

Application Analysis of VR Technology in Practical Teaching of Surveying and Mapping Engineering Specialty in Colleges and Universities

Shifang Liao¹, Manzhu Ye², Minning Zhao¹

1. Xianyang Normal University, Xianyang 712000, Shanxi China

2. Shaanxi Railway Institute, Wei nan 714000, Shanxi China

Abstract: In the critical period of continuous reform of education mode and continuous advancement of teaching work, it is easier to meet the cognitive needs of students to carry out efficient and targeted teaching guidance by using information technology, and enhancing their confidence in professional development, making them learn theoretical knowledge well, applying what they have learned, and gradually building a complete knowledge system, so as to steadily improve their main advantages and practice enthusiasm. This paper specially analyzes the effective application of VR technology in the practical teaching of surveying and mapping engineering specialty in colleges and universities.

Keywords: VR Technology; University Surveying and Mapping Engineering; Professional Practice Teaching; Application analysis

Introduction

With the rapid development of The Times and the popularization of computer, the effectiveness of practical teaching of surveying and mapping engineering major in colleges and universities has been continuously improved. Reasonable application of VR technology, overall optimization of the professional practice teaching effect of surveying and mapping engineering in colleges and universities, pay attention to tapping the potential of students, mobilizing their initiative to explore, providing them with more practice opportunities, stimulating their innovative thinking, and it has very important practical significance. The effective application of VR technology is also the key to improve the practical teaching quality and teaching efficiency of surveying and mapping engineering major in colleges and universities, and ensure the fun of classroom teaching. Besides, students can break through themselves easily and master a number of technical ability, and the future development of themselves is bright.

1. Characteristics analysis of VR technology

VR technology is the product of the continuous development of information technology. It combines “multimedia technology”, “spatial image technology”, “artificial intelligence technology” and so on effectively. It relies on the real-time display of THREE-DIMENSIONAL graphics and has practical functions such as location tracking, high-speed computing and behavioral research. In the continuous development of VR technology, the combination of the virtual and the reality has caused the transformation of the whole society. The experience of vision, feeling and hearing in specific situations at any time and anywhere has excellent integration effect [1]. VR technology features are as follows: First, it has a strong sense of immersion. Experiencers can get real feelings and truly integrate into a specific scene. Through immersive experience, they can have the greatest satisfaction. Second, it has highly interactive. Experiencers can put forward their own ideas to establish various object states, and directly change the state of the virtual world by their will. Third, it has constructive characteristics, through the restoration and replication of object data, establish the three-dimensional space that experiencers are most willing to experience, plane graphics, tools, etc., will be the building elements of the three-dimensional space.

2. The status quo of practical teaching of surveying and mapping engineering specialty in universities

Surveying and mapping engineering is through the determination of object plane, space reduction, at the same time, combined with the earth's gravitational field, to ensure the safety of building design, normal work of an important activity. Surveying and mapping engineering involves the earth gravity field, on the basis of the theory of earth's geography, different regions, different school teaching condition is different, it is difficult to breakthrough the limitation of teaching conditions, inevitably led to a decline in the teaching effect and teaching quality, to a large extent, it hinders the students to apply what they have learned and the continuous progress of their academic achievements. In the previous teaching of surveying and mapping engineering, students had few practical opportunities. Teachers used PPT to impart and guide theoretical knowledge, but the actual teaching effect was unsatisfactory. Specific

problems were manifested in several aspects. First of all, the content of professional teaching materials is single and the updating speed is slow. Without the effective supplement of professional knowledge and relevant content with the continuous development of information science and technology, it cannot meet the learning needs of students and constantly enhance their confidence in practice. It is easy to cause the contradiction between teachers and students, resulting in the resistance of some students. Secondly, the teaching method is single and old, the application in class of teaching methods lacks innovation, and the integration of drawing knowledge, geography knowledge and computing knowledge is insufficient. Students have encountered many difficulties in practical operation, and they have not mastered the correct learning methods and can not use professional skills proficiently. Third, there are fewer surveying and mapping engineering learning instruments, the school does not pay enough attention to infrastructure construction, but also ignores the importance of surveying and mapping technology research and development. Finally, due to the poor laboratory conditions, students cannot find suitable places to complete homework tasks and consolidate the knowledge they have learned. It is more difficult for them to break through themselves, activate their innovative thinking fully, and have no chance to become high-quality professional talents. Students face great challenges in their future development.

