Application Analysis of Virtual Simulation Training Platform in Practical Teaching

Juan Liu

Sichuan Vocational College of Judicial Police, 618000, 2014326215@dlvtc.edu.cn

Abstract: This article starts with the application of virtual simulation training platform to practical teaching, and analyzes and researches the integration of practical teaching and virtual simulation technology. This article briefly describes the significance of integrating virtual simulation training platform into practical teaching, the specific path of applying virtual simulation training platform in practical teaching, and the precautions of virtual simulation training platform in practical teaching application. The author hopes that this article can provide a feasible new path reference for advancing the application of practical teaching in the new era.

1. INTRODUCTION

The use of virtual simulation technology in teaching refers to the integration of computer graphics, human-computer interaction technology, sensor technology, artificial intelligence and other information technologies to build a virtual teaching environment that is very similar to reality. This is convenient for teachers and students to conduct interactive and immersive experience teaching. The virtual simulation training platform uses VR technology to integrate training projects into virtual scenes to build a virtual platform with deep immersion and strong interaction, thereby reducing practical operation costs and improving learning effects. In recent years, the vigorous development of virtual simulation technology has become more and more closely integrated with practical teaching such as professional cognition, experimental training operations, and skill assessment. The practical teaching based on the virtual simulation training platform has become a popular, popular, and effective teaching method in teaching.

2. THE SIGNIFICANCE OF INCORPORATING VIRTUAL SIMULATION TRAINING PLATFORM INTO PRACTICAL TEACHING

2.1. Increase Learning Enthusiasm

In 2019, China released the world's first virtual simulation experiment teaching demonstration platform "Experimental Space". It can do online experiments and "do virtual real experiments", which to a large extent realizes the innovation and upgrading of teaching level. At present, information technology is widely used in teaching, especially in the cultivation of talents in vocational education. In recent years, the vigorous development of virtual simulation technology has become more and more closely integrated with practical teaching such as professional cognition, experimental training operations, and skill assessment. The practical teaching based on the virtual simulation training platform has become a popular, popular, and effective teaching method in teaching.
teaching, and students can experience realistic scenes in teaching. Moreover, this can effectively exercise students' thinking ability, independent learning ability and innovation ability.[2]

The optimization of equipment through the realization of virtual simulation technology can help students experience lifelike situations in virtual simulation technology. The virtual simulation technology uses three-dimensional stereo, voice recognition technology, and is equipped with high-definition display devices such as helmets, terminals, large-screen LCD glasses, and high-definition display systems. It reasonably uses interactive equipment and tactile devices to strengthen the realism of simulation virtual technology, so as to deepen students' learning of subjects in practical operations. This interactive, immersive practical teaching mode can give full play to the advantages of the virtual simulation training platform in practical teaching, and continuously enhance students' interest in exploring and decrypting. At the same time, through the virtual simulation teaching management system, the content and form of practical training knowledge can be enriched, and the value advantage of practical teaching can be strengthened. In this way, the advantages of the virtual simulation training platform can be effectively converted into advantages in learning effects.

2.2. Save Costs and Improve the Actual Operation Rate
Practical operation is an effective means to test students' ability to improve, but due to the constraints of venues, equipment, consumables, and time, some practical operations are too expensive and the rate of practical operations is very low, which greatly affects the mastery of students' skills and teaching Quality improvement. Applying the virtual simulation training platform to practical teaching, an innovative teaching method, can better solve the problem of the open rate of training projects. In the design of practical projects, not only can the relevant practical projects be reorganized and designed according to the needs of practical teaching, but also the barriers between majors or courses can be broken. In this way, the operation can be repeated indefinitely, saving the cost of practical operation in real situations. This has also changed the negative impact of real practice operations limited by time, equipment, venues, teachers, consumables, etc. This not only helps students to combine theoretical knowledge with reality through repeated exercises, but also solves the transitional experience of students before practical exercises in real situations. This transitional practical operation experience well reflects the gradual progress of the teaching process and the stepwise progress of the improvement of students' abilities. This also improves the open rate of training tasks and practical projects, and greatly saves teaching costs.[3]

