - \alpha)^2. \tag{19}$$

After layer-by-layer transmission calculation, the predicted QoE value is obtained:

$$p(c) = p(c_0) - 10\beta \log 12\left(\frac{c}{c_0}\right) + \mathfrak{R}_\mu. \tag{20}$$

Compare it with the expected QoE value to calculate the error:

$$L_x(z) = \sum_{i=1}^{n} x_n \cdot k_c(y_n). \tag{21}$$

Then, use the gradient descent method to adjust the weights and thresholds of each layer according to the error of back propagation:

$$l_i(x_c) = \prod_{m=0, m\neq j}^{n} \frac{n - n_v}{c_i - c_v}, \tag{22}$$

$$s = f_2 - \frac{x_1 - (d_1 + d_2)}{2} = \frac{x_2 + d_1 - d_2}{2}. \tag{23}$$

Input the training sample data one by one, and save the network model when the error meets the conditions. Otherwise, it will not converge within the iteration limit because the maximum number of training times is exceeded, and the prediction network structure will fail:

$$\mathrm{LCC} = \frac{\sum\left(R_a - \bar{R}\right)\left(R_{oi} - \bar{R}_o\right)}{\sqrt{\sum\left(R_a - \bar{R}\right)^2 \sum\left(R_{oi} - \bar{R}_o\right)^2}}. \tag{24}$$

4. Application Analysis of Multimedia Image in PE

4.1. Processing and Analysis of Objective Index Test Data before and after Teaching Experiment. Before and after the experiment, two classes were tested for professional English and technical proficiency, and then, the data obtained before and after the experiment were compared and analyzed. The comparison of professional English scores of students majoring in PE before and after the experiment is shown in Table 1.

The results of the oral test and written test in the experimental class of PE specialty were significantly different before and after the test ($P = 0.002 < 0.05$, $P = 0.045 < 0.05$). Moreover, the pass rate of professional English after the test was 15.33% higher than that before the test.

After the teaching experiment, at the end of the semester, in order to test the volleyball theoretical knowledge of the two groups of students, a volleyball theoretical knowledge test was conducted. The test papers were multiple-choice questions and fill-in-the-blank questions, with a total score of 100 points. The results of the test score comparison are shown in Table 2. From the statistical data, it can be seen that 4 students in the experimental group scored above 90, accounting for 20%, while only 2 students in the control group account for 10%. In the 80-90 segment, 10 people in the experimental group accounted for 50%, and 6 people in the control group accounted for 30%. This directly shows that the degree of mastery of theoretical knowledge of the experimental group students is significantly higher than that of the control group. It can be considered that the network multimedia assisted teaching system has a significant role in promoting students to master the theoretical knowledge of volleyball. The comparative analysis of the test scores of the experimental group and the control group is shown in Table 2.

The results of the comparison before and after the experiment are shown in Figure 6.

In order to have a more comprehensive understanding of the effect of the network multimedia teaching system assisted teaching, a questionnaire survey is used to understand the evaluation of the experimental group students on the application of the network multimedia assisted teaching system to physical education. The specific data are shown in Table 3.

The seven items of the survey show that the positive attitudes are 90%, 95%, 100%, 90%, 90%, 95%, and 95%; the general attitudes are 10%, 5%, 0, 10%, 10%, 5%, and 5%. This fully shows that students have a positive attitude towards network multimedia system-assisted physical education.

Combined with traditional teaching methods, it can stimulate students' learning motivation and interest, effectively mobilize students' learning motivation and enthusiasm, help students master and improve basketball passing and receiving technology, and improve students' professional English level. After the teaching experiment, the students in the experimental class were given questionnaires. The comprehensive attitude coefficient of different survey items in the questionnaire indicates that students agree to use this new teaching method in bilingual basketball teaching. This subjectively reflects the good teaching effect of the courseware in the teaching experiment. In the bilingual teaching of basketball passing and receiving technology, teachers should be proficient in using multimedia CAI courseware for teaching. In addition to having solid professional skills and a high English level, they should also master certain modern educational technology theories, be proficient in using multimedia equipment, and make multimedia

Table 1: Comparison of professional English scores of students majoring in PE before and after experiment.

