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Framework Design and Material Processing of Gymnastics Teaching Network Courseware

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Abstract:

With the continuous development of the economy, science and technology have achieved unprecedented development along with the improvement of the economy. The first thing to bear is the continuous popularization and application of the Internet, which drives the development of Internet technology. Many online learning platforms currently used by universities only focus on the teacher system and teaching system. Compared with other subjects, there are fewer learning materials on the Internet for gymnastics teaching, and the lack of systematic teaching is the primary problem that most schools need to overcome. The current method of online learning has changed the relatively scarce phenomenon of resources in face-to-face teaching in the past, and has excellent improvements in the organization and improvement of resources. By constructing the framework of a professional teaching resource library, collecting and properly sorting out learning materials, and at the same time designing and producing network multimedia courseware to facilitate the learning of scholars. Network teaching technology is realized by the combination of Internet and multimedia equipment. This technology can not only give play to the advantages of computers in network data transmission, but also embody a new teaching model with teachers and students as the main body. Therefore, adjusting teaching methods, building a better learning space, and using CAI courseware learning resources connected by campus network is an important way for students to make compensatory learning, and it is also the main direction for scientific and technological progress in gymnastics teaching. The experimental results prove that the online multimedia learning platform can provide students with more gymnastics learning resources, increase students' interest and time in learning; it can effectively improve the teaching quality of teachers, and use the convenient interactivity of the network to realize a resource library The rapid update of the content enables the teaching content to keep up with the needs and pace of the development of the times.

Key words: Gymnastics teaching, Network courseware, Frame design, Material processing

1. Introduction

The professional courses of physical education in our country are changing towards miniaturization. Gymnastics is one of the main courses. Now it is gradually divided into more detailed courses such as aerobics, artistic gymnastics, group gymnastics and so on. Some current gymnastics courses are mainly based on basic movements, and the teaching time is getting shorter and shorter. In the basic knowledge of gymnastics, removing some unimportant lessons is the most important thing, but blindly deleting the content of the learning materials, which makes the learning materials become inconsistent, causing contradictions between gymnastics teaching and learning. Network multimedia teaching provides more study time for college students, which will inevitably greatly enhance the students' initiative and enthusiasm in learning gymnastics, and enhance their physical quality. These are closely related to the development and reform of modern education and teaching.

Based on the concept of the Internet of Things, the American Power Grid Association has also set a prospect for the future development of the Internet of Things technology. In 2005, the International Telecommunication Union expanded the concept of the Internet of Things and warned of the arrival of the Internet of Things era. The era of the Internet of Things makes it possible to share large amounts of data between different devices and transmissions on the network. The Internet of Things can be applied to all aspects of our life, work and study. For example, in the case of virtual classrooms, the Internet of Things uses middleware, network service technology and event-based sensors to propose new solutions for virtual classrooms. Danaher M proposed that with the progress of the Internet, the traditional teaching model has been subtly changed [1]. Aimin L proposed that the use of an online teaching resource platform can not only improve the quality of domestic students, but also attract a large number of foreign students to continue their studies [2]. Eteri DR recommends strengthening the distribution of teaching resources and teaching technology, and encourages the use of the latest network technology for network information teaching [3].

The multimedia learning platform technology started late. Since the 1990s, with the support of national government agencies, some first-class cities have begun to pilot digital virtual classroom plans, and initially introduced virtual classroom education technology in the sense of digital virtual classrooms. However, the home computer technology at that time was still very backward. The system using digital virtual classrooms as a demonstration project only performed simple automatic control, and there was still a long way to go before digitalization. However, according to the technology platform at that time, the telephone network was the only home network interface, and related digital technologies have been ingeniously studied based on the telephone network. Alario-Hoyos C pointed out that it is necessary to strengthen the application of multimedia network teaching in physical education, improve teachers' knowledge level and multimedia network teaching methods, and strengthen and perfect the construction of multimedia network in sports colleges [4]. Kandekar S B

proposed that the current network application platforms of universities have evolved from simple sharing of teaching resources to a new way to promote classroom teaching through the Internet [5].

my country's sports network multimedia teaching is gradually becoming a popular educational form, which makes my country's sports network multimedia teaching have a further development. Starting from practical problems, combined with the latest development of multimedia learning platform technology, we will find appropriate theoretical foundations, research examples and specific guarantee strategies for preschool vocational education to improve the quality of the courses. With the help of this online multimedia learning platform, students can provide more gymnastics learning resources. The average and highest scores of the experimental class are higher than those of the control class, which proves that under the same learning efficiency, the learning time of the experimental class is definitely longer than that of the control class. Long. Our online multimedia education platform also makes students more willing to learn.

2. Framework Design and Material Processing of Gymnastics Teaching Network Courseware

2.1 Gymnastics Teaching

Just like the teaching of other subjects, gymnastics is a planned, purposeful and organized process, the purpose is to spread knowledge, improve students' skills and physical strength, and cultivate students' physical fitness [6-7]. Compared with other disciplines, gymnastics has its unique side. Compared with other subjects, other subjects focus on cultivating students' intelligence and psychology, and gymnastics is a subject that focuses more on cultivating students' physical strength, skills and personal will.

