Research on the Application of Computer Virtual Technology in Basketball Teaching

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Abstract. With the increasing demand of students' intuitive understanding and cognitive level of basketball teaching, the traditional theoretical courses and teachers' practical teaching have been difficult to meet the actual needs of teaching, and there is an urgent need for teaching reform. Based on this, this paper first analyses the application status and function of computer VR tech, then studies the utilization of computer VR tech in basketball teaching, and finally gives the utilization strategy of VR tech in basketball teaching.

Keywords: Computer Virtual, Basketball Teaching, Teach

1. Introduction

With the iterative progress and maturity of intelligent tech represented by computer VR, it has been widely and deeply applied and studied in many fields, especially in school teaching, which greatly promotes the visualization level of teaching and improves the quality and effect of teaching. Specific to the field of basketball teaching, with the increasing demand of students for intuitive understanding and cognitive level of basketball teaching, the traditional theoretical courses and teachers' practical teaching have been difficult to meet the actual needs of teaching, and there is an urgent need for teaching reform [1]. On the other hand, computer VR organically integrates several fields and disciplines as shown in Figure 1 below, which can greatly improve the visibility, embodiment, interaction and participation of the teaching process. The maturity of computer VR tech makes it have broad utilization space in basketball teaching.

VR tech mainly uses computer processing to realize the visual emulation of things, which helps students get more direct sensory experience of basketball teaching. Through better human-computer interaction experience, students can more intuitively interact with teachers, better understand and master the essentials of basketball teaching. With the significant improvement of teaching quality brought by this immersive and perceptive new teaching experience, more and more schools begin to pay attention to the specific utilization of VR tech in basketball practice teaching [2]. The practical utilization of VR in physical education represented by basketball realizes the integrated processing of video, sound, graphics and other information in the teaching process, and makes the teaching content more vivid and intuitive [3]. In this process, students' learning thinking and understanding ability are further released, and teachers no longer need to participate in the teaching process too much, so as to
promote the further improvement of students' dominant position, and further strengthen students' all-round and three-dimensional understanding ability of basketball.

Figure 1. The fields and subjects of computer VR tech

In addition, the utilization characteristics of computer VR tech, such as integration, digitization and interactivity, enable it to process the teaching content digitally according to the user's wishes. Therefore, the tech can make the difficult part of theoretical knowledge and technical action in basketball teaching all-round, multi perspective dynamic display, so as to highlight the key points and difficulties in basketball teaching, and help students understand, master and consolidate vividly. In short, the utilization of intelligent tech represented by computer VR in basketball teaching innovates the teaching methods, means and classroom atmosphere of basketball, plays an important function in cultivating students' enthusiasm and interest, and further reduces the difficulty of teaching [4]. Therefore, it is of great practical value to study the utilization of computer VR tech in basketball teaching.

2. Utilization status and function of computer VR tech

2.1. The concept of computer VR tech

As a kind of computer emulation system that can create and experience virtual world, VR tech uses computer to generate an emulation circumstances. It is a multi-source info fusion, interactive 3D dynamic scene and entity behavior system emulation, which makes users immerse in the circumstances [5]. VR tech has typical interactive, immersive and imaginative characteristics. Virtual reality system includes desktop virtual reality, immersive virtual reality, augmented virtual reality and distributed virtual reality. Specifically in the field of education, virtual reality tech can provide students with vivid and lifelike learning circumstances, and provide unlimited virtual experience in a wide range of subjects, so as to accelerate and consolidate the process of students' learning knowledge.

2.2. The function of computer VR tech in basketball teaching

The advantage of VR combined with basketball education is that it can provide immersive experience, make the boring preaching and teaching lively and interesting, and make the obscure knowledge easy to understand [6]. Secondly, the utilization of this tech helps to improve the learning efficiency, avoid the safety risk of experimental operation, improve the learning interest and motivation, and reduce the cost of education. VR tech solves the demands of situational and natural interaction of basketball teaching media by creating circumstances similar to the real society. In the specific basketball teaching practice, personal experience is more convincing than empty and abstract preaching. There is a qualitative difference between active interaction and passive watching.

2.3. Utilization status of computer VR tech in basketball teaching

At present, computer VR tech has become a cutting-edge tech which has been widely used in the field of basketball teaching, along with multimedia, computer network and other intelligent and information tech, as shown in Figure 2 below, and plays an important value and function.
Figure 2. Utilization status of VR tech in school education

In addition, the current utilization of computer VR tech in basketball teaching mainly includes desktop VR system, immersive VR system and enhanced VR system, as shown in Table 1.