	N	Oral English (30 points) $\bar{x} \pm Sd$	Written test (70 points) $\bar{x} \pm Sd$	Pass rate
Before the experiment	60	8.54 ± 2.94	51.65 ± 7.96	48%
After the experiment	60	9.83 ± 2.91	51.64 ± 7.94	63.33%
T		3.56	2.13	
P		0.002 < 0.05	0.045 < 0.05	

Table 2: Theoretical knowledge test scores.

Group		90 points or more	90-80	80-70	70-60	60 points or less
Experimental group	Number of people ($n = 20$)	5	11	6	2	1
	Percentage (%)	21	51	26	6	2
Control group	Number of people ($n = 20$)	3	7	6	6	3
	Percentage (%)	11	31	26	26	11

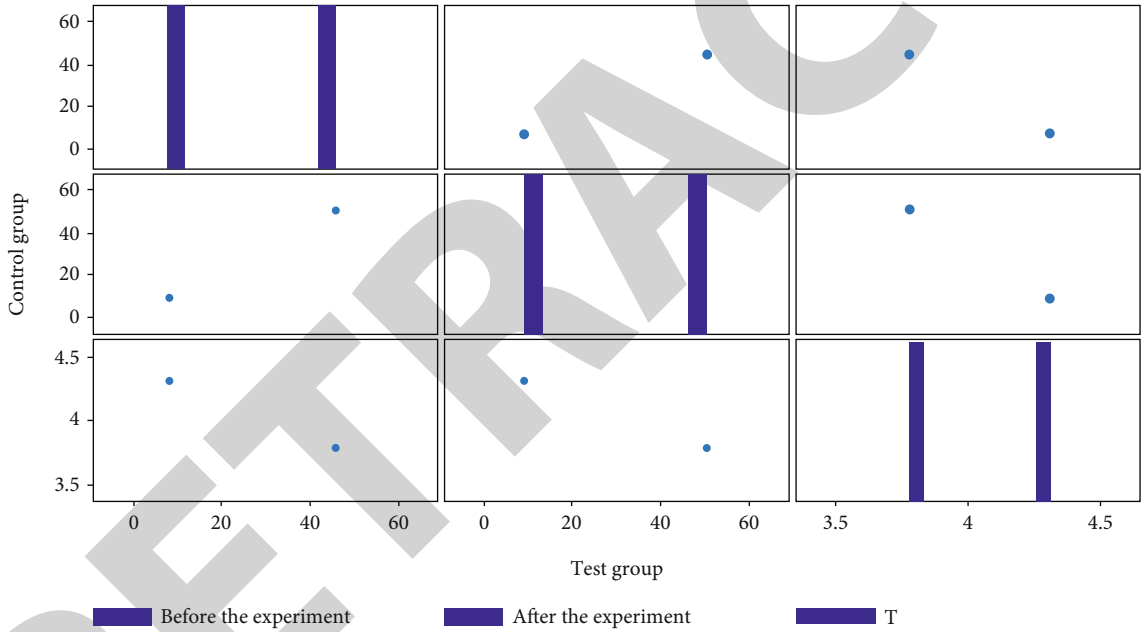

Figure 6: Comparison of professional English scores before and after the experiment of sports training students.

Table 3: The evaluation survey of students in the experimental group on the use of multimedia-assisted teaching.

Serial number	Survey content	Yes		General		Is not	
1	Is it useful?	Number of people	Proportion	Number of people	Proportion	Number of people	Proportion
2	Are you interested?	19	91	3	11	0	0
3	Can you cultivate enthusiasm?	20	96	2	6	0	0
4	Can the technology be improved?	21	101	0	0	0	0
5	Can the teacher-student exchange be strengthened?	19	91	3	12	0	0
6	Can you deepen your understanding of teaching content?	19	91	3	12	0	0
7	Can improve self-learning ability	20	96	2	6	0	0

courseware according to their own needs. At the same time, students should have active thinking abilities and certain self-study abilities.

The interest of the experimental group and the control group in multimedia teaching is shown in Figures 7 and 8, respectively.

In order to test the implementation effect of multimedia system-assisted teaching, both the experimental group and the control group were assessed. The assessment results are shown in Table 4.

