Application of Computer Virtual Technology In Higher Vocational Physical Education

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Abstract: The quality and efficiency of physical education(PE) in higher vocational colleges(HC) are still low due to the deep-rooted traditional PE concept and mode. Therefore, it is of great significance to apply computer information technology to PE in HVC and improve the quality of PE in HVC. Based on the application value of computer virtual technology in PE in HVC, this paper analyzes the effectiveness of the current computer virtual simulation technology, and discusses the modern teaching methods that are in line with the teaching practice and can improve the teaching effect. The research adopts the experimental method to carry out the research, selects the students of the PE department of Shenzhen polytechnic as the experimental objects, applies the virtual simulation technology to the teaching process of PE course, and verifies the effectiveness of the virtual simulation technology in the classroom teaching of PE major. The experimental results show that virtual simulation technology can break through the problems in traditional teaching mode, optimize the whole teaching process, create a good learning environment for students, and improve students' academic interest more than traditional teaching mode. Virtual simulation technology can effectively use intuitive data, improve the standardization of technical actions, and obviously improve students' motor skills.

1. Introduction

PE course is not only beneficial to strengthen the body of students, but also beneficial to cultivate and shape students' lifelong healthy psychological supervision[1]. However, in the current PE teaching process of HVC, there are still many problems of low teaching quality and low teaching efficiency. The reason is that teaching methods fail to keep up with the trend of information preface and fail to combine teaching practice with the development process of information [2]. In short, if the information technology represented by computer virtual technology is fully applied in the process of PE in HVC, the content quality and teaching effect of PE in HVC will have a qualitative leap [3].

Virtual technology refers to the allocation of resources from a logical perspective, which is a logical abstraction of physical reality [4]. Virtual simulation technology has realized the separation of software and hardware. As the technology becomes more mature, its application in computer teaching practice is an inevitable trend [5]. Virtual simulation technology plays a pivotal role. It is one of the important components of modern education informatization, and also an important breakthrough direction of college teaching reform under the new normal [6-7]. After the introduction of virtual technology into educational practice, computer teaching and information construction have achieved a revolutionary change. On the one hand, teachers' teaching activities have become more convenient. The space and time limits for students to learn knowledge are broken, which effectively enhances students' learning enthusiasm and autonomy [8].

There is a relatively lack of evaluation of the training level and the improvement effect of sports competition level brought by the computer virtual technology intervention in PE in HVC [9]. In this paper, in order to remedy the weaknesses, a characteristic platform of "virtual and real interaction"

with strong teaching advantages and development potential was established, which complemented the original conventional experimental system [10]. In such a platform, the virtual simulation technology teaching experiment scheme is designed, and the virtual simulation technology is applied to the PE teaching project of HVC, and the students' skill dimension, physical strength dimension and interest dimension are taken as response variables to verify the effectiveness of the computer virtual technology in the PE teaching of HVC.

2. Computer Virtual Technology and Its Integration with Teaching Activities

2.1 Computer Virtual Technology

In computer science, virtualization is an application that allocates resources from a single logical perspective, rather than from a physical perspective. In the application of virtual technology, each physical machine can run multiple operating systems, each operating system can execute multiple applications, and each application is independent from each other and does not affect each other, so as to improve the overall operating efficiency of the system. Computer virtual technology has been running through every level of the computer field and is one of the indispensable key technologies for building cloud infrastructure. The definitions and expressions of computer virtual technology are different, but they generally contain the following meanings: first, virtualization is to realize the logical expression of resources without physical restrictions, and to simulate the virtual process through space segmentation and time sharing. Second, the virtualized logical resources hide unnecessary details from users, who can realize all the functions in the real environment in the virtual environment. Third, virtualized objects are resources, but they can be hardware or software resources.