Table 1. Utilization level of pre computer VR tech

| Level        | System                  | Equipment                          |
|--------------|-------------------------|------------------------------------|
| Primary      | Non immersice experience| Computer + software                |
| Intermediate | Immerse in virtual reality| Computer + software + VR helmet + data glove |
| Advanced     | Augmented reality system | Software + AR helmet               |

3. Utilization of computer VR tech in basketball teaching

3.1. Utilization of VR tech in basketball teaching theory teaching

Compared with the boring graphics and empty preaching in Basketball Classroom Teaching Theory, computer VR functions and scenes can significantly improve students' concentration, and make students keep a more lasting learning state in the virtual situation [7]. With the help of VR equipment, students can enter the three-dimensional circumstances of the virtual scene of basketball teaching course, and interact with people, objects and scenes, so that they can intuitively obtain the teaching content of multi-dimensional display. Specifically, in the teaching of basketball teaching theory, only the desktop level virtual reality system is needed. Students can get the virtual scene from the computer to achieve the similar real experience. The effect of their transformation is not only visual, but also can enhance the students' learning initiative.

3.2. Utilization of VR tech in basketball teaching practice

Basketball teaching practice teaching pays more attention to the cultivation and training of students' basketball practical ability, and has higher demands for students' personal practical ability and operability [8]. In the process of basketball practice teaching and training, VR virtual equipment can solve many practical problems. For example, the decomposition of basketball action essentials, the students can return to explain again if they are a little puzzled. When the students simulate the operation drill, the lifelike effect is good enough to let the students immerse themselves in the practical learning, so as to obtain a better understanding. For some basketball training movements with high technical difficulty, the teacher's demonstration is difficult to fully present for many times. Using VR tech to panoramic teaching emulation action essentials can help students improve their learning interest and efficiency in immersion teaching. In addition, the difficult movements in the virtual scene
can even be parsed back and forth several times, and students can also complete the targeted training process in a virtual way.

3.3. Utilization of VR tech in basketball online teaching
Online teaching can break through the limitation of basketball teaching time and space, and help students more flexible and free to carry out related training and learning [9]. However, for basketball teaching, most of the online teaching courses are simply moving the timetable and teaching materials of offline learning onto the Internet, boring explanation and PPT display, resulting in the teaching effect is not even as good as offline teaching. Students' learning enthusiasm is not only difficult to be stimulated, but also for students with weak learning motivation or weak ability to accept knowledge, online teaching without teaching supervision will further reduce students' learning efficiency and learning quality.

The computer VR tech is applied to the basketball online education, and the multi-dimensional audio-visual interactive learning mode is created by using VR equipment to simulate a more three-dimensional realistic basketball teaching scene. Students only need to wear VR equipment, and then they can experience the situation similar to basketball training personally. They can not only enter the virtual situation of course content with teachers, but also carry out team practice with students, so as to get a more realistic learning and three-dimensional experience. The integration of VR and online teaching can stimulate students' brain and promote active learning, so as to make up for the lack of interactivity and vividness of online education.

4. The promotion strategy of VR tech in basketball teaching

4.1. Improve the spirit of VR tech in basketball teaching
In the basketball teaching of computer VR tech, when the real circumstances is not enough to express information, virtual method can be used to enhance reality [10]. Secondly, the organic integration of reality virtual continuum and artificial intelligence tech constructs the basketball teaching mode of human-computer cooperation based on artificial intelligence tech to promote the intellectualization of teaching process. In addition, the utilization of extended reality tech, the integration of scheduling real scene and virtual scene, to promote the basketball teaching situation further smart circumstances. Through the utilization of adaptive learning tech, according to the personalized characteristics of students, it could accurately push teaching resources on demand, and promote the level of teaching students in accordance with their aptitude in the process of basketball teaching. Through the utilization of learning analysis tech, accurate analysis of students' learning data, promote the accurate development of basketball teaching, so as to enhance the spiritual development of VR basketball teaching situation.

4.2. Strengthen the integration of VR education and AI tech
The teaching mode of man-machine collaborative integration of virtual reality and artificial intelligence tech can promote the intellectualization of basketball teaching. Based on the extended reality tech, the real scene and virtual scene are integrated to promote the intellectualization of teaching scene. The utilization of emerging tech of basketball education represented by VR should be organically integrated, as shown in Figure 3 below, so as to enhance the situational basketball teaching process, highlight data-driven, and realize large-scale network interaction, so as to enhance the diversified and visual effect of basketball teaching.
5. Conclusion

In summary, the utilization of computer VR tech in basketball teaching can further release the students' learning thinking and understanding ability, and teachers no longer need to participate in the teaching process too much, so as to further enhance the students' dominant position, and further strengthen the students' all-round and three-dimensional understanding ability of basketball. In this paper, through the utilization of computer VR tech and the function of research, analysis of computer VR tech in basketball teaching function and utilization status. Through the analysis of the utilization of computer VR tech in basketball teaching, this paper studies the specific utilization of VR tech in basketball teaching theory teaching, practice teaching and online teaching, and finally analyzes the promotion strategy of VR tech in basketball teaching.

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Figure 3. Integration of VR education and AI tech.