4.2. Analysis of the Degree of Agreement between the Design of CAI Courseware and the Development of Modern Education. The traditional teaching method of physical education is mainly carried out in the form of teacher's explanation and demonstration and students' simulation practice. For a long time, according to this teaching form, in the process of learning, students have no confidence in their own motor skills because they cannot get timely and clear feedback on the learning effect. Physical education is a kind of teaching with strong imitation, which requires intuitiveness, vividness, and concreteness. The information conveyed by teachers only by language and passwords is difficult to be immediately transformed into clear movement images in students' minds in the teaching of motor skills. Standard demonstration has a great influence on the learning effect of students. In today's rapid development of science and technology, the traditional teaching mode cannot meet the needs of physical education in social development. The development of physical education depends to a certain extent on the progress of educational technology, so it is inevitable to introduce multimedia CAI into the field of physical education. Multimedia CAI technology is the most widely used and most representative application of multimedia technology in the process of physical education. Table 5 shows the investigation results of the teaching method experiment of EG students.

More than 73% of the students often log on to the Internet, are quite familiar with the web interface, and are very proficient in the operation of browsing the web page. Therefore, the CAI self-study courseware designed as a web format can be easily controlled, which is conducive to the students' better learning of courseware knowledge. CIA human-computer interaction can prompt learners with various teaching information, used for diagnosing, evaluating, processing, and learning guidance in the learning process. For various information processing, in order to improve learning enthusiasm, create learning motivation, and strengthen learning, the stimulated learning evaluation information is used to update the learning data and realize the teaching strategy of the learning process control and the control method of the learning process. The comparative results of the test scores of the students after the teaching experiment are shown in Figure 9.

After the teaching experiment, the test results of the difference between the EG and the CG show that the test results of the EG and the CG have significant differences, which shows that CAI teaching is conducive to students' understanding and mastery of knowledge content. After the teaching experiment, the test results of the difference between the EG and the CG show that the test results of the EG and the CG are significantly different, which shows that CAI teaching is conducive to students' understanding and mastering of the knowledge content of "track and field technical principles." The multimedia courseware used in the teaching experiment contains rich animation, image, and video materials of motion practice. Before data mining, it first analyzes the data characteristics of the four dimensions of teaching effect, teaching efficiency, and relational performance of multimedia teaching performance evaluation in primary and secondary schools. The analysis of the characteristics of the multimedia teaching performance survey data in primary and secondary schools can allow us to understand the basic situation of the performance of multimedia teaching in primary and secondary schools and provide certain guidance and reference for subsequent data analysis. Teachers use multimedia to carry out computer-aided teaching, which provides a new way for education, which makes the relationship between teachers and students change, and teacher-centered teaching becomes student-centered teaching. With the continuous development of modern science and technology, the integration of multimedia, CD-ROM, and network technology has changed the way of information storage, transmission, and use. As a new education form and teaching method, multimedia will bring great impact and influence to traditional education. The teaching effect and teaching performance are shown in Figure 10.

The characteristics of teaching benefit data and the distribution of relational performance data are shown in Figure 11.

These materials reflect the application of the principle of motion technology in practice and the reasoning process of various principles from different angles and levels. In traditional teaching, teachers mainly use teaching materials, blackboards, and other media for teaching. The form of media information is single. Because of the description of words, it is difficult to visualize and intuitively show the understanding of abstract principles and how to apply these principles in practice, which affects students' comprehensive and profound understanding of sports technology principles. Multimedia teaching transmits a large number of teaching information to students through multimedia, which makes knowledge information radiate to students intuitively and vividly. The resulting cognition is stronger, which increases students' knowledge intake and improves teaching effect. The multimedia effect is shown in Figure 12.

4.3. A Comparative Analysis of the Assessment of Technical Standards after the Experiment. After the teaching experiment, the results of the teaching experiment are mainly verified through the experimental data analysis and questionnaire survey. The results of the comparative analysis of the technical standard assessment after the experiment are shown in Figure 13.

This courseware has played a very good auxiliary role for teachers in class through vivid teaching content and simple and easy to understand text description. Through questionnaire analysis, all the students in the EG can master the operation of courseware quickly and skillfully, which shows