2.3. Optimize Practical Teaching Links and Atmosphere
The application of virtual simulation technology in practical teaching needs to consider professional characteristics, strengthen students' practical training ability, and optimize practical teaching and learning atmosphere. The use of virtual simulation technology can not only optimize the teaching links, select and deliberately emphasize the design key links, but also make the operation three-dimensional and intuitive, and improve the feasibility and operability of practical teaching. Besides, the application of virtual simulation technology in practical teaching can determine the student's dominant position, and more efficiently play the teacher's guidance and error correction functions. Students can also carry out specific operation content in practical teaching, which can realize the continuity, rationality and efficiency of classroom teaching. For example, based on the virtual simulation training platform, using game clearance, roaming experience and other forms, students can fully grasp the practical operation steps and requirements, which can effectively improve the practical teaching effect.[4] Otherwise, teachers can innovate and independently design and cultivate an active and autonomous virtual simulation teaching management system according to the talent training plan and teaching goals. This is conducive to enhancing the atmosphere of practical teaching.
3. THE CONCRETE PATH OF APPLYING VIRTUAL SIMULATION TRAINING PLATFORM IN PRACTICAL TEACHING

3.1. Standard Modeling
The foundation of virtual simulation technology is information technology. It is an imaginary model using computer technology and special equipment as tools. It will use the system model to conduct dynamic tests. It is divided into simulation layer, general simulation and virtual reality simulation layer. In mechanical teaching, the core of the application of virtual simulation technology is the modeling engine. Web3D modeling engines are commonly used in current teaching, including VRML, Java3D and Cult3D. It can use high-performance computer technology to present realistic scenes in a computer environment. Among them, it needs to be applied to image generation technology, animation production technology, and three-dimensional perception, so that more obvious human-computer interaction and subjectivity can be achieved. What’s more, this can also respond in time according to the needs of users, which can fully meet various needs in teaching.

Many teaching aids and equipment in the traditional teaching model cannot be brought into the classroom; students lack sufficient simulation practice before going to the frontline for internship. As a result, it is very urgent to build a multi-functional and comprehensive virtual simulation training platform based on the goal of professional talent training and industry standards. Virtual simulation technology can visually present the workflow, article structure, and usage methods in practical teaching. In the construction of the virtual simulation training platform, to achieve realistic teaching effects, 1:1 modeling is required. In the process of modeling, relevant staff need to design and research the development of 3D animation, human-computer interaction design, various links of practice, and evaluation of practical operation in combination with the actual needs of the industry and teaching. In this way, it can meet the practical teaching standards and realize the talent training program.

3.2. Flexible Operation
The virtual simulation training platform can adopt group mode or individual mode in the application of practical teaching. Students discuss the requirements and steps required for practical operation in groups, organize groups to solve practical operation tasks, and cultivate teamwork spirit; it can also be based on students’ practice The problems exposed in the process, the individual soldiers repeat the exercises. Independent selection needs to strengthen the links and steps of the operation, so as to improve the practical operation ability in a targeted manner. No matter which mode is adopted, students can control the space scene according to practical teaching requirements, choose their own roles, choose practical steps, and get real-time human-computer interaction feedback. Teachers can also provide targeted guidance, point out students' shortcomings in real time, and guide and correct students' mistakes in time. This can effectively cultivate students' practical operation ability and achieve better teaching effects.\(^5\)

3.3. Deep Integration
At present, the informatization teaching mode of vocational colleges is constantly improving, and practical teaching platforms, network resources, teaching equipment, and multimedia courses are becoming more and more high-quality and rich. The combination of virtual simulation training platform and practical teaching and the construction of a virtual simulation training platform to build an innovative, three-dimensional and diversified practical teaching system are the general trend. The in-depth integration of virtual simulation training platform and practical teaching can be considered from the aspects of practical teaching content, modeling standards, industry standards, teaching modes, equipment and facilities, and assessment and evaluation. Firstly, the practical operation in the virtual scene must be based on teaching, integrating teaching content, and rationally arranging practical links. In the important knowledge points of the virtual scene, in-depth integration and mining of the most easily introduced training content and experiments. Teachers should optimize their own teaching strategies and design practical teaching links in combination with professional courses and industry
standards. Secondly, colleges and universities can upgrade the practical teaching platform, dock virtual scenes, innovate the practical teaching system, integrate a variety of teaching methods, change the traditional teaching mode and teaching structure, and develop diversified teaching angles and teaching methods. In addition, the virtual simulation training platform can be integrated into the practical teaching work practice. Relevant personnel must give full play to the advantages of data integration and indexing technology to optimize the effectiveness of training classroom teaching. Thirdly, colleges and universities can take advantage of the practical teaching platform, integrate development, and fully strengthen the depth of practical teaching and the utilization rate of the platform. The selection and optimization of practical teaching content should be based on the characteristics of the virtual simulation training platform itself, and focus on in-depth development. The development and selection of practical teaching projects should pay attention to foresight and expansibility, and fully explore practical projects. This can increase the utilization rate of the virtual simulation training platform.

