Innovative Analysis of Higher Vocational Education Model Based on Virtual Reality Technology

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Abstract. Higher vocational colleges are an important part of China's higher education system. They pay attention to the cultivation of students' ability to analyze and solve problems, and play an important role in promoting students' understanding and mastery of knowledge. At the present stage, due to the influence of many historical and realistic factors, the educational and teaching conditions of China's higher vocational colleges are relatively weak, and the supporting charity of teaching is slightly outdated, so many advanced teaching practice models are difficult to play their roles. Virtual reality technology is the combination of information technology and artificial intelligence, it represents the forefront of scientific and technological development. With the popularization and application of this technology in various industries, more and more people have noticed that innovative education in vocational colleges can be improved from the perspective of technological innovation and teaching mode innovation. The purpose of this paper is to explore how to realize the innovation of higher vocational education model with the intervention of virtual reality technology. This paper starts with the application status of virtual reality technology, analyzes the specific measures of this technology in the innovation practice of higher vocational education, and simulates and analyzes the effect of this technology on practical teaching innovation. The research results of this paper show that virtual reality technology can greatly improve the formalization, inpertinence and imperfect training system of innovation education in higher vocational colleges, break the limitation of time and space, reduce the cost, and improve the status quo of innovation education in higher vocational colleges.

Keywords: Virtual Reality Technology, Higher Vocational Colleges, Educational Model; Teaching Innovation

1. Introduction
At present, China's economy is in a critical period of transformation, in this process, the key role of talent is increasingly apparent. As technical and high-quality talents, graduates of higher vocational
colleges not only respond to the call of cultivating innovative talents, but also create more employment opportunities. In the process of continuous progress of science and technology, the world is also experiencing significant changes. According to statistics, at present, 76% of the relatively cutting-edge scientific and technological achievements in the world are completed through teamwork, which indicates that virtual reality technology has deeply penetrated into people's production and life. With the passage of time, virtual reality technology, which is gradually becoming more mature, will become a visual symbol of the environment used by computers and be applied to more fields such as education, medical treatment and health care to achieve more natural human-computer interaction.

Theoretical research and practical progress do not always go hand in hand. At present, the virtual reality technology in various industries have achieved a deeper level of application, but the research of virtual reality most is still under 2 d environment research, and, in fact, virtual reality technology has been put in practice the three dimensional elements included in technology field, has realized to provide users with more real, more efficient application scenario for the [1]. The promotion of virtual reality in the education industry enables students to get a more real sense of experience and immersion in teaching activities [2]. Due to the scale, curriculum content and policy support of higher vocational colleges, many higher vocational colleges are unable to enjoy the same updated treatment as key universities, and are still in the traditional teaching mode. Students are mostly passive recipients of information, and teachers still play a dominant role in the whole teaching process, greatly suppressing students' potential to develop autonomy and creativity, and restricting students' ability to develop good thinking habits [3]. Some domestic researchers have also pointed out that virtual reality is an interdisciplinary science and technology relying on modern information technology, which is widely used in image processing, artificial intelligence, sensor manufacturing and other fields. Some domestic scholars also believe that virtual reality technology not only provides an indispensable nutrient for the birth and development of virtual world, but also more strongly promotes the development of computer technology to a higher end [4-5].

Existing researches at home and abroad mainly analyzed and discussed the achievements of virtual reality in the fields of technology system application, software development and design, and fully affirmed the positive role of virtual reality technology in communication practice [6]. However, it is not difficult to find that the research on the application of virtual reality mainly focuses on the commercial field, but rarely involves the education industry, especially the higher vocational colleges with relatively scarce teaching resources [7]. Based on this, this article USES the virtual reality technology in the composition of three-dimensional space, to pick up the real environmental factors and properties on the basis of higher vocational education characteristic into the effect more lifelike teaching environment, let the students of higher vocational colleges on the multi-sensory satisfied, so as to play the effect of virtual reality technology in the field of education should be [8-9].