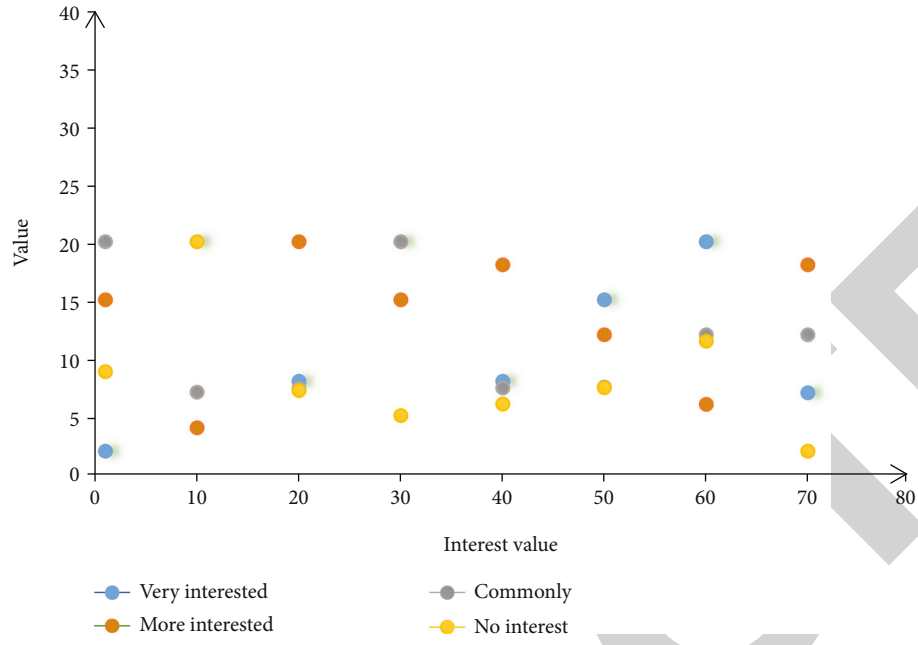

Figure 7: Experimental group.

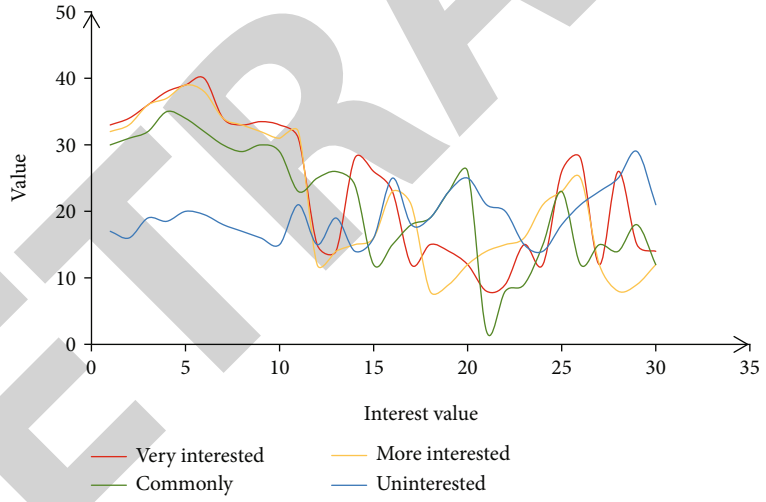

Figure 8: Control group.

Table 4: Student assessment results.

Group		Excellent	Good	Pass	Fail
Experimental group	Number of people	19	18	5	0
	Percentage (%)	92	82	12	0
Control group	Number of people	16	14	12	4
	Percentage (%)	68	62	46	12

that the design of courseware is simple and easy to operate. In this way, teachers can reduce the repeated work in the process of preparing lessons, so that teachers have more time and energy to optimize the classroom content and explore the teaching mode. The difference test of students' conditions before and after the experiment is shown in Table 6.

Table 5: The results of the experimental investigations by the students in the EG.

Project	Sure	General	Negative
Are you proficient in online operations	24	3	3
This courseware is designed as a web page format, do you think it is reasonable	27	2	1
Can you master the operation of this courseware	22	2	4

