

# The Application of Digital VR Technology in Snow and Ice Landscape Teaching

Li Siyuan and Huang Jian

Heihe University, China, 164300

**Keywords:** Snow and Ice Landscape; Digital VR Technology; Application

**Abstract:** With the continuous reform and development of modern education system, it puts more emphasis on learning theoretical knowledge through practical perception to improve students' understanding and digestion of knowledge. With the rapid development of digital VR technology, students can visit and study the real scene with the assistance of the corresponding equipment. This paper mainly discusses the application of digital VR technology in snow and ice landscape teaching to better understand the technical characteristics of digital VR technology, which can apply it in the course teaching and further improve the teaching quality of snow and ice landscape.

## 1. Introduction

Due to the influence of geographical location and climatic conditions, the teaching of snow and ice landscape is often unable to be learned through visiting. Therefore, in the previous teaching process, teachers usually adopt the form of video or pictures for teaching. Although this improves the visualization of the teaching content to some extent, it still has great educational defects compared with the actual scene. However, with the rapid development of digital VR technology, teachers can use digital VR technology to simulate the actual scene so that students can be exposed to the real snow and ice scene through the corresponding equipment to improve their perception of snow and ice landscape. At the same time, the simulation of real scenes can better mobilize students' enthusiasm to participate in learning and improve the overall teaching quality of snow and ice landscape. It can be seen that the powerful simulation function of digital VR technology provides an important foundation for the setting of teaching scenes.

## 2. Current Situation of Snow and Ice Landscape Teaching

At present, many colleges and universities in China have set up ice and snow landscape courses, whose purpose is to enhance students' ability to appreciate outdoor landscape and cultivate artistic beauty. Therefore, in order to better realize the practical value of the course, it is necessary for students to participate in the viewing activities of snow and ice landscape and improve their perception of snow and ice landscape. However, in the current practical teaching process, snow and ice landscape teaching is still restricted by many factors.

### 2.1 Limitations of Actual Teaching Resources

The teaching of snow and ice landscape requires students to participate in the process of landscape viewing. However, from the actual situation, the teaching of snow and ice landscape is often unable to learn through visiting due to the influence of geographical location and climate conditions. Secondly, due to too many students, the cost of going out to visit is high, which affects the normal development of the course of snow and ice landscape. At the same time, the limitations of actual teaching resources make it necessary to conduct snow and ice landscape teaching through traditional teaching methods in the teaching process, which is difficult to mobilize students' enthusiasm for learning and not conducive to improving their art appreciation ability. The teaching of snow and ice landscape needs to be supported by real scenes. Therefore, in order to better save the cost of manpower and material resources, scene simulation can be carried out through digital VR technology to increase the actual teaching resources and provide students with a good physical

viewing environment, which can better mobilize their enthusiasm to cultivate artistic beauty.

## 2.2 Limitation of Practice of Teaching Time and Place

When teaching snow and ice landscape, many schools choose to offer courses in winter, during which students only get theoretical guidance from the teachers in the prescribed hours. Due to the short visit time of actual objects, students often fail to understand the meaning of the course due to the lack of relative perception of objects after participating in the course of snow and ice landscape so that many students are still in a vague learning state after class. Through computer digital VR technology, the virtual teaching scene of snow and ice landscape can be established. Students can visit and study snow and ice landscape without time and space constraints to improve their perception of snow landscape and their appreciation ability. Digital VR technology can increase the time for students to visit and study, improve their practical skills and then improve their aesthetic appreciation ability.

## 3. Features of Digital VR Technology

Digital VR technology is a highly interactive human-computer technology, which can simulate human's visual, auditory and dynamic behaviors in the natural environment. It has a wide range of applications in the field of simulation due to its unique characteristics of immersion, interactivity and conceivability. Digital VR technology, by using computers to build virtual environments, produces realistic sensory worlds such as three-dimensional vision, hearing and touch. With the help of hardware devices, it interacts with objects in the virtual world for observation, which can effectively simulate people's behavior in the natural environment so that users can have a full sense of participation and experience. In real life, digital VR technology is widely used. For example, in video games, VR glasses can be worn to operate the actual scene to enhance the sense of reality of operation. The trend of virtual reality error reduction is as follows.



Figure 1. Trend of Virtual Reality Error Reduction

## 4. Application of Digital VR Technology in Snow and Ice Landscape Teaching

Generally speaking, VR software itself has no modeling capability. In order to establish the virtual reality scene and equipment model, it needs to be realized in other special CAD software. The virtual reality software completes the interactive operation of various programs. The teaching of snow and ice landscape can set up real situation through CAD software modeling to create a good learning atmosphere for students. The digital VR technology workflow is shown below.