2. Method

2.1. Core concepts

(1) Virtual reality technology

Virtual reality technology, also known as reality technology, is a technology that utilizes computer systems to create and experience virtual worlds [10]. It can effectively simulate various perceptual
behaviors still in the natural environment, and is a human-computer interaction technology that comprehensively utilizes various technologies to create a realistic artificial intelligence simulation environment [11]. It USES 3d devices to contact with objects, so that users can perceive objects in the virtual environment in an immersive manner, so as to truly realize human-computer interaction.

Virtual reality technology is a combination of computer graphics, computer technology, computer vision, visual physiology, multimedia technology and simulation technology [12]. Verisimilitude and real-time interactivity are the most powerful support of system simulation technology, but also have immersion, imagination and interactivity; these three characteristics are always accompanied by the three main characteristics of virtual reality technology. Virtual reality technology can inspire human thinking, its essence is to use the computer to produce a simulation world dynamic, three-dimensional visual environment, so that the operator has immersive, burst out more spiritual perception. Virtual reality is achieved by wearing professional headgear, data gloves and location servers to experience the simulated environment through visual, auditory and sensory experience.

(2) Higher vocational education model

As an important part of China's higher education system, vocational colleges provide a large number of applied talents for social development, industrial development and local economic development. In the process of national development strategy transformation and upgrading, modern production technology and industrial structure are also undergoing upgrading, and many production activities are gradually replacing manual labor by mechanical production. This process will induce the reduction of labor opportunities in the society, but under the guidance of technological economy, this background provides more opportunities for higher vocational college students with information skills. Therefore, in the new situation, in addition to basic course teaching activities, vocational colleges and universities need to use modern information technology to cultivate students' innovation ability and entrepreneurial quality. Under the new normal of development, the education model of higher vocational colleges is characterized by application-oriented talent training institutions, which is also the only way to promote scientific and technological progress, social development and sustainable talent.

2.2. Research ideas and methods

In this paper, two methods of literature research and investigation are combined. In the process of literature investigation, we adopt the method of process diffusion, and take time as the diffusion point to analyze the domestic and foreign research literature and content at the same time and latitude. The specific research process can be described as collecting relevant literature materials based on the subject, summarizing the examples and conclusions after reading, and summarizing the dissemination of virtual reality technology in teaching application through the analysis and induction of these literatures. On the basis of comparison and analysis, it is necessary to understand the shortcomings of virtual reality in the teaching deployment of vocational colleges and carry out further exploration and analysis on this basis, so as to help the teaching activities of vocational colleges and universities to be better developed.

First of all, the field survey needs to adopt an objective and scientific attitude, collect a large amount of data and conduct statistical analysis in the identified survey topic, and then carry out discussion. In this study, Internet + is applied to the practical teaching platform to build a project, and
the communication effect of virtual reality technology in higher vocational colleges is further explored through field understanding, so as to make systematic analysis and conclusion summary more objectively and scientifically.

3. Experiment

3.1. Application and deployment of virtual reality technology in the education mode of higher vocational colleges

(1) Deployment simulation training
In the process of using virtual reality for simulation training, it is required to create a vivid man-machine interaction simulation teaching scene. On the one hand, it is to stimulate students' interest in learning, and on the other hand, it is to bring the key points and difficulties of teaching into the simulation environment, so as to promote the improvement of students' operational skills and innovation ability.

(2) Create a simulated teaching atmosphere
According to the teaching objectives and tasks of higher vocational colleges, this paper deduces and analyzes the key points and difficulties of teaching content, and USES the principles and applications of experimental instruments to deepen students' understanding and experience of theoretical knowledge.

(3) Enrich teaching resources
The traditional teacher-centered teaching mode is clearly unable to meet the needs of teaching under the new environment, in order to better carry out good emerging professional courses, vocational colleges must apply virtual reality technology fully, dig out more abundant teaching resources, in order to better work for the quality of teaching quality, and the upgrade.

3.2. Conduct field survey
The questionnaire design of the field survey is based on the three dimensions of knowledge and skills, method and process and emotional attitude. It is divided into two parts: pre-test questionnaire and post-test questionnaire. The front part of the survey is the data arrangement of the teaching mode before the intervention of virtual reality technology. After the intervention of virtual reality technology, the posterior questionnaire is an analysis of the innovative effect of teaching effect.

