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On the Application of Virtual Reality Technology in the Course of Photography and Videography in Higher Vocational Colleges

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Abstract

With the change of social demand for talents and students' demand for integration of professional knowledge, when virtual reality redefines photography and videography, college photography and videography courses should also actively apply virtual reality technology to carry out teaching and practical training. Virtual reality technology can be presented in a visual way in the photography course, directly hit the teaching difficulties, blind spots, theoretical and abstract concepts easily mastered; Practice shooting can be interactive learning, human-computer interaction, leading the flipped classroom; The scenario-based teaching of virtual reality can break the limitation of time and space, and is more suitable for the situation where it is difficult to go out during the epidemic and the practical training resources are insufficient. The immersive experience can integrate the ideological and political thinking of the course silently. Therefore, it is an inevitable trend for virtual reality technology to overcome the current shortcomings and be widely used in the future photography courses.

Keywords

Virtual Reality Technology; Photography and Video Courses; Teaching; Practical Training; Application.

1. Introduction

At present, with the rapid development of society, the demand for technical talents is getting higher and higher. The training of talents in schools should also change with the needs of the society. Many traditional teaching and practical training modes can no longer meet the needs of the society. In 2022, the Ministry of Industry and Information Technology and other five departments jointly issued the Action Plan for the Integrated Development of Virtual Reality and Industrial Application (2022-2026), proposing to build a batch of virtual reality classrooms, teaching and research rooms, laboratories and virtual simulation training bases in primary and secondary schools, higher education and vocational schools, aiming at experimental and associative teaching content. We will develop a batch of digital virtual reality courses based on the teaching syllabus, strengthen the interactive practical operation between students and various virtual objects, complex phenomena and abstract concepts, promote the upgrading of teaching mode to independent experience, and create a new immersive classroom that supports independent inquiry and collaborative learning. According to the twenty requirements, promoting virtual simulation teaching, actively improving teaching methods and practical training methods, applying virtual reality technology to the teaching of photography and video will provide ideas for the reform of curriculum teaching and practical training in higher vocational colleges.

2. Virtual Reality Technology Redefines Photography Courses

Photography and video is a practical course, and the general classroom teaching mode is carried out by integrating the truth with reality. After the teacher explains the relevant knowledge

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points and demonstrates the operation, the students carry out the operation and practice. In this teaching mode, the teacher is generally in the initiative position, which cannot mobilize the curiosity, creativity and enthusiasm of the students. Especially when a teacher is explaining to multiple students or groups, vocational students may be distracted by the number of cameras or the difficulty of teachers to take care of each student, resulting in a poor class situation. However, the emergence of virtual reality technology changes the teacher-student interaction in the teaching process into human-computer interaction. Teachers only need to be the organizer and mentor of the class, and most of the learning is completed by students themselves. Such teaching method allows virtual reality technology to redefine photography and video courses.

With the emergence of mobile phones and the increasingly intelligent camera, future cameras will adopt more accurate and interactive virtual reality technology. Intelligent and simple virtual reality APP has also been installed in students' mobile phones and computers, so that they can take and experience photos with a sense of virtual reality anytime and anywhere. Through the photos and videos taken by the panoramic camera, virtual reality technology can present completely different visual experience to people. People only need to touch the screen or swipe the smart phone to change the Angle of the video, which can change the interactive mode of the video, so that people can better understand the surrounding and the whole life. In the era of the epidemic, virtual reality technology is combined with photography and videography, so that people can easily realize "cloud" travel, "cloud" viewing, "cloud" conference, etc., so that people feel like immersive. Camera builds a bridge between virtual and reality and becomes a window for people to perceive the world. Therefore, how to combine virtual reality technology with photography and video courses, how to apply virtual reality technology in photography and video courses, and how to carry out teaching design and innovation based on information technology according to different teaching contents will be the regular topics of photography and video courses in the future.

3. Application Advantages of Virtual Reality Technology in Photography and Video Courses

Photography and video courses cultivate students' aesthetic ability, image thinking ability and design ability, and realize the combination of photography technology and art from the perspectives of aesthetics, psychology, art and so on. At present, photography and video courses in higher vocational colleges are mostly taught by traditional teachers assisted by multimedia technology, which can not meet the teaching needs of modern vocational education to a large extent. Therefore, the combination of virtual reality technology and photography and video is a teaching method that is being explored and tried in the current course teaching. Based on the virtual reality technology, the photography course is based on the real-time needs of the society, with culture as the foundation and creative design as the extension, so that the teaching difficulties and blind spots can be visualized to improve the quality and efficiency of the course teaching, guided interactive teaching, and optimize practical teaching activities. In addition, situational teaching can break the limitation of time and space, improve class interest and arouse students' interest in learning, and immersive experience can also boost the realization of ideological and political education in the course. The course of photography is a combination of theory and practical operation. Students should understand the theoretical connotation while mastering practical operation. Teaching with the help of virtual simulation system can make the teaching theory easier to understand and make up for various defects in practical operation.