3. Effective application of VR technology in practical teaching of surveying and mapping engineering specialty in colleges and universities

3.1 Restore the real mapping site

Many schools do not pay attention to the construction of surveying and mapping laboratory, resulting in insufficient conditions of surveying and mapping laboratory; the teaching quality of the surveying and mapping engineering professional practice is very difficult to improve. Because it is unable to create a good surveying and mapping environment, students lack interest in experiments and enthusiasm for exploration, and there is limited room for improvement of academic performance, so they cannot improve their professional level and master professional skills in the shortest time [2]. At this time, VR technology can be used to restore the real mapping site to the greatest extent through three-dimensional modeling, so that students can understand the knowledge learned in the experience deeply, gradually build a complete knowledge system, and complete the mapping task better. After the application of VR technology, the surveying and mapping efficiency of students is greatly improved. They find the correct answer to the question, have enough test time, and their ability to apply what they have learned is significantly improved. They are more familiar with the process of the surveying and mapping, matters needing attention, and working procedure, and their professional strength will be improved to the greatest extent.

3.2 Fully display the advantages of technical functions

First of all, the theoretical knowledge of surveying and mapping engineering has a certain abstractness. When some students learn and understand knowledge, there will be confusion of thinking, so the learning quality is not high and the ability level needs to be improved. At this time, VR technology is used to realize the return visit of key points and difficulties of knowledge. Animation videos and related courseware are played in a loop to directly deepen students' understanding. It can deepen students' understanding directly, they consolidate what they learn, improve learning efficiency, and also generate confidence in self-study, after the summary of timely reflection, master a wealth of learning methods, and then participate in mapping work, the practice of the link will certainly have a surprisingly good performance. Secondly, the use of surveying and mapping instruments and the application of surveying and mapping technology test students' understanding of professional knowledge and proficiency in professional skills greatly [3]. Surveying and mapping work has a great risk, ensuring the personal safety of students, is conducive to the realization of long-term planning goals of practical teaching of surveying and mapping engineering specialty in colleges and universities. VR technology has a large amount of perceptual information and data model, and integration technology includes synchronization technology, calibration technology, data transmission technology, and so on, the VR technology is more suitable for complex surveying and mapping work, the application of VR technology in time, it can reduce the risk of surveying and mapping effectively, ensure the personal safety of students, help them experience surveying and mapping better, surveying and mapping engineering professional practice teaching, it can be welcomed by all students.

4. Conclusion

In a word, the effective application of VR technology in the practical teaching of surveying and mapping engineering major in colleges and universities needs to arouse the great attention of teachers. It should explore effective teaching approaches, improve the quality of teaching constantly, tap the potential of students deeply, help them develop professionally and creatively, and then cultivate a large number of high-quality talents.

References:

- [1] Xu Shaoyu. The application of VR technology in the teaching of engineering surveying and mapping in colleges and universities [J]. Journal of Jincheng Vocational and Technical College, 2020 (21) 70-70.
- [2] Zhang Lin. The effective application of VR technology in the professional practical teaching of "Surveying and Mapping Engineering" in colleges and universities[J]. Logistics Technology, 2019 (08) 56-57.
- [3] Yang Yuwei. The application value of virtual reality technology in the teaching of surveying and mapping engineering in colleges and universities[J]. Surveying and Spatial Geographic Information, 2020 (03) 111-112.