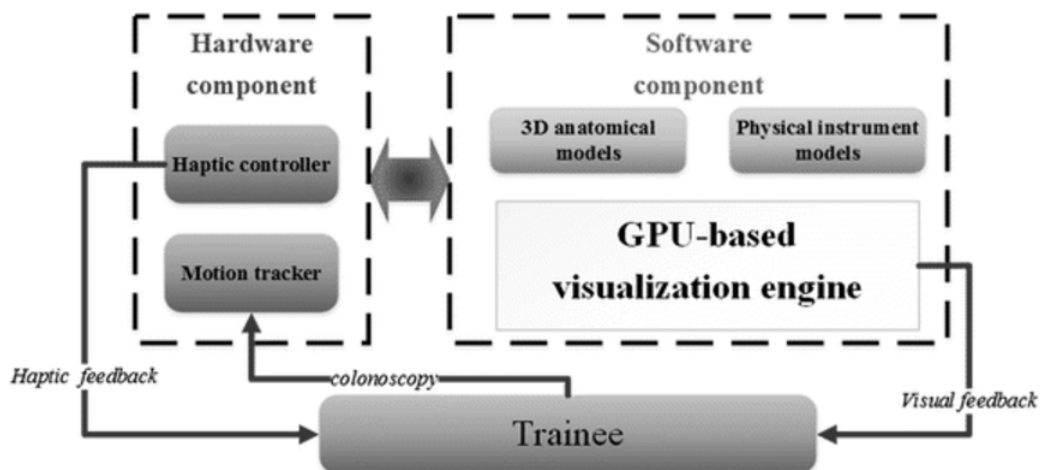


Figure 2. Digital VR Technology Workflow

In the process of snow and ice landscape teaching, the teacher can present the real situation through digital VR technology and explain the features of snow and ice landscape to the students to form a general impression in the students' mind. Then, students are asked to wear the appropriate equipment for a 15-minute visit, followed by perception sharing. In this process, teachers should give students enough viewing time and create a good viewing environment for students to ensure the teaching quality of snow and ice landscape supported by digital VR technology. After the visit, students' perception is actually the process of improving their appreciation ability. Teachers should be good at guiding students' perception.

In order to improve the smoothness, flexibility and interestingness of virtual operation, teachers can conduct variable teaching of snow and ice landscape forms through software optimization. In addition, teachers can also enhance the independence of digital VR technology and build a system of snow and ice landscape resources so that they can operate independently on the computer or network, thus extending the time for students to visit and learn snow and ice landscape after class in order to better enhance their art appreciation ability. Moreover, the snow and ice landscape created by digital VR technology for students can actually be manipulated by the teacher. Therefore, the teacher can teach students through different forms of snow and ice landscape and explain the art form to the students in the teaching process, which will definitely improve the students' aesthetic discrimination ability.

## Conclusion

In a word, the current snow and ice landscape teaching needs the support of real scenes to better enhance the significance of the course. However, the actual snow and ice landscape is limited by geographical location and climatic conditions, and neither teachers nor students have enough time and opportunity to construct the snow and ice scene, which will have a certain impact on the actual teaching quality. The application of digital VR technology in students' snow and ice landscape courses can make up for the defects of real conditions, enable students to truly visit and perceive the simulated snow and ice landscape scenes, break through the limitations of time and space of traditional educational resources and further improve the efficiency and quality of snow and ice landscape teaching.

## Acknowledgement

Research Project of Basic Scientific Research Expenses of Heilongjiang Provincial Colleges and Universities in 2018<Research on Creation and Design of Patriotism Topics in Practical Teaching of Ice and Snow Landscape(Project No.:2018-KYYWF-1252).

## References

- [1]Liu Gang. Thinking on strategic layout of ice and snow sports talent reserve -- based on the perspective of the 2018 winter Olympics in Pyeongchang, South Korea [J]. Journal of Nanjing institute of physical education (social sciences),2017,31(03):176-180.
- [2]Ma Xu, Sun Yuwei. The orientation and development of the social function of snow and ice teaching in colleges and universities in northeast China from the perspective of lifelong sports [J]. Winter Sports,2017,39(02):156-159+166.
- [3]Sun Xue. Blocking and resolving the implementation of snow and ice policy on campus in China -- from the perspective of comprehensive model of policy implementation based on Sabatier and Mazmanian [J]. Journal of Shenyang Physical Education Institute,2018,37(02):118-115.