2.2 Computer Virtual Technology Combined with Teaching Activities

The integration of computer virtual technology into teaching activities is the operation mode of presenting fragmented learning content and expanding teaching resources according to cognitive rules. After integrating the teaching activity into the computer virtual technology, it forms a contrast difference with the traditional single teaching resources and teaching cases, but it itself is developed on the basis of these resources.It has several characteristics: first, it is convenient to teach students according to their aptitude. The traditional teaching method is deeply influenced by the traditional educational concepts, so it only pays attention to the position of teachers in teaching activities, but ignores the principal position of students. Second, the teaching efficiency is high. Short course time and refined teaching content are the specific characteristics of computer virtual technology. Compared with the traditional classroom, it expands the time and space of classroom education, and the emphasis of teaching content is more specific and targeted. Students can also make good use of their spare time to study, learning methods and time constraints have been liberated. Third, the effect feedback is fast. Under the background of computer informatization and modernization, teachers can help class students through remote operation platform, and students can also seek help from teachers through network connection. In this process, the feedback cycle of teaching effect is shortened.

3. Experiment

3.1 Experimental Subjects

Ninety students from the PE Department of Shenzhen polytechnic were selected as the research objects. The research objects were divided into three research projects, namely the track and field project, the strength project and the calisthenics project. In each project, 15 experimental samples were set in the experimental group and 15 experimental samples in the control group. The specific distribution of relevant experimental samples is shown in Table 1.

Table 1. Research sample attribute information

Items	Group	Boy	Girl	Total
athletics	Experimental group	9	6	15
	Control group	8	7	15
Power	Experimental group	10	5	15
	Control group	11	4	15
Aerobics	Experimental group	7	8	15
	Control group	8	7	15

3.2 Experimental Design

The teaching mode of all students in the control group adopts the traditional classroom teaching mode, without any monitoring behavior on students' physical ability. The form of acquiring skills mainly depends on the teacher's action demonstration and the students' imitation, during which the teacher corrects the students' mistakes with subjective experience.

After the theoretical knowledge was taught, all the students in the experimental group were required to receive virtual simulation laboratory teaching, which used the ring-screen simulation analysis system to evaluate and correct the students' movements. Before the simulation training, the teacher arranged the experimental group students to learn basic operation in their spare time and divided the experimental group students into groups. At the end of class time, students can continue to practice and evaluate motor skills in the laboratory, so as to achieve the purpose of intensive exercises in class.

3.3 Statistical Analysis

In this experiment, mathematical statistics method was adopted to collect and sort out the experimental data. During the experiment, Excel was used to record the data obtained in the experiment.

4. Experimental Results and Analysis

At the end of the experiment, in order to test whether there is any difference between the experimental group and the control group in the three project groups, the post-test experiment was conducted from the learning interest and physical fitness dimensions of the experimental subjects, and the independent sample T-test was conducted on the post-test index data. The experimental results are shown in Table 2 and Figure 1.

Table 2. Difference test results of each indicator between the experimental group and the control group

Index		Athletics group		Power group		Aerobics group	
		Experimental group	Control group	Experimental group	Control group	Experimental group	Control group
Interest in learning	Active learning interest(A1)	4.75±0.83	3.59±0.26	4.76±0.33	3.83±0.53	4.39±0.84	3.52±0.56
	Specific learning interest(A2)	4.84±0.24	3.79±0.17	4.53±0.26	3.94±0.77	4.25±0.12	3.83±0.18
	Independent inquiry learning(A3)	4.71±0.59	3.84±0.56	4.37±0.81	4.00±1.25	4.66±0.65	3.86±0.84

