Application of Virtual Reality Technology in Higher Vocational Smart Logistics Teaching

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Abstract. Analyzed the problems existing in the teaching of smart logistics, through the introduction of VR technology, focused on the application of virtual reality technology in the teaching of smart logistics. Compared with the traditional teaching mode, it summarizes the advantages of virtual reality technology in logistics management teaching. Finally, it is concluded that the application of virtual reality technology in logistics management teaching has effectively improved students' interest in learning and improved the teaching effect of the course.

Keywords: VR Technology, Smart Logistics, Teaching, Advantage

1. Introduction
With the continuous development of intelligent and unmanned intelligent logistics management in the future, intelligent logistics management will become a dominant position in the entire logistics management and directly determine the survival and development of logistics enterprises. This requires future logistics vocational education to pay more attention to cultivating students' ability to manage smart logistics, so that students can master the operation and maintenance methods of logistics warehousing and distribution under intelligent unmanned conditions, so as to meet the development needs of future smart logistics enterprises. However, there are many types of intelligent unmanned logistics warehousing and distribution facilities and equipment, especially the high maintenance cost of unmanned facilities and equipment. In addition, the update speed is very fast. At present, it is difficult to provide a complete, safe and effective intelligent logistics teaching platform in higher vocational colleges due to the constraints of funds, personnel, safety, and venues in smart logistics teaching. At the same time, due to the current limitations of smart logistics teaching conditions, teaching is mainly in the traditional single mode, such as pictures, videos, etc., which requires too much imagination for students, and it is difficult to improve students' interest in learning and teaching effects in teaching. Making teaching quality and effect difficult to meet the requirements. VR technology can be used to create a variety of realistic smart logistics scene models. Through the operation of VR special equipment, the same effect as the actual operation can be achieved. The intelligent logistics teaching platform established by virtual reality technology can realize the human-computer interaction learning mode between students and machines, which greatly improves students' interest in learning and teaching effects [1-4].
2. Problems In The Teaching of Smart Logistics

2.1. The Investment of Smart Logistics Facilities and Equipment is Small, Teaching Facilities and Equipment are Short, and Teaching Methods are Single

The teaching of smart logistics requires the support of corresponding smart logistics facilities and equipment, such as automated three-dimensional warehouses, unmanned sorting robots, unmanned delivery vehicles and other smart logistics facilities and equipment. This requires the school to invest a lot of money, and at the same time, it needs to maintain a high operation and maintenance cost in the later period after the one-time capital investment. In addition, as technology advances, facilities and equipment also need to be updated in time. However, it is often difficult for schools to update facilities and equipment in a timely manner, resulting in large differences between the smart logistics facilities and equipment actually used by schools and enterprises. Due to the lack of the support of intelligent logistics facilities and equipment, teachers’ teaching methods can only be expressed in the form of text, video, and pictures. The traditional teaching method is single, students have no interest, and the teaching effect is difficult to achieve.

2.2. High Pressure on Safety and Operating Costs, Limited Practical Training

When students are in the actual operation of smart logistics facilities and equipment, schools often arrange as few as possible logistics facilities and equipment with certain safety risks and high operating costs from the perspective of safety and operating costs for practical training. For example, unmanned forklifts, cranes, and other large-scale machinery and equipment that have major safety hazards, and smart cold-chain warehousing and other intelligent logistics facilities with high operating costs; it is difficult for students to improve their facilities and equipment operation capabilities. In addition, school-enterprise cooperation is an important platform for school teaching practice and training students. However, school teaching and enterprises cannot be seamlessly connected. At the same time, enterprises will limit students’ intelligence from the perspective of their own operating costs and safety. The operation of logistics facilities and equipment, which greatly reduces the teaching effect of students to some extent.