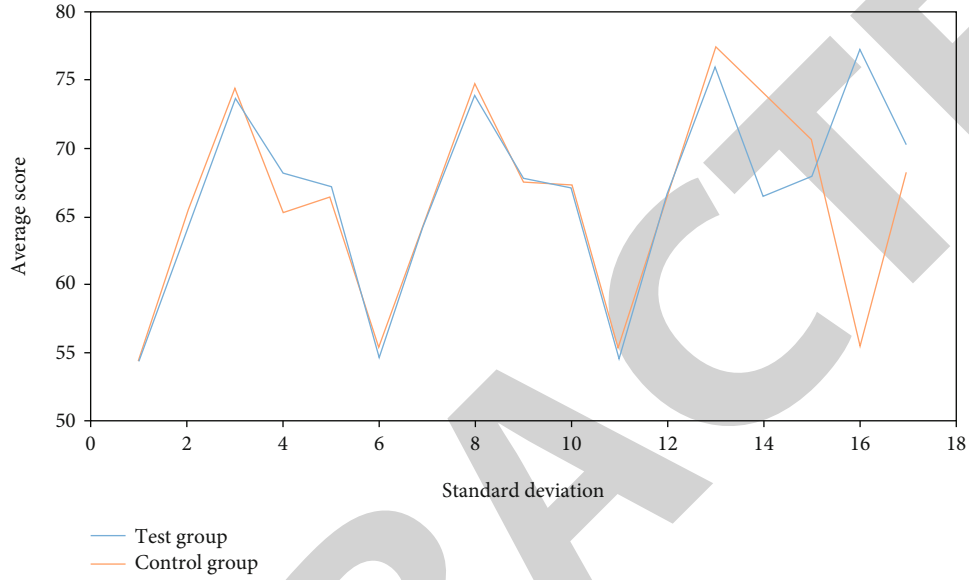

Figure 9: Analysis of the comparison results of students' test results after teaching experiment.

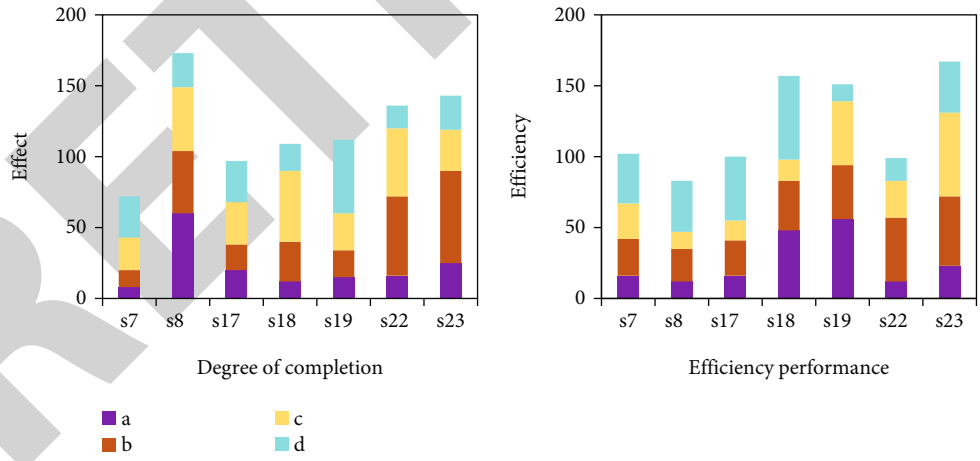

Figure 10: Teaching effect and teaching efficiency performance.

4.4. Analysis of the Influence of CAI on PE Resources. With the development of the Internet, the speed of information dissemination is faster and faster, which makes the renewal speed of sports teaching resources faster and also increases the range of resources. High-quality sports teaching resources can be obtained for the first time through mobile Internet, which improves the speed of information acquisition. The information transmitted by mobile Internet is not only domestic resources but also foreign resources can be obtained at the first time of information release, so the source becomes more convenient. The results of the analysis of the impact of CAI on PE resources are shown in Figure 14.

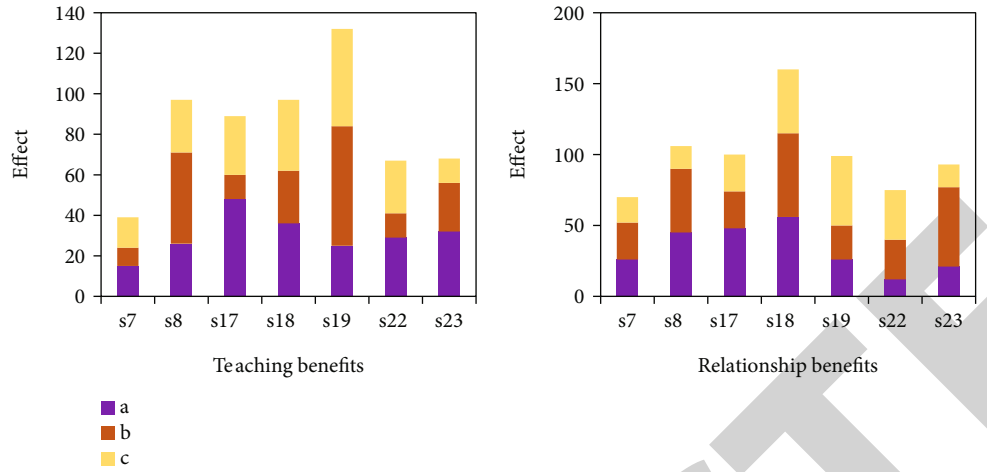

Figure 11: Data characteristics of teaching effectiveness and distribution of related performance data.