(1) Characteristics of Gymnastics Teaching in Colleges

As far as gymnastics teaching in universities is concerned, its characteristic is the extremely high combination of technical teaching and theoretical teaching. Theoretical teaching mainly covers the development history of gymnastics, the status quo of gymnastics, and the human body and psychological knowledge related to gymnastics. The organization of major gymnastics events and the rules of various gymnastics events, judging principles, etc. The technical teaching is to use the existing venue equipment, through the teacher's narration and display, and students' imitation and practice to complete the part [8-9]. Theory teaching and technical teaching are inseparable in college gymnastics teaching. Theory teaching is the foundation of college gymnastics teaching, while technical teaching is the practice of college gymnastics teaching. Therefore, in gymnastics teaching in colleges, the unification of theory and practice is very important. Gymnastics teaching in colleges and universities needs to pay attention to the timely communication and interaction between teaching and learning in the teaching process. Gymnastics teaching in colleges and universities also pays attention to the implementation of individualized teaching based on personal preference and development. Compared with the teaching of other subjects, the characteristics of gymnastics teaching can be discussed in terms of teaching content and teaching organization:

1) Characteristics of teaching content

In terms of teaching content, gymnastics teaching is mainly based on the teaching of gymnastics theoretical knowledge, gymnastics technique, and motor skills. The most fundamental purpose is to enhance the personal fitness of students. Gymnastics teaching belongs to technical teaching. It is used for the physical practice of the students themselves.

2) Characteristics of teaching organization

In terms of teaching organization, gymnastics teaching is generally carried out in specific gymnastics venues and the outdoor natural environment of the school. Teaching requires a larger space, and different equipment and venues are used in the teaching process [10]. The number of students in each class is as small as a dozen or as many as tens of students. Each student's quality level, athletic ability, and mastery of sports are also different. In addition, gymnastics teaching is also affected by the environment, so the organization of gymnastics teaching is complex and diverse.

(2) Problems in Traditional Gymnastics Teaching in Colleges

Through communication with relevant experts in the field of gymnastics teaching, it was discovered that there are many problems in traditional gymnastics teaching in colleges and universities, and the existence of these problems restricts the development of gymnastics teaching in colleges and universities.

1) Inadequate understanding of gymnastics teaching concepts in college

Many non-gymnastics college gymnastics teachers still maintain the monotonous classroom theory teaching and gymnastic skills teaching, and the selection of these teaching content is also affected by the teachers' own level and personal ability [11]. Insufficient application of multimedia technology in gymnastics teaching, and insufficient use of multiple Internet networks.

2) Gymnastics teaching in colleges is restricted by traditional teaching methods

The traditional gymnastics teaching model is based on the class as the unit to teach, the teaching method is mainly the "cracking duck" teaching of teachers and students. Individualized and targeted teaching cannot be carried out[12-13], let alone the selective and autonomous learning of students, which severely limits the improvement of students' quality and the development of personal skills.

2.2 Online Courseware

(1) Definition of Online Courseware Teaching

There is no unified definition for the definition of online courseware teaching. I have defined the online courseware teaching as: the so-called online courseware teaching is a brand-new teaching method that combines the most advanced Computer network technology and courseware technology are completely combined for teaching [14-15]; this is the application of courseware technology supported by Internet technology, which will be boring. Through the use of computer network technology, the boring knowledge in the classroom is tightly integrated into Audio, video, film and action make a real teaching method based on communication and discussion.

(2) The emergence of network courseware teaching

Online courseware teaching is a kind of distance learning. With the development of mainstream media and information technology, online courseware teaching belongs to the third generation of distance learning. To a certain extent, network courseware teaching is a product of the development of modern computer network technology and multimedia technology [16-17]. With the emergence and development of computer network technology and multimedia technology, two-way interactive electronic information communication technology has been realized. This makes the teaching process more open and flexible. Therefore, with the emergence and development of new technologies, network courseware teaching came into being.

(3) The Development Status of Online Courseware Teaching

As a brand-new teaching method, online courseware teaching has been listed by the Ministry of Education and related departments as an important part of the 21st century education reform. Based on the construction of our country's computer network and the construction of educational resources as the core purpose, it is aimed at teaching applications. With the construction of campus network infrastructure, the popularization and development of the Internet, the increasing innovation of multimedia technology, and the huge number of education population in my country, many reasons have caused many domestic software development companies to shift their development focus to the development of online courseware teaching software. In the past, the construction of the online courseware teaching platform is increasingly perfected with the support of the state and the social environment [18-19]. From the relevant research topics of online courseware teaching in this search, we also see that the application scope of online courseware teaching is mostly limited to the learning of school main courses, and the promotion in gymnastics teaching is still in its infancy. At present, these colleges and universities have their own independent campus network, which is used for the information release of the normal educational administration system and the display of excellent courses. However, most colleges and universities have not yet built their own online courseware teaching platform, because there is still a big gap in the application of online courseware teaching technology.

(4) The Elements of Gymnastics Network Courseware Teaching

As mentioned in the previous concept of gymnastics teaching in colleges and universities, gymnastics teaching as an educational process has similarities with other disciplines. These are bilateral teaching and learning activities. Under the guidance of teachers, they are deliberate, planned and planned. The education, formation and development process of the organization is based on the learning of indirect knowledge [20-21]. However, gymnastics education itself is also different from other courses. This is mainly reflected in the fact that gymnastics is a gymnastics activity based on the ideological activities of teachers and students, and is the main means of disseminating knowledge, techniques and skills in gymnastics activities.

2.3 Framework Design

Combined with the teaching characteristics of professional technical courses and network implementation conditions, combined with the following two aspects, use Macromedia multimedia development tools and Authorware software to write multimedia operating software. First of all, teaching technical courses is different from teaching theoretical courses. It is very intuitive and requires a lot of intuitive graphics, cartoons or videos to support the presentation [22-23]. Authorware supports audio, movie, animation and graphic file formats in other applications, and can eventually be integrated into media files. Secondly, Authorware has powerful interactive functions. In the authorware structure design, frame icons can be used to design the page structure so that users can move between different pages and allow students to selectively manipulate the content.

(1) Framework design ideas

The automation framework is also destined to have these infrastructures. Therefore, the most basic of the automation framework is to improve the efficiency of the script, and other people should be able to understand the script written at a glance, and the maintainability of the script is also high. If an error occurs in the script operation, the error must be detected as soon as possible and the cause must be analyzed. In this case, some infrastructure is required. The framework includes three key components: business logic, data objects and test data [24-25]. Therefore, we first deal with the three most important issues, which are what we usually call multi-level ideas. We often hear the idea of coding: high class aggregation, low coupling. In other words, it must be shaped and objectified. Only after sharing the business logic, data objects, and test data, we can better retain the written scripts, so that the screenwriter can focus on the business logic only, thus making it easier to improve the effectiveness of the scripts.

