Research on the Application of VR Technology in Physical Education

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ABSTRACT. *With the continuous development of today's social science and technology, various technological products have poured into our lives. From 2D and 3D technology to the current VR (virtual reality) technology, the application fields are extremely wide. This article mainly explores the application of VR technology in physical education, and discusses the problems and results achieved in the application of this technology, analyzes the value and disadvantages of virtual reality technology in physical education, and finally the application of VR technology in s physical education learning puts forward its own hypotheses and prospects, aiming to provide ideas for expanding new physical education learning methods and increasing the fun and effects of physical education learning.*

KEYWORDS: *VR technology, physical education, learning methods*

1. Introduction

With the continuous advancement of science and technology and the continuous innovation of today's educational concepts, traditional teaching methods have also highlighted their own shortcomings and deficiencies. Science and technology have gradually penetrated into classroom teaching, bringing more novel and interesting learning methods to students [1]. Nowadays, science and technology have penetrated into physical education classroom teaching and play a huge role. It is a new teaching medium (VR technology) that has emerged after multimedia technology. In the teaching process, it not only allows students to learn knowledge, but also allows students to have a real feeling of being there. This technology can bring people real feelings such as hearing, sight, touch and even smell through various devices on the computer and the combination of various software and hardware. The application of this technology in physical education is an innovation in physical education. The birth of this scientific and technological teaching method will make the physical education process more perfect. The application of VR technology in physical education classroom teaching can not only promote the development of physical education, but also improve the level of modern physical education. It also enables students to master sports knowledge and skills more comprehensively through high technology, thereby comprehensively improving students' physical and mental

development.

2. The impact of the application of VR technology on physical education

2.1 Impact on physical education teaching experiment

VR technology can first be used in sports experiments in physical education. For example, the current science of sports human body and some biological experiments all use creatures such as mice as experimental products [2]. From a humanitarian point of view, this is a very cruel behavior. In addition, some students' psychological quality is not strong enough to conduct anatomical experiments on living organisms. Even some sports experiments can't be completed in reality, so they can only rely on virtual reality technology to complete. VR technology can simulate objects in the real world in a virtual environment, such as simulating animals such as mice. Students can conduct anatomical experiments on mice in a virtual environment. This reduces the need for living biological experiments and also overcomes psychological obstacles of some students. Students use virtual reality technology to complete experiments that cannot be done in the real world. Not only do they overcome various difficulties, but they can also obtain the same effects as real world experiments.

2.2 Influence on the concept of physical education

First of all, traditional physical education is knowledge-centered, teacher-centered, and physical education classroom-centered. Students' initiative, enthusiasm, and creativity will always be constrained. The current education reform pays more attention to the subject status of students and requires students to fully reflect their subjectivity in the classroom so that students can carry out effective independent learning [3]. However, the effect of this model is not obvious in actual teaching, and it has not achieved the desired effect when implemented. Once VR technology enters the physical education classroom, it will arouse students' interest in learning and the motivation of active learning. This will better highlight the student's subjectivity. Secondly, the current science and technology are so advanced, the world can be connected as a whole through VR technology, and cross-disciplinary and cross-cultural learning can be realized. It is no longer limited to knowledge and skills in domestic textbooks, and can achieve the effect of general education. Broaden your horizons, active thinking, open thinking. The use of VR technology can give students endless space for thinking divergence and can effectively stimulate students' creative thinking.

2.3 The impact on physical education teaching goals

The current teaching objectives are mainly three-dimensional teaching objectives, including knowledge and skills, processes and methods, emotional attitudes and

values. When VR technology is applied in physical education, it will inevitably cause corresponding changes in certain aspects of the three-dimensional teaching objectives. For example, the teaching process will be different from the ordinary teaching process in the past. After all, learning is done in a space not led by a physical education teacher. Some teaching methods such as explanation methods and demonstration methods used in actual teaching will be correspondingly weakened, and more are to highlight students' dominant position and stimulate students to learn independently. The entry of high-tech products into the sports classroom will inevitably bring different feelings and experiences to students, thereby greatly improving students' enthusiasm for learning and making students more enthusiastic about sports learning. High-tech teaching methods and traditional teaching methods will form a greater difference, which will make students' understanding of new things and their own values will produce a series of changes.

2.4 Impact on the content of physical education

First of all, the application of VR technology in physical education can make physical education content break through the restrictions of the geographical environment. The current physical education content is restricted by regions, so it is difficult for the northern sports events, such as skiing and skating, to appear in the southern sports classrooms [4]. In the northern classroom, it is also difficult to appear in southern sports. This results in a certain degree of difference in the teaching content of physical education in the north and the south. The use of VR technology just compensates for this shortcoming and can make the sports in the north and south the teaching content is more comprehensive. Secondly, students can receive technical guidance from high-level athletes through VR technology. At present, physical education mainly relies on the teaching of physical education teachers, and sports techniques are not necessarily comprehensive. The current online sports technology learning is mainly based on video teaching, which is not real enough after all. In the VR system, high-level athletes can provide professional guidance. The system presents high-level athletes in front of students three-dimensionally, so that the visual, auditory, and tactile feelings during learning will be more real, thus expanding physical learning resources and physical learning content.