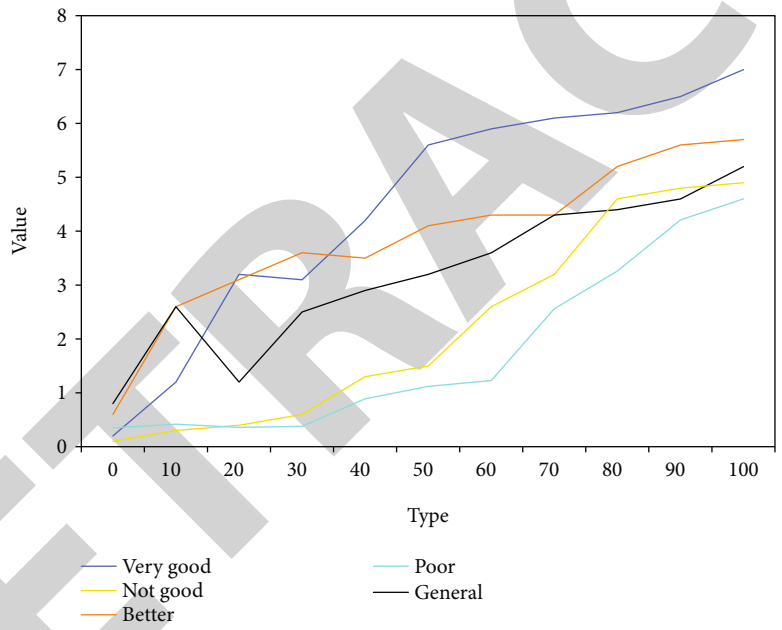

Figure 12: Evaluation of the effect of multimedia.

The use of CAI technology makes the subject knowledge update faster. All levels of education departments cooperate with PE experts to deeply mine the subject knowledge suitable for the current situation of PE in the city, so as to optimize the PE resources and improve the quality of PE. The environment created by CAI technology is more in line with the ideal state of learners, so that they can exchange information through language, feeling, vision, and environment. When teaching in the playground, the PE teacher explains and demonstrates the movement skills in detail according to the students' feedback and emphasizes the key problems repeatedly. In addition, through the use of CAI tools to assist students in PE learning and through the investigation of students' interest degrees, we can increase the study of sports events in their spare time, increase the school selected courses of sports courses, and make students increase the study of sports events. The overall structure of multimedia network courseware is determined by the nature of teaching objectives, teaching content, and interaction methods, and it is based on the structure of teaching content. The structure of sports multimedia network courseware is essentially the organization structure of multimedia information, which reflects the main frame and teaching function of sports multimedia network courseware. The overall structure of the courseware is divided into two parts: teaching content and online interaction. The teaching content consists of all the content and expanded knowledge required by the physical education syllabus. Due to the introduction of online teaching methods, a large amount of expanded knowledge related to the main teaching content of the course can be linked to the teaching content, so as to ensure the correctness of the teaching content.

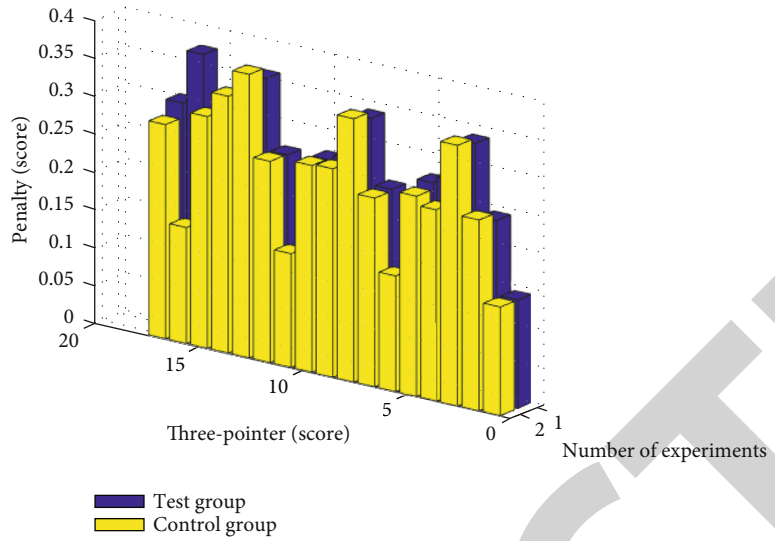

Figure 13: Contrast analysis results of technical standard assessment after the experiment.