4. MATTERS NEEDING ATTENTION IN THE APPLICATION OF VIRTUAL SIMULATION TRAINING PLATFORM IN PRACTICAL TEACHING

4.1. The Diversification of Virtual Simulation Training Platform and Practical Teaching Docking Point

The construction of the virtual simulation training platform is expensive and costly. Its use in practical teaching should not only consider a teaching content or teaching goal, but should think more, research more, plan ahead, and break the constraints of tasks, disciplines, and even majors. In addition, the virtual simulation training platform must also consider the needs of industry training and social services, establish diversified docking points, and maximize the role of the virtual simulation training platform in practical teaching. Practical teaching based on virtual simulation training platform should combine simulation training with virtual simulation. It can use virtual 3D dynamic modeling technology and low-coupling scene design ideas to build a simulation training system that is highly compatible with the real environment, and realize a practical teaching mode focusing on "simulation training and actual combat training". In the meantime, this practical teaching model can play a role in school talent training, industry employee ability training, vocational skill appraisal, teaching and research research and development, etc. This helps to achieve a multi-functional integrated synchronization application.

4.2. Optimize Students' Operability During Use

As of 2019, the number of online MOOCs in China has reached 12,500; the number of learners has reached more than 200 million, of which the number of national boutique online open courses has increased to 1,291. For example, the application of the virtual simulation system in the perception layer of the Internet of Things can greatly promote the solution of the problem of data acquisition. The data distributed in the human world and the physical world can be efficiently acquired. The perception layer of the Internet of Things is composed of sensors and sensor gateways. Proteus and Multisim software can provide simulation component libraries. By adopting a virtual simulation system and building a simulation circuit in a software environment, students can clearly and intuitively see the effect of the circuit implementation by clicking the mouse and running the circuit. It can be explained that the use of virtual simulation software for modeling in teaching has obvious advantages, which can help students understand the key points of relevant knowledge of the perception layer and fully grasp the relevant course knowledge. In the teaching of digital integrated circuit sensors, virtual simulation technology can make up for the teaching problem of missing circuit components due to the inability to carry out the physical design of the circuit. This will show obvious teaching effects and advantages.

Compared with PPT and flash teaching, the virtual simulation system can help students perform practical operations with a full range of three-dimensional perception. Students can give more real feedback during the operation of the simulation virtual practice teaching, and the students have a deep sense of immersion. If the operation is complicated, the steps are cumbersome, and it is out of touch with the real situation, it will affect the effect of the practical operation. Therefore, the practical
operation based on the virtual simulation training platform must optimize the students' operating procedures and systems to avoid situations that are far from the real situation and difficult to operate. Teachers can answer questions in a timely manner based on the feedback from students in the operation, and make adjustments and improvements on this basis. This can continuously meet the specific needs of practical operations and the requirements of students. Furthermore, the school needs to optimize the interactivity of the virtual simulation training platform itself to meet the individual needs of different practical projects. Among them, both hardware development and software development platforms need to achieve technical optimization. The effect of image generation and processing and application objects needs to be continuously upgraded to meet the needs of all parties.