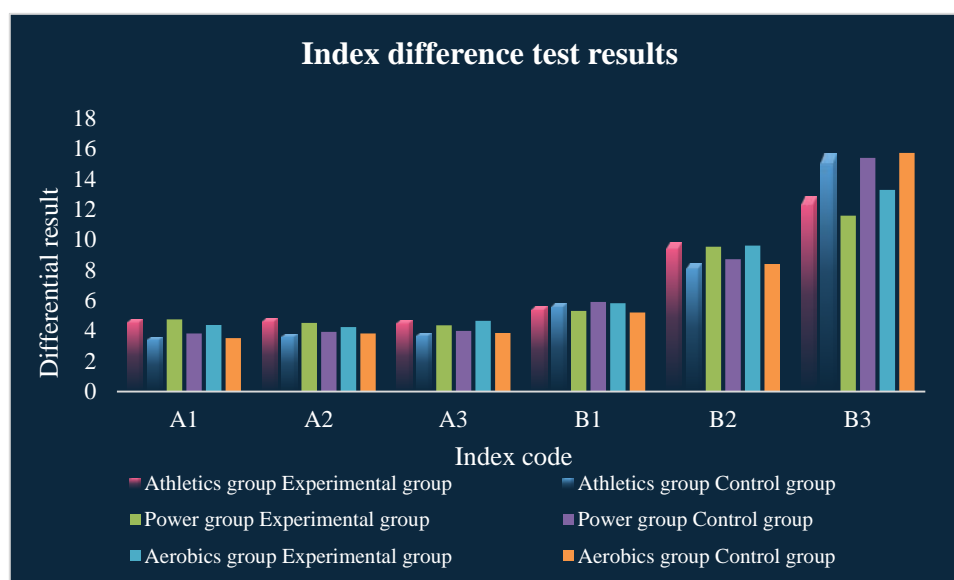|	Total score(/)	91.59±7.19	75.32±6.28	93.3±11.6	82.67±11.4	92.7±10.33	79.6±10.44
Physical ability	1000 meters test(B1)	5.61±0.61	5.83±0.62	5.32±0.37	5.91±0.95	5.83±1.61	6.21±0.97
	Average power(B2)	9.82±0.72	8.47±1.22	9.55±2.35	8.73±1.98	9.62±1.35	8.41±2.25
	Sensitive reaction(B3)	12.85±1.58	15.72±2.72	11.6±1.07	15.41±2.26	13.3±1.61	15.73±1.44

Figure 1. Difference test results of each indicator between the experimental group and the control group

According to the feedback information in the chart, after the end of the experiment, there were significant differences among the three project groups in terms of learning interest and physical fitness. In terms of the index of active learning interest of athletes in track and field group, and the data of the index in the strength group and the aerobics group were 0.93 and 0.87 respectively. In terms of physical dimensions, the typical test score is 1000 m data, track and field, strength group and group calisthenics index average differences between different groups were 0.22, 0.59 and 0.38, and how each index dimension evident between the project team use computer technology of virtual experimental results are excellent traditional teaching group.

We speculate that through the access of computer virtual technology, the experimental group's curriculum and teaching philosophy have been improved and upgraded. PE teachers can make accurate and intelligent assessment of students' physical fitness, instead of taking individual subjective attitude as the evaluation standard of students' physical fitness. With the aid of computer virtual technology, teachers can design courses by combining classroom teaching with after-class consolidation learning. With the help of those information equipment, students' interest in learning is naturally higher than that of the control group, thus realizing the maximum use of learning time. In addition, through communication with students in the experimental group, we found that students in the experimental group showed great interest in the application of computer-aided virtual technology support auxiliary equipment, and they are generally willing to use these technologies to observe their average speed, energy consumption, average power and other measurement data in the process of exercise. These evaluation data can only be achieved, therefore, the use of these technologies to achieve the students to observe their own detailed scores data, self-assessment and self-improvement functions.

Conclusion

By fusion technology of computer virtual function and value analysis of sports teaching in HVC, found that the application of the computer virtual technology to innovation in HVC and universities sports teaching mode, enrich the teaching content, therefore, aided by computer virtual technology sports teaching is an important content of higher vocational college for the future development, must actively promote the computer virtual technology application in HVC sports teaching, thus to improve the teaching quality and efficiency, promote HVC and universities sports teaching work and the perfect combination of computer virtual technology.

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