2.5 Impact on the physical education teaching process

For sports learning in the VR system, first of all, the system can automatically diagnose the learning level of students, students can also choose their own physical education content, and students can choose their own teaching progress and preferred teaching methods according to their own learning ability. Because different learning individuals have their own characteristics, learning ability, learning level, and learning methods are different. A single teaching may not be suitable for all students, so the application of VR technology can not only reduce the workload of teachers before class, but also effectively improve students' learning

efficiency. Secondly, learning in the VR system can cross the limitations of time and space. Teachers and students of different races and countries can communicate online through the system, which can make teaching methods more diverse and enable students to experience and learn sports in other countries cultural and sports knowledge and skills. Finally, it can break through restrictions on age, gender, and industry. Current physical education learning mainly relies on physical education classroom teaching and extracurricular training classes. It is very difficult for social adults in all walks of life to learn the same teaching content as students. Learning in the VR system is no longer limited to students' school physical education. Everyone can enjoy the same teaching resources as students, which can be conducive to the spread and popularization of mass sports culture.

2.6 Impact on physical education teaching methods

The application of VR technology in physical education has the greatest impact on physical education methods. The current physical education teaching methods are mainly based on the language method, the intuitive method, the complete method, the decomposition method, the method of preventing and correcting errors, and some methods used in technical exercises. These methods are mainly used in the interactive learning of teachers and students in the classroom. The birth and application of new technologies will hinder such communication and interaction, so the teaching methods in the classroom will have corresponding changes. For example, the use of VR technology makes it unnecessary for physical education teachers to guide students one by one [5]. Therefore, the use of explanation methods, prevention and correction methods in physical education teaching will be reduced, and more methods used are mainly for students to learn method-based. Therefore, adding a high-tech application to teaching will inevitably lead to changes in teaching methods.

2.7 Influence on the evaluation of physical education

In the past physical education teaching, teachers mainly used quantitative evaluation and qualitative evaluation as well as absolute evaluation and relative evaluation to evaluate students' physical learning. In the VR system, the teacher pre-programs the entire teaching process through design, and students learn in stages. At the same time, the system will give feedback on each stage of learning in time, and export the corresponding exercise data to determine each whether the stage of learning is qualified. At the end of the course, the system will give a final evaluation. In the end, the physical education teacher will give the students corresponding realistic evaluations based on the actual practice of the students. Combining the systematic evaluation with the actual evaluation can make the teaching effect and teaching evaluation better and more comprehensive. In this way, teachers do not have to repeatedly correct errors, which not only reduces the workload of physical education teachers, but also effectively optimizes the evaluation of physical education teaching.

3. The impact of the application of VR technology on the effect of physical education learning

3.1 Effectively improve the learning effect of students

Traditional physical education is relatively boring, and students' interest in learning is not high, which leads to a less optimistic learning effect. When VR technology is used in physical education, the technology itself is more attractive because of its scientific nature, which can effectively enhance students' learning effects. First of all, science and technology are more attractive, which can make students devote more energy to practice and can further improve their physical fitness. Secondly, because the technical movements in the VR system are scientific and reasonable, the technical movements learned by students can be closer to the standard, and compared to previous studies, the students' sports skills can be greatly improved. Finally, the study of physical education is ultimately to improve the students' own athletic ability. Students' ability to accept new things is quicker and more interested. They will consciously perform a variety of exercises in the system to continuously improve their exercise intensity, thereby gradually improving their own athletic ability. The improvement of students' own physical fitness, physical skills, and athletic ability is the performance of effective improvement of teaching effect and student learning effect.

3.2 Optimize physical education training and competition

VR technology can also be used for sports training in classroom teaching and training. First, students can perform digital learning to ensure the scientificity and accuracy of training. According to the teaching content provided by the VR system, students will learn and train. The system will effectively capture their movement trajectory and establish a complete data system for the practitioners to refer to [6]. In this way, the scientific nature of the training methods and the accuracy of technical movements are guaranteed. Second, in the process of physical training, some sports have certain antagonism and danger. For this reason, some projects cannot be carried out in classroom teaching at all. Therefore, we can complete these projects that cannot be completed in reality in a virtual environment, which effectively guarantees the integrity of the teaching content and avoids the occurrence of unsafe accidents in teaching.