4.3. Control the Mentality of Students in the Process of Using
The practical operation of students on the virtual simulation platform has more or less factors that affect the effect of practical operation. What students face is not real situations and objects, what students are doing is also role-playing and simulation of operations. In addition, the virtual situation itself has a strong sense of immersion and novelty, which can easily cause students to shift their focus, not paying attention to specific items of practical operation, and instead focusing on factors that have nothing to do with learning. Among them, students' perfunctory game mentality may lead to perfunctory role-playing and game processes in virtual situations, putting the cart before the horse. To solve this problem, teachers actively guide, remind beforehand, and develop a strict evaluation system. Teachers can also add multi-role alternation and interaction, design sub-tasks and overall goals in the role setting of the practical operation project on the virtual simulation training platform. Teachers can use students' game psychology to let students try multi-role, multi-angle, multi-task step by step, pass customs and promote, so as to experience the sense of accomplishment of practical operation and complete practical teaching tasks.

4.4. Avoid Using Generalization
Although the virtual simulation training platform has various advantages and functions in practical teaching, it must follow the principle of "combination of virtuality and reality, complement each other, and be true to reality." The use of virtual simulation training platform in teaching should not be excessive and generalized, and it should not pursue the use of so-called informatization methods to incorporate unnecessary projects into virtual simulation training. Teachers must always uphold the concept that virtual simulation technology is an important teaching aid in the process of use. The use of virtual simulation training platform in practical teaching cannot be equal to or even substitute for practical operations in real situations. When designing and organizing practical teaching, teachers should control the nodes used by practical teaching on the virtual simulation training platform. Teachers need to pay attention to the connection points and the degree of relevance to the real situation practice operation, and formulate detailed operation manuals and steps to avoid students who do not follow the instructions to experience and operate by themselves. In addition, practical operations on the virtual simulation training platform need to be organically combined with theoretical learning, real operations, and skill assessment. Teachers can formulate standardized operation manuals and assessment methods, make full use and not abuse, and grasp the degree of use.

4.5. Teachers' Response in Use
The virtual simulation training platform has been used in practical teaching for a short time, and the penetration rate is still low. It is challenging for teachers and requires teachers to actively respond. First of all, teachers' teaching philosophy needs to be changed. At present, many teachers still have doubts about the application of virtual simulation training platform to practical teaching. Many teachers have low acceptance of emerging things and worry that the double-edged nature of virtual simulation will affect the teaching effect. This requires teachers to actively learn new things, study the pros and cons of using virtual simulation training platforms in practical teaching, and actively coordinate and communicate with developers. In this way, teaching concepts can be integrated into the design of
practical projects on the virtual simulation training platform as much as possible, and the projects, procedures and implementation rules of practical operations can be scientifically designed, turning passive into active. Secondly, teachers need to receive professional training to improve the practical operation level of the virtual simulation training platform. The application of virtual simulation training platform to practical teaching requires a high level of information technology for teachers. Therefore, schools need to organize teachers to learn advanced VR technology. Moreover, it is very necessary to improve teachers' ability to use VR in the classroom, organize teaching, and organize the exchange and learning of related professional practices.

5. CONCLUSION
In summary, it is the trend of teaching development to promote the integration of practical teaching into the virtual simulation training platform. In the teaching process, teachers need to actively explore the path of practical teaching integrated into the virtual simulation training platform. Schools need to consider professional characteristics and real needs, and ensure the interactivity, rationality and operability of virtual simulation in the process of practical teaching, and customer service for the negative impact of virtual simulation itself. Solving the problems of resource selection, organization construction, and use of teachers and students in the process of integration is conducive to building a virtual simulation practice teaching system. Furthermore, this can also give full play to the auxiliary role of the virtual simulation training platform in practical teaching, thereby enhancing the learning effect.

REFERENCES
[1] Xiang Luan, Chen Liang. Application of power station virtual simulation technology in practical teaching in higher vocational colleges [J]. Integrated Circuit Applications, 2019 (5): 91-92.
[2] Hao Cuixia, Ye Hui. Research on virtual simulation teaching of industrial robot training courses[J]. Experimental Technology and Management, 2018, 35(6): 144-146.
[3] Yang Zhongxing. Application research of virtual simulation training system in training teaching [J]. Journal of Liaoning Higher Vocational College, 2018, 20(2): 40-43.
[4] Ye Mingjun. The construction of virtual simulation practice teaching system in higher vocational colleges [J]. Journal of Zhejiang Vocational and Technical College, 2020, 21 (3): 51-54.
[5] Wang Yong. Discussion on the application and development strategy of virtual simulation technology in practical teaching in higher vocational education. [J]. Digital Communication World, 2021, (2): 191-192.