4. Discuss

4.1. Result analysis
In the pre-test questionnaires before the field survey, students in higher vocational colleges know little about the auxiliary role of virtual reality technology in teaching, and only 20% believe that this technology can make them make faster progress. That figure reached 78 percent after virtual reality intervention at the site of the field survey. The survey results of students in higher vocational colleges on the practical help of virtual reality technology from the three dimensions of knowledge and skills, investigation process and emotional attitude are shown in table 1 and figure 1 below. Table 1 is the result of pre-test questionnaire survey on the role of virtual reality technology in the innovation of higher vocational education model, and figure 1 is the result of post-test survey.
Table 1. Results of pre-test questionnaire on the role of virtual reality technology in the innovation of higher vocational education model

| Attribute                  | Satisfaction | Dissatisfaction |       |       |
|---------------------------|--------------|-----------------|-------|-------|
|                           | Number       | Proportion      | Number| Proportion |
| Knowledge and skills      | 118          | 59%             | 82    | 41%     |
| Methods the process       | 126          | 63%             | 74    | 37%     |
| Feelings and attitudes    | 92           | 46%             | 108   | 54%     |

Figure 1. Results of post-test questionnaire on the role of virtual reality technology in the innovation of higher vocational education model

By above and watch the results of a survey can be found, in terms of knowledge and skills of teaching innovation, a pretest questionnaire, 59% of students are checked, and then test the questionnaire in this rate is reached 87%, suggesting that most of the higher vocational college students think they learned in virtual reality technology intervention helps to achieve innovation and progress in knowledge and skills; Before the beneficial aspects of learning process, survey questionnaire, 63% of students think that the traditional teaching mode suitable for the current teaching, and then test the questionnaire, 92% of students think that virtual reality technology to complete their courses more tasks, this shows that the teaching mode based on virtual reality among higher vocational students and help them progress; In the pre-test survey of emotion and attitude, only 46% of the students thought that the current teaching model was very progressive and needed no further innovation, while 84% of the students in the post-test questionnaire of this topic said that the application of virtual reality technology in teaching was the best explanation for the innovation of education model.

4.2. Analysis on the promoting effect of virtual reality technology on teaching model innovation in vocational colleges

(1) Innovatively reduce the cost of running a school

The large number of students, the large investment in practical teaching and the high cost of
equipment maintenance have been the restricting factors for vocational colleges to play their functions well. However, the application of virtual reality technology can restore the real teaching scene with a high degree of one-time investment, and it is not afraid of multiple people learning together. Moreover, because the form is a virtual teaching environment, multiple drills can be carried out, so there is no physical damage to the equipment, thus solving the problem of high practice cost.

(2) Innovatively improve the teaching efficiency

Through the intervention of virtual reality technology, teachers combine teaching content with students' individual personalities to develop more targeted teaching plans, and set up corresponding simulation scenarios to enrich the teaching content. Through the creation of virtual environment, it is possible to make the dull teaching contents become vivid and convenient for students to learn, so as to improve learning efficiency.

(3) Innovative realization of modern teaching

Virtual reality technology breaks the barrier of time and space in traditional higher vocational education and realizes the goal of human-machine interaction and students' more active participation in practical teaching. It is also conducive to the communication and interaction between teachers and students, to develop students' teamwork and language skills, worthy of being called a modern teaching technology.

5. Conclusion

Based on the virtual reality technology in the application status of higher vocational colleges and universities education mode analysis, using literature review and field survey research method of combining virtual reality technology is discussed in the reform of the education innovation of higher vocational colleges of rich teaching resources, improve teaching efficiency and realize the function of modern teaching. According to the research of this paper, if higher vocational colleges want to improve their teaching quality, they should give full play to the role of virtual reality technology in practical teaching, and make students learn boldly through simulation training and enriching classroom content. Through the promotion of students' operational ability and the cultivation of their innovative consciousness, they can better adapt to the needs of social work, and become truly skilled high-quality talents.

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