When we conduct physical education and training, we must pay attention to the effectiveness of teaching and enable students to have a certain ability to compete. If you play in the classroom, due to the limitations of the opponents, the best results will not be achieved. Therefore, it is necessary to compete with opponents outside the school to achieve better learning results. However, because it is very difficult to hold an off-campus exchange competition, it takes a lot of manpower, material resources, and financial resources, so at this time we need to conduct a simulation competition in the VR system. In this way, unnecessary energy and material resources can be reduced, while the effect of teaching and training can be improved,

and the learning effect of students can also be improved. In addition, in the virtual competition environment, the choice of opponents is wider, not only limited to domestic, but also can communicate with opponents in other countries, so that you can learn more comprehensive sports knowledge and skills. The application of VR technology in sports training can not only effectively improve the effects of teaching and training, but also provide a certain degree of effectiveness and convenience for classroom teaching and training.

4. The advantages of VR technology in physical education

4.1 A variety of teaching environments can be set

School physical education mainly takes two forms: indoor teaching and outdoor teaching. Indoor teaching is mainly based on sports theory teaching, and sports technique teaching is mainly based on outdoor teaching. Outdoor teaching is often affected by the environmental climate. For example, extreme weather such as rain, snow, heavy haze, etc. will hinder the normal progress of outdoor physical education, thereby affecting the progress of physical education and the learning effect of students. The input and application of VR technology can set the teaching environment according to the needs of the course. You can also set the teaching environment according to the environment required by different projects. For example, if a skiing project requires snow, you can set the snow in the system. The application of this technology makes the progress of physical education no longer affected by the seasonal climate, which not only enriches the physical education classroom, but also enriches the physical education environment and makes physical education more comprehensive.

4.2 Choose a variety of teaching content

The current physical education teaching content is constantly evolving. Due to the influence of factors such as student safety, there are fewer and fewer projects that can be implemented in physical education classes. For example, dangerous projects such as javelin, discus, and gymnastics have gradually faded out of our field of vision. It is becoming rarer, which makes the content of physical education more and more monotonous. Therefore, it is possible to learn and practice sports skills of dangerous events in the VR system, so that students can experience the different feelings and pleasures brought by different sports. In such teaching, the learning content selected by the students will also be rich and colorful, which can also enrich the physical education classroom teaching and improve the enthusiasm of students in learning. The purpose of exercises for different sports is different, and the content of physical education should be diversified, so that students' physical skills can be fully developed.

4.3 Effectively stimulate students' interest in learning

The traditional physical education teaching model is relatively simple, the teaching content is relatively monotonous, and the teaching method is relatively boring, mainly relying on teachers' professors. The teaching content is also prescribed content. Repeated learning of the same content will inevitably make students less motivated to learn. Nowadays, students are more able to access new things and are more interested in electronic products and emerging technologies. We can apply this feature flexibly in the process of physical education. When VR technology is applied to sports classrooms, it can arouse students' enthusiasm for learning and be full of interest in sports classrooms. In such a class, students will experience a different learning experience from the past, and they can also experience sports that they have never dared to try, bravely challenge themselves and surpass themselves. The times are advancing and students are advancing, and the form of physical education classroom teaching is constantly updated. To boldly introduce new things into classroom teaching, not only meets the development of the times and the needs of teaching, but also can effectively stimulate students' interest in learning.

4.4 The occurrence of teaching accidents can be avoided

Physical education is an activity process that uses physical exercises as the main method to promote student health, enhance student physique, and enhance student health. Physical education is also a process in which teachers and students, students and students interact to learn physical education knowledge and skills, so teaching accidents are common. There are many unsafe factors in the physical education classroom, obvious unsafe factors and hidden unsafe factors. As long as there is human-to-human communication and interaction, it will be accompanied by insecure factors. In the physical education class, due to many unsafe factors, some sports cannot be carried out. However, if students learn physical education in the VR system, communication between students is reduced. Each student learns on an independent machine, thereby reducing the possibility of disorder in the classroom, so that the workload of physical education teachers can be reduced, and students' learning will be easier. Therefore, the application of VR technology in physical education can not only effectively exercise the students' bodies, but also effectively avoid teaching accidents.

5. Conclusion

Today's society is constantly advancing, and along with the continuous development of science and technology, virtual reality technology has gradually become a reality in physical education. Although there are many drawbacks in VR technology, VR technology, as an emerging technology, has its technical concept very advanced, with very great potential and advantages. The application of this technology in physical education will have a profound impact on enhancing

students' interest in physical education, improving physical education conditions, and cultivating students' innovative ability. Although the current development of VR technology is not perfect, and its application in physical education is also in the trial stage, but with the continuous advancement of science and technology, the continuous innovation of VR technology and the continuous reduction of costs, the application of VR technology in physical education will gradually mature and perfect. In the process of continuous updating of science and technology, coupled with the continuous efforts of all sports workers, VR technology in the future will definitely cause changes in the concept of physical education and promote the optimization and perfection of the physical education system. We should always boldly innovate, practice, combine more emerging technologies with physical education, and inject new vitality into physical education. Only in this way can we better implement teaching, stimulate students' interest in learning, and cultivate more innovative talents who adapt to society.

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