2.3. Smart Logistics Facilities and Equipment are Highly Intelligent, Fast Update and Iteration, and Insufficient Professional Teachers

Smart logistics facilities and equipment are highly intelligent, and the degree of intelligence continues to increase with technological progress, and the update iteration speed is getting faster and faster. At present, it is difficult for a teacher to have the actual operation and maintenance qualifications of multiple smart logistics facilities and equipment, or it is difficult for multiple logistics professional teachers to have the actual operation and maintenance qualifications of multiple smart logistics facilities and equipment. For example, AGV, which is commonly used in smart logistics equipment, has few teachers with teaching qualifications, and for more professional smart logistics equipment such as unmanned forklifts, there are very few teachers with teaching qualifications. Therefore, the requirements for teachers in smart logistics will become too high, or it will be difficult to carry out good practice teaching in actual teaching. These problems reflect the actual difficulties of smart logistics teaching. Apply virtual reality technology to the teaching of smart logistics, and use virtual reality technology to simulate and visualize the real smart logistics facility equipment scene, shape, structure, operation process, safety, and special treatment. It shows that it can effectively solve the problems of intelligent logistics facilities and equipment, fast update, single teaching methods, virtual reality technology can provide teachers with richer teaching methods and methods, provide students with a real human-computer interaction learning mode, and make students effective Master the application scenarios, basic structure, working principle and operation process of intelligent logistics facilities and equipment, and can greatly improve the teaching effect.

3. Application of Virtual Reality Technology in Smart Logistics Teaching
3.1. Demonstration Application of VR Technology in Smart Logistics

Smart logistics teaching involves a large number of smart logistics facilities and equipment, so it has high requirements for demonstration and practicality in teaching. The operation and operation of smart logistics facilities and equipment need to be carried out on the basis of mastering the operation scenarios of smart logistics and the basic structure, working principle and equipment operation process of smart logistics equipment. Although traditional pictures and videos can achieve certain effects, they are too abstract and require students' imagination. It is difficult to effectively explain the basic structure, working principle and operation process of smart logistics facilities and equipment, especially some complex smart logistics equipment. Through VR technology to create a variety of smart logistics facility scene models and smart equipment models, teachers can clearly and intuitively show the operation scenes of smart logistics facilities and the basic structure, working principle and operation process of smart logistics equipment to students through VR equipment, thereby improving teaching effect. At the same time, students can clearly and intuitively learn the operating scenarios of smart logistics facilities and the basic structure and working principles of smart logistics equipment through VR equipment at any time, thereby improving students' cognitive efficiency and interest in learning smart logistics.

3.2. The Practical Application of VR Technology in Smart Logistics Teaching

An important content of smart logistics teaching is the practical application teaching of intelligent facilities and equipment. The practical application teaching of intelligent facilities and equipment has always been a prominent problem. Secondly, in traditional teaching, most teachers can only show students the application process of various intelligent logistics facilities and equipment through pictures, videos and other forms. This requires students to have high imagination and it is difficult to achieve teaching effects. Third, the school's smart logistics facilities and equipment generally have a small number and a single type, which is difficult to meet the training time for students' practical application, and the timeliness is poor. This makes it difficult for the effect of practical training to be effectively satisfied, and the students' practical application ability is relatively weak, especially not suitable for the goal of vocational colleges to train technical skills talents. Through the application of virtual reality technology, teachers' teaching can demonstrate the application scenarios and operation steps of intelligent logistics facilities and equipment through virtual reality, and manipulate virtual intelligent logistics equipment. Virtual reality technology can realize the operation of intelligent logistics virtual equipment and real intelligent logistics equipment. There is no difference. Students can clearly and intuitively feel the entire operation and operation process of logistics facilities and equipment by manipulating various virtual intelligent logistics facilities and equipment, and realize a truly undifferentiated experience. At the same time, learning is not limited by time and space, and can be repeated many times, which can greatly increase students' interest in learning, enable students to effectively master the application scenarios and operation methods of smart logistics facilities and equipment, and maximize smart logistics teaching Effectiveness.

3.3. Application of VR Technology in the Teaching of Smart Logistics Safety Standards

An important teaching content of smart logistics teaching is job safety standard teaching. There has always been a prominent problem in the practical teaching of smart logistics, that is, the safety problem in the training of smart equipment. Secondly, the students did not perform effective simulation operations before actual operation, and could not effectively master the operation process of the equipment. The third is that the students did not conduct effective drills for handling special situations of smart facilities and equipment. Although the teacher will emphasize the necessity of safe operation and safety measures in the actual training process, most students will not pay attention to it, so there will be greater safety hazards in the actual training and teaching, which will not be conducive to the effective teaching of teachers and students Security. Through the application of VR technology, teachers can use VR equipment to teach safety precautions and special situation handling methods before actually operating smart logistics facilities. VR technology can truly simulate various special
situations and processing methods in the actual operation of intelligent logistics facilities and equipment. It can effectively improve students' safety awareness and ability to handle special situations in the process of practical training, and maximize the safety of smart logistics practical operation teaching.