(2) Types of frame design

From our perspective, the framework can be divided into three types: the relationship between the logical architecture and the components in the software system; how the physical architecture and software elements are placed in the hardware; and the system architecture. Two elements of the architecture: element division and design decision [26-27]. First of all, the components of the software system are the first logical components. How these logical elements are placed in the material and how these elements contribute to scalability, reliability, robustness, flexibility, performance, etc. The entire system is very important information. Second, decisions about software design must include logical structure, physical structure, and how they affect all non-functional features of the system. Many of these decisions are difficult to change once made.

2.4 Classification and Construction of Network Teaching Resources

Network teaching resources refer to all information resources that can be applied to the network teaching environment and can support and enhance teaching and research activities. There are narrow and broad concepts. The first one mainly includes: online courses (CAI courseware), electronic reading room, multimedia teaching CD, education management database, etc. The second one mainly includes: online teaching platform, professional teachers and technicians.

Complete online teaching resources for domestic universities. It can be divided into three categories: First, in terms of content, it can be divided into: teaching resources for teaching programs, including multimedia software courses, online courses, test libraries, case libraries, etc. Experimental teaching platform, etc.: simulation system, cell bank and other material resources serving quality education [28].

The construction of online teaching resources is the core of the distance education project, and the construction of standardized online teaching resources is the realization of lifelong learning. The key to communication and social education. Establishing a network teaching resource library is a huge system task, involving effective integration, the construction of various parts and the high distribution of different teaching resources. It has many projects, heavy workload and long construction time. To establish a teaching resource library that meets the requirements of the information age, meets the needs of teachers and students, and meets actual needs, the following principles must be followed: Scientific: The construction of teaching resources must be scientific and reasonable, and the selection and completion of content must conform to the laws and characteristics of modern education[29]. Normal: According to the relevant international and national standards, the corresponding system is scientifically standardized, and its file format and classification standards must meet the requirements of the "Technical Specification for Educational Resources Construction" to ensure scientific and standardized resources. Systematic: It is necessary to clarify the construction goals, make plans and comply with the principles of integrity and sustainability in the construction process.

3. Experimental Research on Frame Design and Material Processing of Gymnastics Teaching Network Courseware

3.1 Design of Teaching Platform of Gymnastics Network Courseware

The first part of courseware development is how to select learning content, design the overall structure, and at the same time confirm the teaching goals that the courseware can achieve, where to use it and the overall style of the software. Gymnastics network courseware must be logically designed according to different teaching methods and teaching strategies. Therefore, we should think of the purposeful selection of teaching content and build a framework interface that separates different knowledge. As shown in Figure 1.

3.2 Realization of the Teaching Platform of Gymnastics Network Courseware

(1) system structure

When developing multimedia courseware, we must give full play to the advantages and functions of Authorware software, and emphasize its differentiated interaction. The improved code processing window in the program provides developers with a good programming interface. Through the effective integration of program components, the software can simulate many principles and methods. By using the built-in functions of the system, some functions that are difficult to achieve only through icons and interaction are completed.

(2) Development environment and development tools

The front-end uses html, css, jsp and other languages to build the front-end page. The back-end business logic and functional logic use the currently popular Java language, and the database uses the Mysql relational database. On the whole, the cooperation of these three parts can basically realize the functions of this system. The operating system used for development and debugging of this system is Windows 2008, the software development tool is Authorware, the application server is Tomcat, and the database is Mysql 5.7.

3.3Material Handling

There are five types of materials for making courseware: text, graphics, audio, animation and video. Text material is the simplest material. The use of words in multimedia courseware should focus on the accuracy, simplicity and functionality of the content. The sound material is generally selected from the existing sound material library and collected from the microphone through the sound card in the computer. The more commonly used method of image material collection is the use of digital camera collection. Flash animation material is currently the most popular two-dimensional animation technology. Video material is a combination of one or more of text, graphic images, sound, and animation.

3.4test subject

In this research, based on the network multimedia teaching platform we designed, gymnastics teaching video courses are selected. This research selects the freshmen and sophomore students of X University Physical Education Institute as the research objects, which are divided into experimental classes and control classes. Students use our designed system for the experimental class, and the other uses face-to-face teaching for the control class. At the end of the semester, 60 students were randomly selected from each class to participate in the questionnaire survey. A total of 120 people participated in the questionnaire survey. At the same time, all students were scored for gymnastics learning. The questionnaires of these students were the main source of data. Through this experiment, the establishment of a network multimedia education platform promotes the diversification of sports learning methods, thereby better improving the quality of teaching, and is more conducive to the learning of knowledge points, the improvement of sports skills and the enhancement of physical fitness.

3.5Experiment Procedure

(1) Experiment preparation stage

Distribute the network multimedia teaching platform system we designed to the freshman and sophomore students of X University's physical education major, so that they can use it to learn the general college sports and health video courses online, and then according to the needs of the theme, according to the research information and combine sports Experts, network technology experts and experts interviewed, consulted a large number of documents and literature about CNKI, and prepared with reference to related books and theoretical knowledge. Video tutorials familiar with the subject

content were designed as questionnaires. At the same time, conduct a preliminary test for the test experimental class and the control class.

(2) Experimental stage

The same course for the two classes is the general college sports and health video course. The experimental class uses the system we designed, and the control class uses the original learning system of X University. The experimental period is one semester. At the same time, all students are scored for gymnastics learning.

