

Research on the application of computer virtual reality technology in the teaching of college students

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Abstract: VR(virtual reality) technology has been rapidly applied in various fields. When it is applied to college students' teaching, the teaching mode of computer education will be subverted. Students will learn the teaching content in the set virtual environment through VR technology and interact with it, which will increase the situational and interesting of classroom teaching and learning. Applying VR technology to college students' teaching can change the traditional teaching methods, attract students' attention with more novel teaching conditions and forms, stimulate students' subjective interest in computer learning, and enhance their learning and exploration motivation. This paper introduces the basic concept of computer VR, then introduces its advantages in college students' teaching, and finally introduces the application of computer VR technology in college students' teaching.

1. Introduction

With the continuous improvement of computer technology, people's dependence on computers is becoming stronger and stronger, and the demand for computer talents in society is becoming more and more urgent. Therefore, the employment prospects of students majoring in computer science in colleges and universities are becoming broader and broader. As college students, they should be more aware of their own advantages and disadvantages and study relevant professional knowledge, so as to have a more perfect and systematic computer professional ability and lay a solid foundation for their future jobs [1]. VR(virtual reality) technology has been rapidly applied in various fields. When it is applied to college students' teaching, the teaching mode of computer education will be subverted. Students will learn the teaching content in the set virtual environment through VR technology and interact with it, which will increase the situational and interesting classroom teaching and learning.

Nowadays, it is more and more applied to teaching. As an important teaching method for college students, its application has greatly improved the teaching effect and level of college students. In this context, colleges and universities should take the application of VR technology in college students' teaching as a key topic and actively strengthen research, discussion and practice.

2. Basic concepts of computer VR technology

VR technology is a high-end technology. In the computer industry, VR is an advanced man-machine interface technology, which aims to give people an immersive experience. The technical features of computer VR are shown in Figure 1.

VR is an idealized form of human-computer interface between computer and user. Compared with the traditional mode of human-computer operation, VR system puts users in a virtual real environment, bringing them an immersive imagination space. Users operate objects in this virtual environment through sensing devices, and fully experience the interaction between human and computer [2-3]. Through various software algorithms to collect and analyze its behavior and transmit it to the data center, and then make real-time response to users and feedback to users. In this way, the user's brain can have a sense of reality and experience a more realistic virtual world in the simulated 3D scene.

Generally speaking, VR technology is a compatible subject, which effectively integrates human

engineering with human psychology, sensing technology, graphics technology and intelligent comprehensive technology. Relying on virtual technology, the theoretical content of teaching can be effectively combined with the practical content of teaching, and the abstract teaching content can be more three-dimensional. At the same time, this method can also effectively enhance the compatibility of virtual systems, and then effectively build diversified systems [4].

In recent years, with the improvement of hardware and algorithms and the progress of various supporting technologies, VR technology not only has a more realistic effect, but also has a wider range of popularization and application. For example, in the fields of TV broadcasting, various trainings, e-commerce and education, VR technology has been highly concerned and effectively applied.