(a) visualization, direct teaching difficulties, blind spots

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In the course of photography and photography, students should not only take pictures, but also know the camera in their hands, including the internal structure and working principle of the camera, so that students should know the why and why. In the teaching of photography and videography, there are some abstract knowledge points that are difficult to present, such as how to present the relationship between aperture, shutter, exposure and so on. Even if the teacher compares them with a variety of close to figurative objects, the effect cannot be understood by all students. Therefore, curiosity and thirst for knowledge make students want to understand the principle.

At this time, by introducing virtual reality technology into the teaching of photography and photography courses and displaying camera models with the help of virtual reality system, students can intuitively understand the styles and working principles of different parts of the camera in the interactive operation process, know what the internal combination structure of the camera is like, understand the path of light entering the hole and the process of imaging on the sensitive elements. To understand the different influences of different exposure and photometry on photo shooting, students can combine theory with practice without repeated practice summary, so as to better grasp the abstract and difficult knowledge points, make clear the teaching difficulties and blind spots, make clear the students' learning pain points, and reduce the burden of students' abstract understanding. Make students more time and energy to apply to the core elements of photography and photography and key knowledge points to truly combine theory with practice, improve learning efficiency.

Vivid virtual simulation scenes make it easy to solve the knowledge blind spots in photography and videography teaching. Take single servo autofocus and continuous servo autofocus in the knowledge points of autofocus in photography and videography courses for example, the camera only presents the resulting works after adjusting different focusing modes, but the process cannot be presented completely. At this time, a combination of virtual simulation and animation is adopted to allow students to simulate the process of autofocus and observe the changes caused by the combination of different autofocus modes and regional modes. Students can better grasp and understand the changes of images under different focusing modes, so as to better master the relevant theories. In the process of shooting in the future, there is no need to worry about tedious memorizing formulas and contents, and we can choose the right focusing mode better by relying on our own understanding, as shown in Figure 1.

Figure 1. Autofocus interaction design

(2) Interactive learning, leading the realization of flipped classroom

The most important part of photography and video teaching is the actual shooting operation. Most students in higher vocational schools take photography and video courses as a unit. After the teacher explains the theoretical demonstration and operation, the students shoot in groups and disperse. As a result, students may encounter many problems in the process of practicing

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by themselves, and it is difficult to grasp the knowledge of each student. In many colleges and universities, professional cameras cannot be equipped with one camera, which will also have a great impact on students' learning efficiency and learning situation. However, when students carry out interactive virtual photography and video experiments relying on virtual reality technology, through human-computer interaction, students can conduct virtual shooting drills on the content to be filmed before class. Through virtual drills, students know the shortcomings of their theories and the problems they may encounter in the actual shooting process, and will think and find ways to solve them. Such interactive learning changes the classroom into the student as the main body and realizes flipped classroom.

During the actual virtual operation, students can carry out self-exploration learning. They are very interested in designing various shooting compositions, angles and lighting according to their own ideas. During the virtual simulation operation, they will find the problems and deficiencies in their theories and practices, and solve the problems through group discussion or exploration. This is conducive to students' independent learning, improve their comprehensive grasp of knowledge and mutual learning ability, stimulate their learning enthusiasm and creativity.

Practice is the only standard to test the truth. Similarly, in the course of class, whether students have mastered the knowledge can be reflected in the shooting process. The use of virtual photography practice training system can improve the utilization rate of equipment, reduce the loss of equipment, and improve students' proficiency in using cameras. In the virtual studio, students can simulate the real shooting environment and practice. For example, students can choose different shooting objects and adjust their positions to achieve different shooting effects; Students can adjust the position, direction, height and brightness of the lighting in the studio to fill the light of the subject. Students can adjust the parameters of the camera to achieve the purpose of correct exposure. They can also adjust the position and shooting Angle of the camera to make composition before shooting, etc., to achieve human-computer interaction, as shown in Figure 2.