(3) End of experiment

After testing the overall level of the experimental class and the control class, make sure that the type of questions is similar to the difficulty of the test paper. Compare the performance differences of the two classes and analyze them to get a conclusion.

3.6 to gather data

The statistical data used in this article has a different unit dimension for each index data. After calculating the data in the previous steps, we can get the similarity between users. Select several users closest to user u_a interests and preferences to form set N_a . Then calculate the score of user N_a on j according to the score of the user in the set u_a on the unrated item j . The prediction formula is shown in formula (1):

$$p_{a,i} = \frac{\sum_{b \in N_a} sim_{u_a, u_b} r_{b,i}}{\sum_{b \in N_a} |sim_{u_a, u_b}|} \quad (1)$$

Where $p_{a,i}$ is the predicted score of user a for unrated item i . In the recommendation system, users' scoring preferences are sometimes different. For example, some users are accustomed to giving higher ratings to items, while some are accustomed to giving lower ratings. In order to reduce the difference between users' scoring preferences and improve the accuracy of scoring predictions, the method of formula (2) introduces the user's average rating \bar{r} , and the specific form is shown in formula (2):

$$p_{a,i} = \bar{r}_a + \frac{\sum_{b \in N_a} sim_{u_a, u_b} (r_{b,i} - \bar{r}_b)}{\sum_{b \in N_a} |sim_{u_a, u_b}|} \quad (2)$$

3.7 application experiment design of network courseware

In order to apply network courseware to gymnastics teaching, and to provide feasible reference for teachers to develop network courseware and use it in daily teaching, this paper designs a set of multimedia courseware suitable for gymnastics teaching according to the characteristics of gymnastics teaching and the principles of making computer network courseware, and makes practical experiments. This paper discusses the feasibility of the application of network courseware in gymnastics teaching.

4. The Frame Design and Material Processing Experimental Analysis of Gymnastics Teaching

Network Courseware

4.1 Platform Testing

(1) System function test

The functional test of the system mainly includes the main functions such as registration, login, action explanation, action demonstration, technical points, technical analysis, error correction, etc., as shown in Table 1.

Table 1. System function test table

functional module	function name	Test steps	Test Results
Login/Registration Module	registered	Register operation	Successfully registered
	login	Perform login operation	Successfully logged in
Main functions of the system	Action explanation	Perform action explanation test	Test success
	Action demonstration	Take action demonstration test	Test success
	Technical points	Conduct technical points test	Test success
	technical analysis	Perform technical analysis test	Test success
	practice method	Take practice method test	Test success
	error correction	Perform error correction tests	Test success
	classwork	Take classwork test	Test success

In the process of testing the monitoring effect, technical tests such as background sampling and encoding are carried out using specific video formats, and the server and other hardware are repeatedly tested until satisfactory test results are obtained. It can be seen from the table that the system is basically designed and tested successfully after analyzing the required functions.

(2) Running status test analysis

Here we test the running status of the system, and test the maximum number of users who log in to the background system at the same time. We select 100, 200, 500, and 1000 respectively for testing. Will it cause system lag? Or error (0 means no, 1 means yes). Draw conclusions, analyze and put forward corresponding countermeasures and suggestions on this basis. as shown in picture 2.

It can be seen from Figure 2 that when 200 people perform the login operation of the system at the

same time, the system starts to feel a bit stuck; when 1000 people perform the login operation of the system at the same time, the system starts to make a little error, but at least 100 people do it. The login operating system of the Taiwan system will not appear to be stuck and cause errors.

4.2 Reliability Test Analysis of Questionnaire

Reliability refers to the stability and reliability of the questionnaire. This article adopts the α coefficient method created by L.J. Cronbach. The α coefficient can be obtained by Reliability Analysis in SPSS software. It is generally believed that the α coefficient above 0.8 indicates that the effect of index setting is very good, and above 0.7 is also acceptable. Listen to expert opinions and suggestions and draw a column chart, as shown in Figure 3.

From the data obtained in Figure 3, calculated by SPSS statistical software, the overall evaluation α coefficient is 0.742, the overall evaluation α coefficient is 0.716 for traditional teaching methods, 0.732 for online course learning experience, and 0.719 for online video teaching methods. It can be seen that the scores obtained in the questionnaire survey are credible to a certain extent, and the results obtained this time can be further studied.

4.3 Get Data Analysis Through Questionnaire Survey

(1) Questionnaire data analysis

The data obtained through the questionnaire survey can calculate the mean, standard deviation, and standard error of the pre-test scores of the experimental class and the control class. At the same time, the independent samples drawn, the variance of the individual and the overall score, etc., are also the beginning of the experiment. An important condition, as shown in Figure 4.

From Figure 4, we can get the independent sample test of the pre-test scores of the control class and the pre-test scores of the experimental class. The standard error of the mean is $0.002 < 0.05$, and the mean and standard deviation of the scores are also similar, that is, the scores have no significant difference, indicating that the experiment. There is no obvious difference in the physical activity level of the control class and the control class before the experiment, and the preconditions for the experiment are met.

(2) At the end of the semester, all students perform gymnastics study score analysis

We analyze the data of gymnastics performance test and scoring of all students at the end of the semester, and draw an area chart, as shown in Figure 5. Reduce the difference between the teacher's scoring preferences, improve the accuracy of the score prediction, and compare the average scores of the experimental class and the control class to get a conclusion.

It can be clearly seen in Figure 5 that the pre-test and post-test scores of the experimental class have significantly increased. At the same time, the pre-test scores of the experimental class and the post-test scores of the control class are tested in pairs. If the learning efficiency is the same, the learning time of the experimental class will definitely be longer than that of the control class. The platform is easier to make students willing to learn than the face-to-face teaching model. It also proves

from the side that the network multimedia teaching platform has a broader development prospect.