Table 6: Tests of differences in students' conditions before and after the experiment.

	Group	Mean ± standard deviation	T value	P value
Control group	Before the experiment	3.39 ± 0.722	-1.817	0.083 < 0.05
	After the experiment	3.78 ± 0.736		
Experimental group	Before the experiment	3.43 ± 0.590	-3.810	0.01 < 0.05
	After the experiment	4.13 ± 0.694		

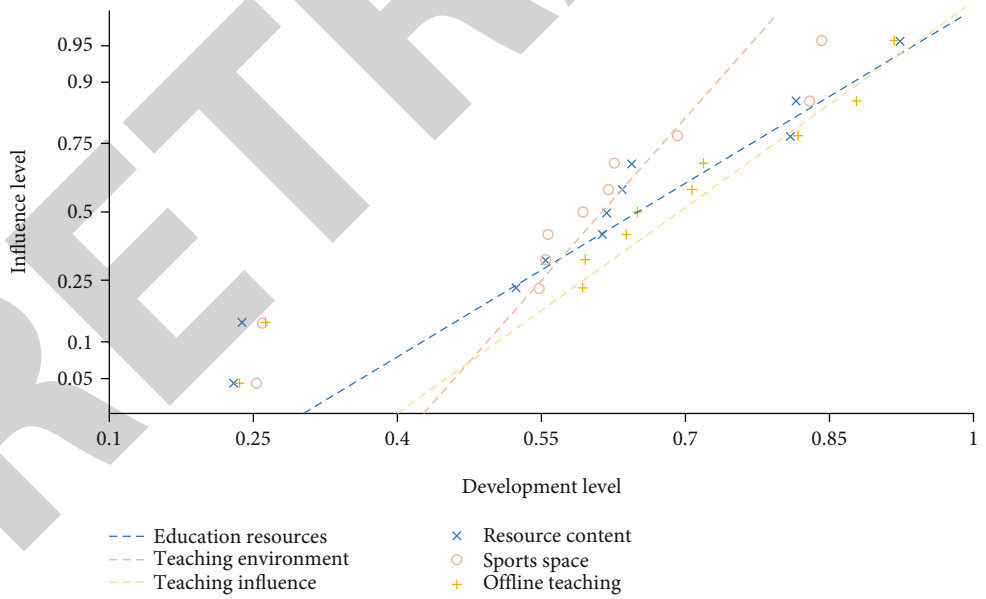

Figure 14: Analysis results of the impact of CAI on PE resources.

5. Conclusions

Due to the backward teaching methods and monotonous forms in the past, it is difficult to eliminate the negative psychological state of students in the learning process. Multimedia CAI, with its varied and novel forms, can keep students in a good state of mind, stimulate their thirst for knowledge, and improve learning efficiency. Sports CAI in the classroom can completely solve some problems encountered by teachers in traditional sports teaching. Teachers can give full play to their initiative by using CAI in PE and overcome the limitations of traditional PE. The majority of PE teachers can create a high-quality production platform through theoretical research, collect a large number of

materials at the same time, and make a complete and systematic material library, which can further promote the realization of PE CAI, reform the traditional PE teaching mode, and explore new teaching modes.

Multimedia CAI courseware teaching and conventional teaching methods complement each other, which is a beneficial supplement to conventional teaching, not a complete replacement. With problems to see multimedia CAI courseware and find answers, students' ability to analyze and solve problems and the quality of classroom teaching are improved.

Improving the quality of teachers is the key to improving the quality of CAI courseware. CAI courseware is the embodiment of teaching thought, teaching content, teaching method, and teaching design, but the development of teaching means cannot replace the leading role of teachers. Teachers' attitude towards using multimedia CAI courseware, their understanding of CAI courseware, and their application level of computer multimedia directly affect the teaching effect of multimedia CAI courseware.

Data Availability

This article does not cover data research. No data were used to support this study.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Acknowledgments

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