Figure 2. Virtual studio light

(3) Scenario-based teaching to break the limitation of time and space

Photography and video technology is not only carried out in the studio or classroom, but also needs to be carried out outdoors. However, due to the influence of special period or special factors such as the epidemic, weather, traffic and the time cost of a class, students have few opportunities to go out. In the process of virtual teaching, corresponding scene database can be used to help students realize the virtual creation of photography in different scenes. There is no need to worry about the personal safety of students and equipment safety caused by going out. The most important thing for virtual reality technology to introduce photography is to build photography scenes. Different scenes can be simulated, so that students can choose the use of

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the lens, the choice of scene, the scheduling of the scene according to different scenes, and can freely move the characters and buildings in the scene in the virtual scene, so that the practical teaching of photography and photography has a better development and perfection. At present, virtual simulation technology has realized the intervention of various scenes, which can play a role in stimulating thinking and obtaining the latest resources and information in the teaching of photography and photography.

Under the network background supported by virtual reality technology, the computer terminal and the mobile terminal can be shared across platforms, which breaks the limitation of teaching time and space. The construction of different photography scenes enables students to shoot all over the world without leaving home. At the same time, flexible and changeable scenes can stimulate the vitality of students' photography creation. Students' independent choice of scenes can improve their own interest in learning photography, making photography class interesting and interesting is also one of the requirements of modern education. The scenario-based virtual practice of photography and videography in higher vocational colleges enables more interaction and communication between students and teachers. Students are willing to display their own works and scenes. With the help of modern educational means, abstract photography and videography can be easily understood and received in realistic scenes and animations. Give full play to the advantages of virtual component resources, improve the teaching effect of photography and video class, and achieve the predictive results of virtual scenes and virtual laboratories.

(4) Immersion learning, silent integration of curriculum ideology and politics

Whether it is scene building or model building, the biggest feature of virtual reality is its multi-perception immersive experience and learning when students realize human-computer interaction. Students can experience different scenes with the greatest sense of reality, experience the human emotions of the whole world, joys and sorrows, joys and sorrows in different situations, and stimulate students' compassion, empathy and sense of inclusion. In the virtual photography world, Li will experience the changes of managers' life and society, which will trigger their thinking about life and society, and learn to think and observe life and the world from different angles. Through this virtual photography horizon, students' insight and perception will be greatly improved. This is helpful for them to think about the humanity, objectivity and documentary nature of photography. "Experience" is more valuable experience than "watching" or "listening". For example, Nan Golding, the representative of "private photography" in the history of photography, practiced the photography concept of "being immersed in it is more objective than looking on calmly", and advocated that photographers should create with the identity of "participants". This is just in line with the advantages of immersive virtual reality system and augmented reality virtual reality system. Through such immersive experience, ideological and political elements are naturally integrated into the course without much talk.

4. The Future Development Direction of the Combination of Virtual Reality Technology and Photography Courses

At present, the application of virtual reality technology has indeed promoted the reform and innovation in the teaching resources, teaching means and teaching environment of photography and videography course, and achieved the teaching effect of "combining virtuality and reality, and supplemting reality with virtuality". Objectively speaking, however, the application of this technology in teaching is relatively simple at the present stage. The main reasons for the low usage of virtual reality technology in the classroom are as follows: Hardware devices such as helmets are not comfortable enough to wear, the teaching resource library of virtual teaching cannot keep up with the progress of hardware development, there

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are few teaching resources to choose, and the threshold of virtual teaching is too high. However, these problems will be improved and perfected with the development of technology. It is believed that these problems will be solved in the combination of virtual reality technology and photography courses in the future. The advantages of virtual reality technology in the course are obvious: By using virtual simulation technology to teach photography and photography courses, students can quickly master and understand the theories of photography and photography. Compared with the traditional teaching mode of photography and photography courses, the class is more interesting and lively, improves teaching efficiency, improves the utilization rate of equipment, reduces the loss of cameras and saves teaching costs. While assisting teachers in classroom teaching, students can interact and learn independently to achieve immersive learning.

With the rapid development of computer hardware equipment and virtual reality technology, the combination of virtual simulation technology and photography and video courses will be more and more, virtual studio, virtual studio, virtual interactive experiment, etc., for the optimization of teaching process, teaching quality improvement, visualization of teaching knowledge, saving the cost of education and teaching and the improvement of students' learning enthusiasm is of great help. Some of its problems will also be solved in the future teaching and technology development to provide greater support for the optimization of education and teaching.

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