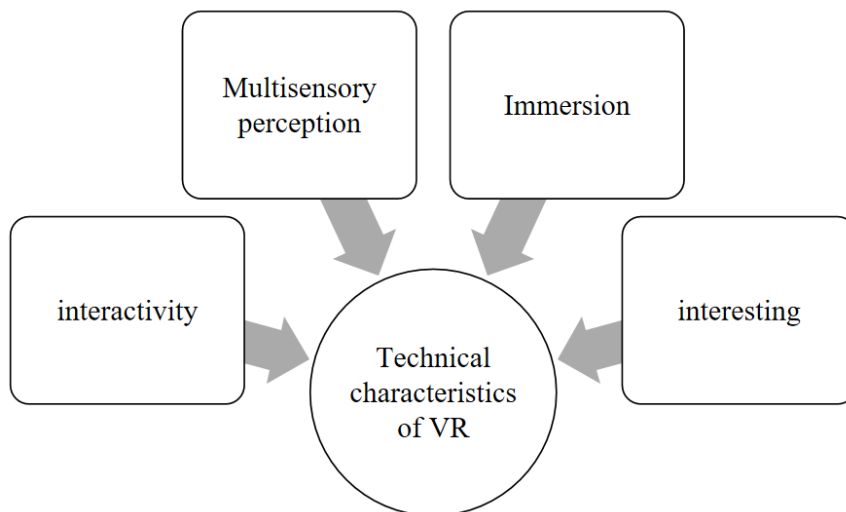


Figure 1 Technical characteristics of computer VR

3. Advantages of computer VR technology in college students' teaching

3.1. Stimulate students' subjective interest in learning

VR enables the operator to truly enter an interactive 3D virtual environment generated by a computer, interact with it and communicate with it. Through the interaction between participants and the simulation environment, and with the help of people's own perception and cognitive ability of things they touch, it helps to inspire participants' thinking, so as to obtain all kinds of spatial information and logical information contained in the environment in an all-round way. Through the use of software and hardware system of VR technology, a virtual atmosphere close to facts is created for students, which stimulates students' senses such as sight and hearing, develops students' thoughts, and makes students become active and easier to remember knowledge [5]. Applying VR technology to college students' teaching can change the traditional teaching methods, attract students' attention with more novel teaching conditions and forms, stimulate students' subjective interest in computer learning, enhance their learning and exploration motivation, make them participate in computer learning more actively and actively, and ensure that college students' teaching can achieve more ideal results.

3.2. Improve the quality of teaching resources

VR technology can generate an experimental system in computer experimental teaching, which mainly includes experimental objects, laboratory environment, experimental instruments and equipment, as well as experimental information resources, mainly including self-evaluation, navigation and testing. You can use VR technology to create an idealized laboratory or construct another virtual laboratory by imitating a real laboratory. At the same time, VR technology can better allocate resources, which is mainly reflected in the fact that the virtual machine is not affected by other virtual machines after configuration. In traditional teaching, teachers usually use

PPT, oral description or existing experimental training equipment for teaching, and the teaching resources are relatively simple. Using VR technology, the teaching content can be digitized, a vivid virtual learning environment can be simulated, and a VR education and teaching resource database can be established to improve the quality of teaching resources for Keheng teaching of computer major in colleges and universities [6-7].

3.3. Save education cost

Because VR technology can build a high-definition, high-quality and efficient virtual environment based on the software platform, students can have a sense of experience in it, which has great visual impact and keeps their cerebral cortex in an exciting state all the time, thus effectively attracting their attention. The virtual laboratory adopts a functional modular structure, and new equipment and instruments can be selected as needed. At the same time, the teaching content is updated, and the equipment and instruments are also updated [8]. Remote areas and areas with poor economic ability can reasonably use VR technology software to do experiments in virtual laboratories, which brings convenience to people and reduces the capital investment of experimental equipment, so that college students can get better education.

4. Application of computer VR technology in college students' teaching

4.1. Using VR technology for theoretical teaching

VR is an idealized human-computer interface between users and computers. It takes computer technology as the core and uses various technical means to create a realistic virtual environment. Computer is a practical course, and it is difficult for students to have a deep understanding of knowledge only by the teacher's narration, while the introduction of VR technology can make abstract knowledge more vivid and concrete.

VR technology can organically combine pictures, sounds, animations, words and other media expressions, and skillfully design and produce immersive, interactive and lively teaching courseware to meet the teaching requirements that students can learn and practice from various angles. When explaining the basic concepts of information coding, binary and decimal, VR technology can also be used to make some game cases, which can not only stimulate students' interest in learning, but also improve students' ability to think and solve problems actively through the questions set in the game.