5. Results and discussion

From the school's point of view, the multimedia network teaching platform is currently the best network teaching model, which can effectively improve the school's teaching quality and teaching effect level, and strongly express the teaching form. It can be seen that the extensive implementation of the network multimedia teaching platform is indispensable, aiming to create a new network teaching platform. Through system design and development and system testing, it can meet the design requirements and bring obvious effects to the university teaching network. Although the college sports auxiliary teaching platform has been established, there are still major deficiencies in professional websites. If more problems are found in the future operation process, they can be modified and improved in time.

The gymnastics teaching network framework designed in this paper has passed the system function test, and can support at least 100 users' multiple concurrent requests. In the questionnaire survey, through the calculation of SPSS statistical software, the overall evaluation α coefficient is 0.742, that of traditional teaching methods is 0.716, that of online course learning experience is 0.732, and that of online video teaching method is 0.719. It can be seen that the scores obtained from the questionnaire survey are reliable to a certain extent, and the results obtained this time can be further studied. In the questionnaire survey results, the overall evaluation α coefficient is 0.742, that of traditional teaching methods is 0.716, that of online course learning experience is 0.732, and that of online video teaching method is 0.719. It shows that the gymnastics teaching network framework designed in this paper is welcomed by students.

The gymnastics network courseware framework and material processing module system designed in this paper are rigorous in design, clear in module and strong in expansibility, which have important significance and reference value for improving campus service system and teaching quality. But because the system development time is short, so there are some functions are still not perfect, part of the function for the detailed division and design, these problems and deficiencies, will be gradually improved in the future. Aiming at the deficiency of this topic, future planning has the following work: 1. This research based on in-depth study of the design of network course learning activity model is relatively thin, among them, the most important application class learning group activities need further expand, make each activity to specific, make teachers to design learning activities can make reference. 2. The curriculum involved in this experiment is single, so it is necessary to carry out multi-disciplinary experimental teaching in front of more students, so as to find out the characteristics of learning activities in various subjects, so as to improve the effectiveness and feasibility of network course learning activities based on deep learning.

COMPETING INTERESTS

These no potential competing interests in our paper. And all authors have seen the manuscript and

approved to submit to your journal. We confirm that the content of the manuscript has not been published or submitted for publication elsewhere.

DECLARATIONS

Ethical Approval and Consent to participate: Approved.

Consent for publication: Approved.

Availability of supporting data: We can provide the data.

AUTHOR'S CONTRIBUTIONS

All authors take part in the discussion of the work described in this paper.

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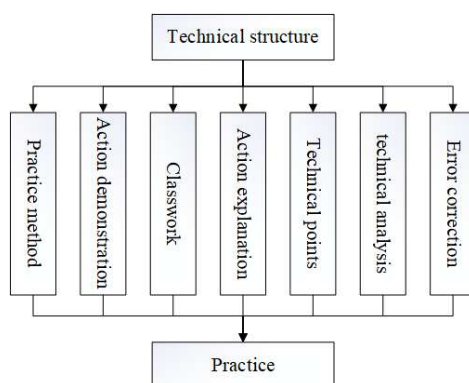