4. Advantages of Virtual Reality Technology in Smart Logistics Teaching

4.1. A Strong Sense of Reality Enables Students to Increase Their Interest in Learning
Virtual reality technology builds virtual smart logistics scenarios, so that students can observe the operating scenarios of smart logistics facilities and the basic structure and working principles of smart logistics equipment very intuitively and realistically, and can truly perceive smart logistics operating scenarios and smart logistics equipment operations. The process is to enhance practical operating experience, improve the learning efficiency of smart logistics, make the learning process vivid, easy to understand and operate, while stimulating students' interest in learning, and improving students' ability to operate smart logistics facilities and equipment.

4.2. The Real-Time Open Sharing of the Intelligent Logistics Virtual Reality Teaching Resource Platform Improves the Teaching Effect
Virtual reality technology builds a teaching resource platform for virtual smart logistics facility operation scenarios and smart logistics equipment application scenarios. The teaching resource platform allows students not to be limited by space and time, and can repeat the virtual operation of smart facility logistics equipment training multiple times, which can better master the operation scenarios of smart logistics facilities and the basic structure and working principle of smart logistics equipment, and be able to truly experience the operation and operation process of smart logistics facilities and equipment, improve the efficiency of student training and learning and the utilization rate of virtual training equipment, and further improve the teaching effect of smart logistics [5-6].

4.3. Virtual Interactive Learning can Effectively Stimulate Students' Enthusiasm for Learning
Virtual reality technology builds a virtual intelligent logistics teaching resource platform so that students can obtain a realistic sense of experience and sense of accomplishment through human-computer interaction. Students can use virtual reality technology equipment to produce a realistic experience of human-computer interaction, and they can use virtual reality technology equipment to communicate their learning ideas with the machine in real time, forming a human-computer interaction learning method, which can greatly improve students' learning interest and sense of accomplishment, so that students change from passive learning to active learning, and then realize the effectiveness of smart logistics teaching.

5. Conclusion
The organic combination of virtual reality technology and smart logistics teaching provides teachers and students with a lively and interesting teaching platform and smart teaching method. At the same time, the traditional images, videos and other content in the past are realized through virtual reality technology to achieve three-dimensional interactive learning, vivid. The display of the operation scenes of the entire smart logistics facility and smart equipment operations allows students to understand more accurately and effectively, thereby improving the quality of teaching and the motivation of students to learn. In short, VR technology breaks the time and space limitations in smart logistics teaching, allowing human-computer interaction teaching to enter the classroom. Through lively teaching activities, the traditional single teaching mode has become more interesting and the teaching efficiency has been improved. At the same time, it can effectively save teaching costs, improve the effectiveness of training, and avoid various safety hazards in the process of training. Of course, virtual reality technology also has some problems in smart logistics teaching, which will be the main content of the next step.
Acknowledgements
This work was supported by Chongqing Vocational College of Transportation science and technology project(CJKJ201902).

References
[1] Li ling. Logistics training teaching design based on VR technology and flexsim simulation. Modern Business Trade Industry, 2017(23):35-36.
[2] Xu jing. Application Research on VR in practice Teaching of Logistics Engineering, 2016, 38(7):279-280.
[3] HeShiwei, Zhouleishan. Software Technology of Transportation Virtual Simulation Experiment Teaching Center. JOURNAL OF SYSTEM SIMULATION, 2016, 28(2):322-328.
[4] Ke Wang. Research on the application of VR technology in logistics equipment application and management course teaching. Modern Business Trade Industry, ICEIEM2019 (340):77-79.
[5] Guo yongchen, jia jiali, wang jiaolin.Study on the application of virtual reality technology in experimental teaching of economics and management. Laboratory Science, 2016, 19(2):70-75.
[6] GaoXin, Research on the application of technology in practical teaching of logistics management specialty. Modern vocational education, 2017, (36), pp.190-191.