4.2. Virtual experiment with VR technology

Computer VR is a synthesis of many technologies, including real-time 3D computer graphics, stereoscopic wide-angle display, user (head and eyes) tracking, stereo, tactile and force feedback, voice input and output and other technologies. Using VR can not only create these spaces in students' minds, but also make them visible, audible and even tangible [9]. For example, space presents us with a mysterious and unfamiliar world. How to feel the feeling of the body in space is a dream of many people. Using VR technology, a virtual laboratory is established on the computer. Students can walk into this virtual laboratory and operate virtual instruments as if they were there. The results can be displayed by the instrument and fed back to the students.

In experimental teaching, for experiments that require a lot of money, or some dangerous and long-term experiments, VR technology can be used to simulate these phenomena or processes realistically. In the virtual environment, students can communicate with each other, and their learning situation can be recognized and observed by teachers. Then teachers can adjust and guide students' learning deficiencies, and can also discuss with students to further stimulate their potential strength. For example, the quality of college students' teaching will be improved, the realistic goal of programming and program improvement teaching will be realized, and the real-time communication classroom and learning control system will be built. In some backward areas, because the economy and culture are relatively backward and the experimental facilities are poor, in this case, VR software can make up for it, so that students' learning is no longer limited by learning

conditions, experimental equipment and venue facilities, thus improving the learning quality and efficiency.

4.3. Integrating teaching resources with VR technology

VR technology has already become the fundamental medium of human-computer interaction. The medium of autonomous learning can be supplied to students, and it can also fully allocate teaching resources based on students' learning conditions. At the same time, it can provide students with essential guidance, guide students to reflect and update their progress, enhance their enthusiasm, and let students actively learn about computers [10]. Virtual technology is a teaching resource system with good compatibility, low cost and convenient control. Under the audio-visual atmosphere, it can build a practical and useful teaching environment for students and realize the goal of students observing scientific facts.

In actual teaching, the existing teaching courseware, animation, micro-lessons, film and television resources can be virtualized through VR technology, which highlights the characteristics of various teaching resources and integrates the advantages of various resources, so that teaching is not limited by time and space, and the teaching scene is more vivid and realistic, making up for the shortcomings of traditional teaching. With the help of VR technology, abstract algorithms can be presented to students intuitively, so that students can better absorb and master them. At the same time, VR technology can also be used to make some animation or game cases, which can better stimulate students' interest and motivation in learning and improve their unlimited potential to think actively and be good at thinking and solving problems.

4.4. Using VR technology for network teaching

VR technology can break the limitation of time and space, provide students with a situation that can be found in production practice, and reproduce a specific environment. Combining VR technology with the Internet, intelligent, interactive, distributed and illustrated teaching is carried out, and a realistic teaching and learning environment is transmitted through the Internet. In the classroom, the goal of real-time communication between students and teachers can be realized by the construction of online classrooms. The problem of insufficient allocation of teaching resources has also been solved by virtual technology, which improves the running quality of computer system, at the same time, increases the isolation of virtual system, creates more and more good learning conditions for students and gives them correct guidance. Through excellent design, vivid and vivid teaching courseware is made, and the advantages of interactivity and immersion of VR technology are brought into play, so as to create a virtual real environment for students, which is like the real experience of being in it, so as to meet the needs of students to learn and practice from different angles.

5. Conclusions

VR is an idealized man-machine interface between computer and user. Compared with the traditional mode of human operating computer, VR system allows users to be in a virtual real environment, which brings them an immersive imagination space. Users can operate objects in this virtual environment through sensing devices, and fully experience the interaction between human and computer. Nowadays, it is more and more applied to teaching. As an important teaching method for college students, its application has greatly improved the teaching effect and level of college students. Therefore, in the teaching of college students, teachers must pay more attention to VR technology, take effective measures, and reasonably apply VR technology to course teaching, experimental teaching, courseware design, resource construction and many other links, so as to effectively improve the overall teaching effect of computers.

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