Figure 1.The Structural Mode of the Technical Content of Gymnastics Courseware

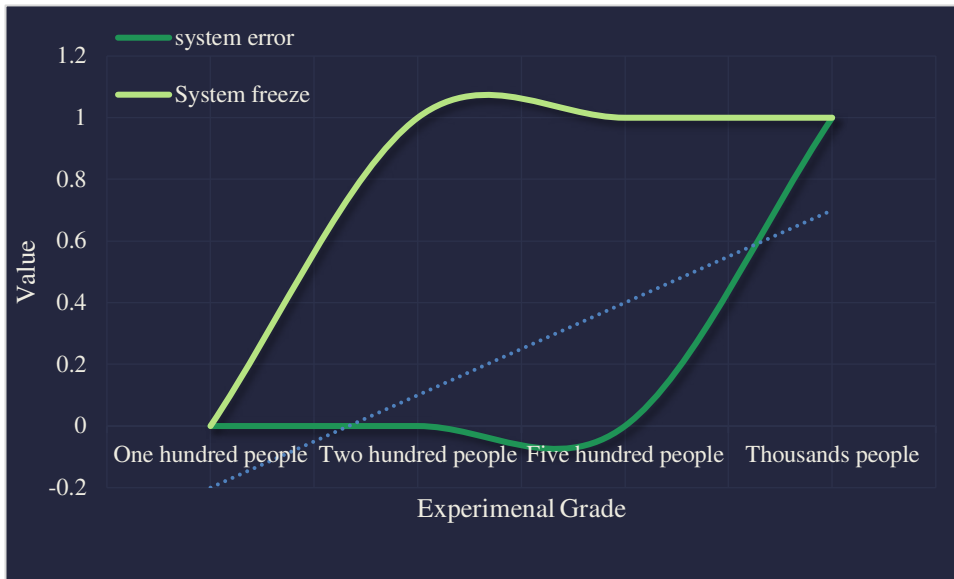


Figure 2.Running state test chart

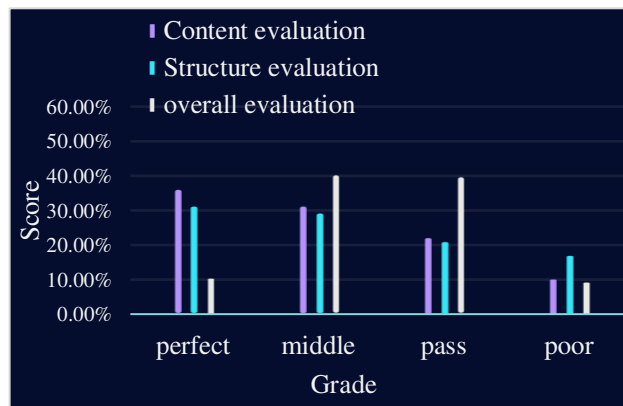


Figure 3.Reliability-based questionnaire evaluation result graph

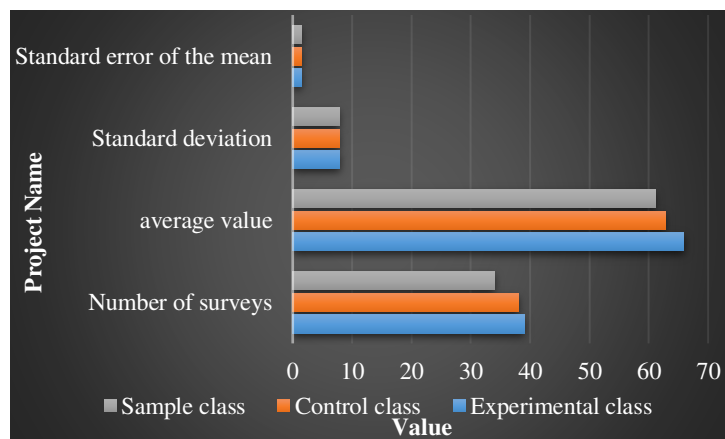


Figure 4.Survey data analysis graph

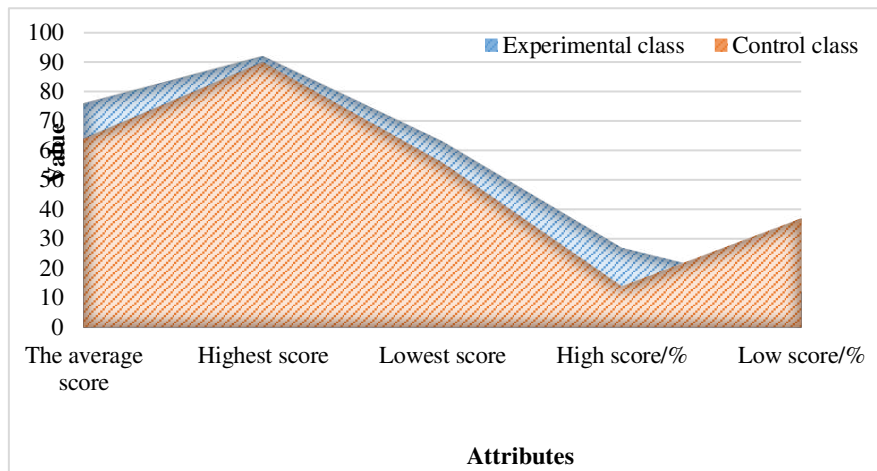


Figure 5.At the end of the semester all students perform gymnastics learning score chart

Figures

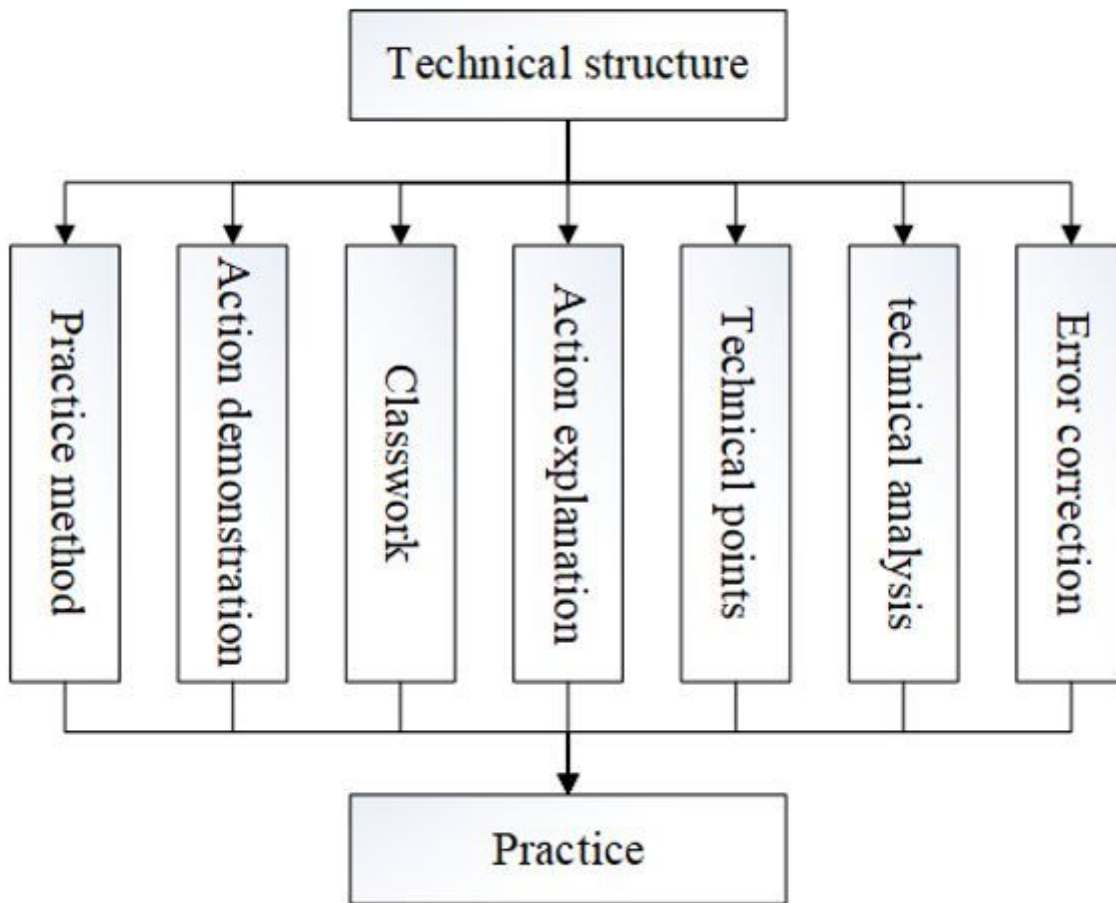


Figure 1

The Structural Mode of the Technical Content of Gymnastics Courseware



Figure 2

Running state test chart

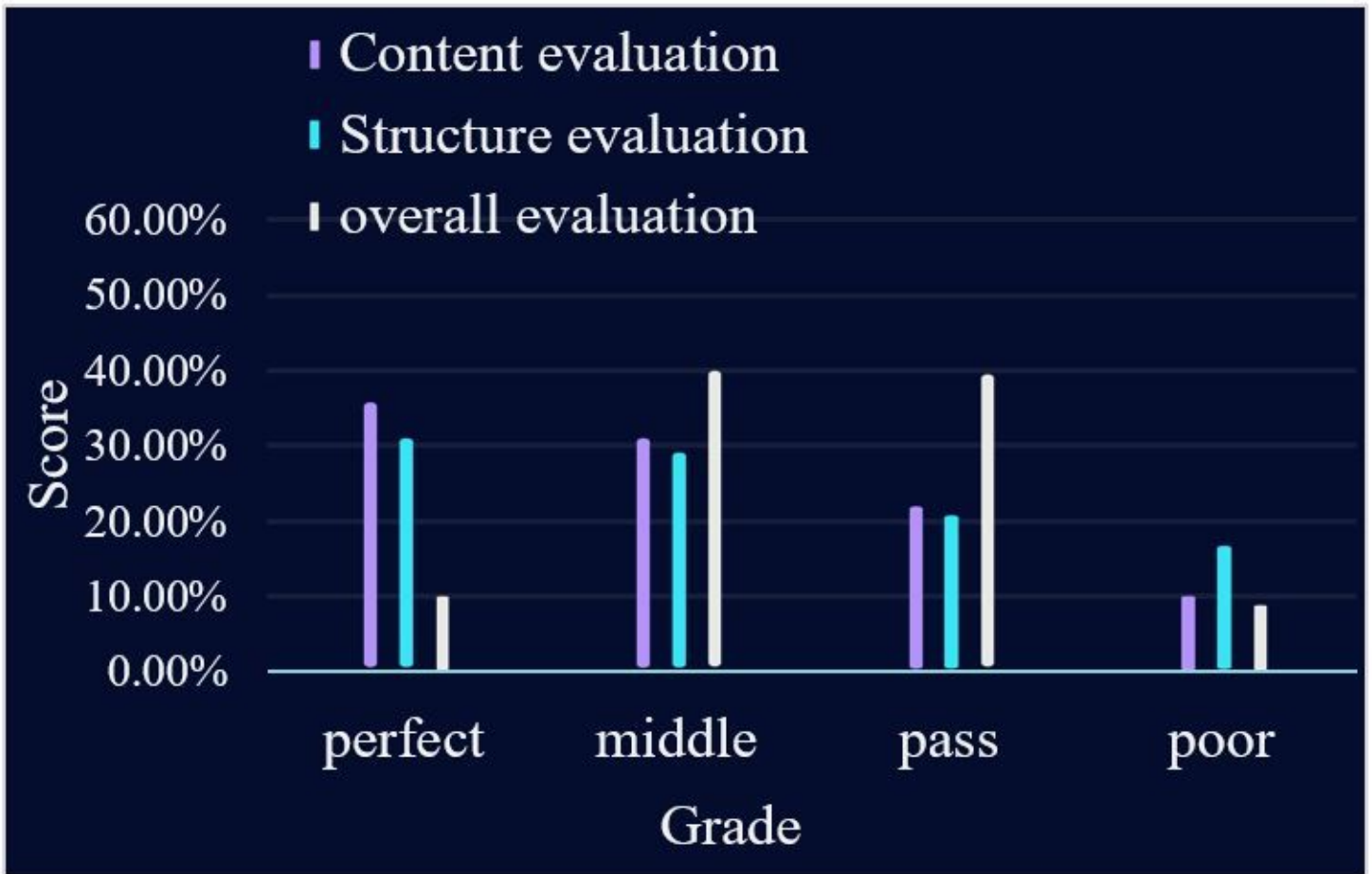


Figure 3

Reliability-based questionnaire evaluation result graph

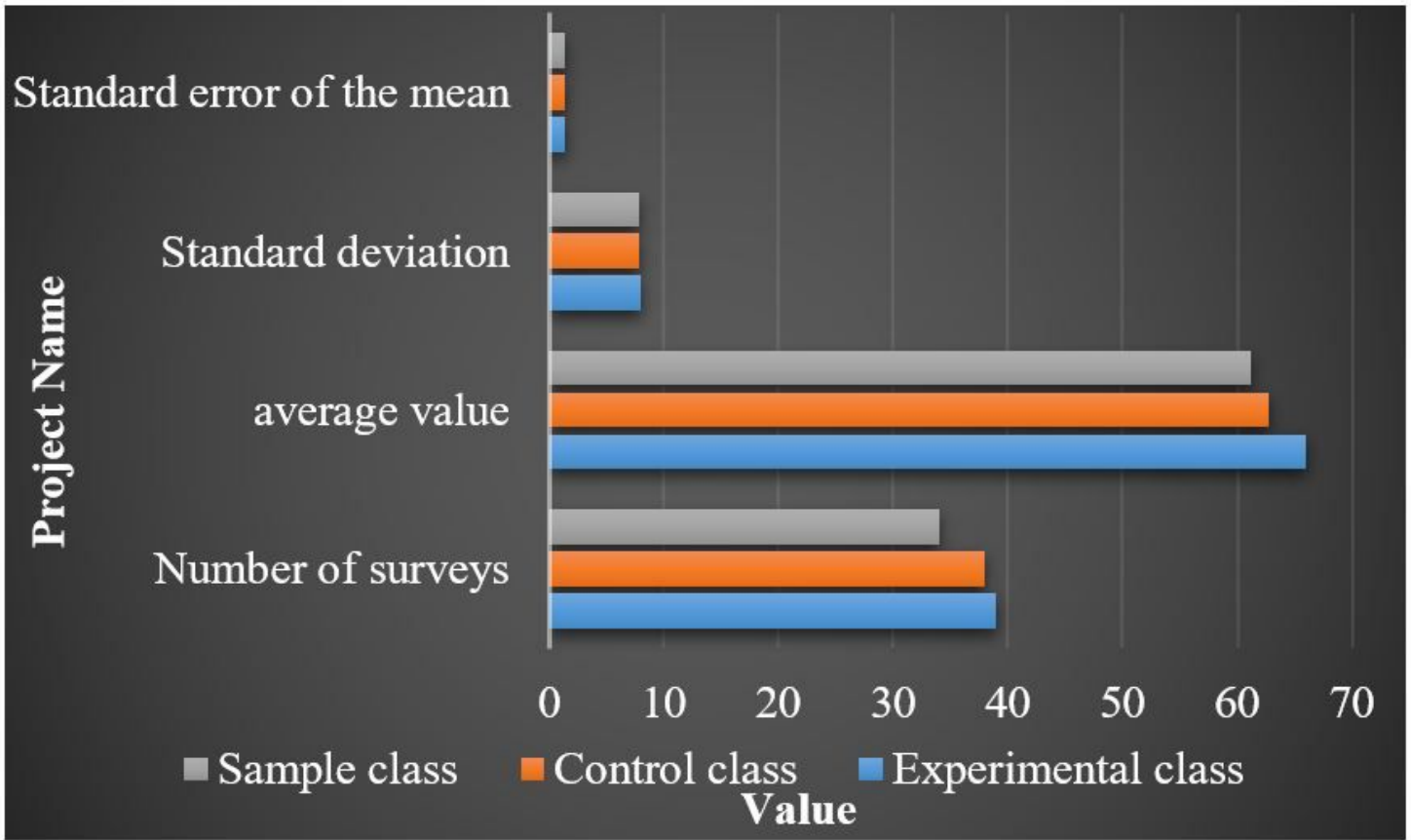


Figure 4

Survey data analysis graph

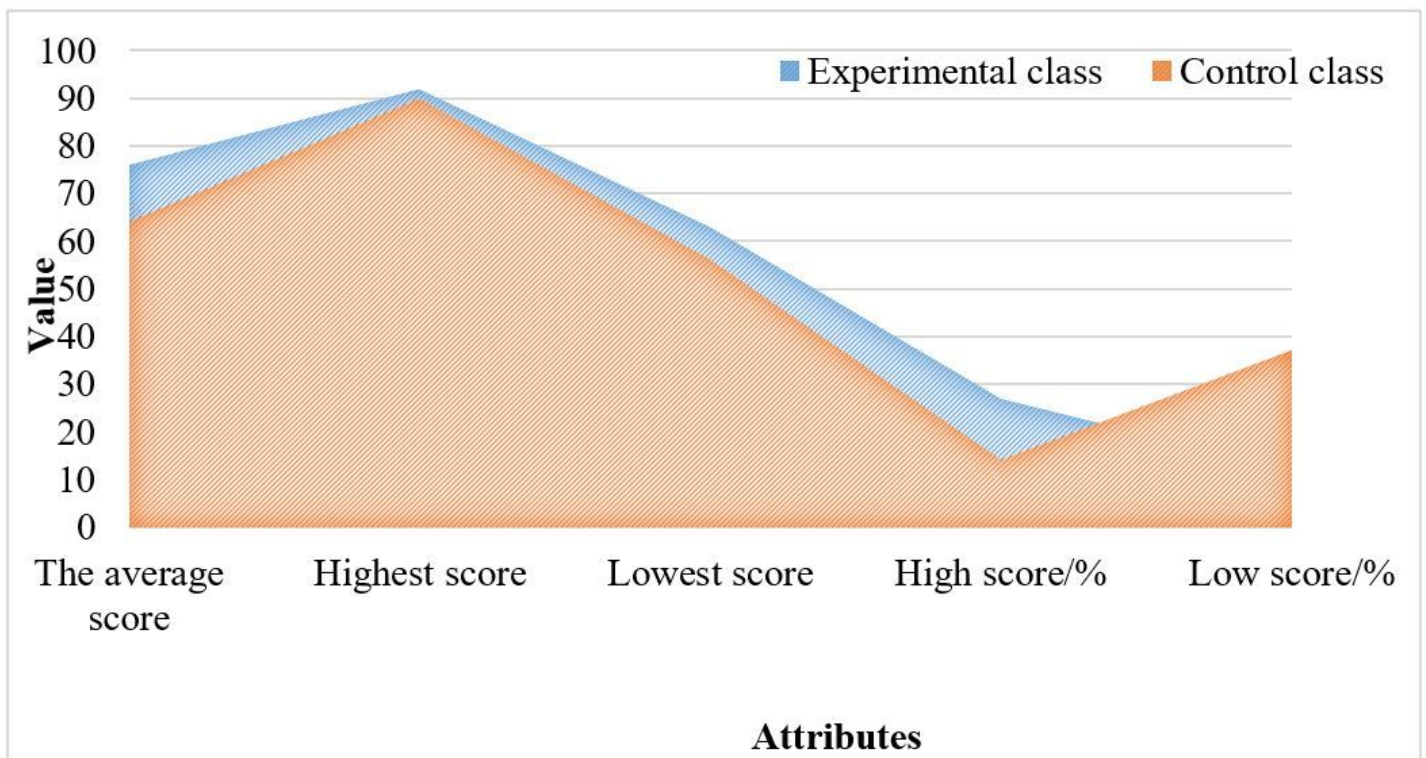


Figure 5

At the end of the semester all students perform gymnastics learning score chart