A Study on the Effectiveness of Integrating Virtual Reality Technology into Ideological and Political Education in Universities

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Abstract. With the continuous development of education in China and the rapid advancement of information technology, virtual reality (VR) technology has gradually become an important tool in ideological and political education in universities. This paper mainly explores the effectiveness of embedding VR technology into ideological and political education in universities. The research is divided into three parts: firstly, the current application status of VR virtual reality technology in practical teaching of ideological and political courses is analyzed, and its existing achievements and challenges are elaborated; Secondly, the feasibility and design ideas of VR virtual reality technology in practical teaching of ideological and political courses were explored, and specific implementation plans and technical paths were proposed; Finally, a specific practical path for applying VR technology to ideological and political education practical teaching was proposed, and various innovative application cases were demonstrated. Through in-depth research on these aspects, this paper aims to provide theoretical support and practical guidance for enhancing the effectiveness and innovation of ideological and political education in universities.

Keywords: VR technology; Ideological and political education; Effectiveness.

1. Introduction

Since 2000, the development of education informatization in China has gone through the pre-education informatization stage, education informatization 1.0 stage, education informatization 2.0 stage, and the current stage of education digital transformation. In this process, the country has issued a series of policy documents, such as the "Thirteenth Five Year Plan for Education Informatization" and the "Action Plan for Education Informatization 2.0", which clearly put forward specific goals and tasks to accelerate the process of education informatization, providing strong guarantees for education informatization. In recent years, with the increasing maturity of VR virtual reality technology, its application in the field of education has rapidly developed. With its unique advantages of seeing, listening, and touching in three dimensions, combined with the characteristics of virtual and reality, immersion and interaction, theory and practice, and technology and vividness, it has achieved significant results in ideological and political education teaching.

In July 2019, the Ministry of Education included "Marxist Theory" in the scope of the national virtual simulation experimental teaching project for the first time. This move marks that the integration of VR technology in ideological and political education has been elevated to the national strategic level, indicating that the trend of VR empowering ideological and political education is irreversible. Exploring the advantages and challenges of VR technology in this field is crucial for promoting educational modernization. With the help of VR virtual simulation technology, ideological and political courses can achieve a leap from real teaching resources to an "immersive experience" teaching mode. This transformation not only breaks the limitations of physical space and time, but also greatly enriches students' learning experience by constructing virtual simulation scenes, enhances their participation and sense of achievement in learning, and thereby improves teaching effectiveness and social influence. However, the introduction of any emerging technology comes with challenges and problems, and the application of VR virtual reality technology in ideological and political courses in universities also faces many urgent problems that need to be solved. These challenges include optimizing and integrating the technology itself, designing teaching content more effectively to adapt

to the characteristics of new technologies, and evaluating the teaching effectiveness brought by new technologies. Therefore, while seizing the new opportunities brought by VR technology for ideological and political courses, it is also necessary to face and solve these practical problems to ensure that technological innovation can truly serve the improvement of educational quality.

2. The current application status of VR virtual reality technology in practical teaching of ideological and political courses

The integration of VR technology into the teaching practice of ideological and political courses is gradually highlighting its unique charm, winning widespread favor from teachers and students, and increasingly becoming a focus of academic exploration on the path of ideological and political course reform. However, this integration process is still in its developmental stage and faces many challenges in practical applications, and its limitations cannot be ignored. Although VR technology has opened up new horizons for ideological and political education, it still needs to overcome many practical obstacles in the process of deep integration with traditional teaching models to fully unleash its potential.

2.1. The application and promotion of virtual simulation teaching constrained by high costs

Cost is one of the main challenges faced in the application and promotion of VR teaching, including construction costs and maintenance and upgrade expenses. On the one hand, the implementation of VR teaching requires corresponding infrastructure support, such as high-speed networks, dedicated classrooms, and servers. Meanwhile, VR teaching requires the use of a range of high-tech devices, including head mounted displays, controllers, sensors, computers, and servers. These devices are expensive, such as high-quality VR head mounted displays that cost thousands of yuan per set. For many schools with limited funds, purchasing these devices is a huge financial burden. On the other hand, in addition to the initial purchase cost, the maintenance and regular upgrades of VR teaching equipment are also significant expenses. Hardware devices require regular maintenance and replacement of components to ensure their normal operation and extend their service life. Meanwhile, with the rapid development of technology, software systems also need to be constantly updated and upgraded to ensure compatibility with the latest technology and teaching needs. These maintenance and upgrade costs further increase the total cost of virtual simulation teaching. The high costs of equipment procurement, maintenance and upgrading, and infrastructure construction have constrained the widespread application and popularization of virtual simulation technology in education.

2.2. The comprehensive ability of ideological and political teachers to apply technology needs to be improved

At present, many teachers have limited understanding and application ability of VR technology, and lack relevant training and practical experience. The effective application of VR technology in teaching not only requires teachers to have basic technical operation skills, but also requires them to be able to organically combine VR technology with teaching content and design interactive teaching plans suitable for students' learning. However, teachers of ideological and political courses usually come from the fields of humanities and social sciences. They have rich experience in traditional teaching methods, but relatively little training and education in digital technology. This leads to insufficient understanding of the basic principles and operational processes of VR technology, making it difficult for them to independently design and develop suitable VR teaching content. In addition, ideological and political teachers may encounter various technical problems in practical operation, such as unstable device connections, poor software compatibility, and complex operating interfaces. These issues not only affect teaching progress, but may also dampen teachers' enthusiasm for using VR technology. In order to effectively utilize VR technology to improve teaching quality,

ideological and political teachers need to constantly overcome technological barriers and enhance their digital literacy.

2.3. There are difficulties in standardizing and quantifying the evaluation of teaching effectiveness

VR teaching is an emerging technology, and currently lacks a systematic and standardized evaluation system for teaching effectiveness. On the one hand, traditional teaching evaluation methods mainly rely on written exams, homework, and final exams. VR teaching emphasizes student participation and practice, making the learning process more dynamic and diverse. Students' learning outcomes are not only reflected in their knowledge mastery, but also in their hands-on ability, problem-solving ability, and teamwork ability. Therefore, traditional evaluation methods cannot fully capture the performance of these aspects, resulting in evaluation results that are not comprehensive and accurate enough. On the other hand, due to difficulties in evaluation, the monitoring and improvement of teaching quality are limited. Teachers have difficulty obtaining students' real learning effects and experiential feedback in VR teaching, and are unable to adjust teaching content and methods in a targeted manner, which affects the effectiveness and pertinence of teaching. In addition, the lack of a scientific evaluation system makes it difficult for schools and education departments to objectively measure the effectiveness of VR teaching, which in turn affects its promotion and application on a larger scale.

3. Feasibility and design ideas of VR virtual reality technology in practical teaching of ideological and political courses

3.1. Feasibility of integrating VR technology into ideological and political education courses in universities

With the continuous development and maturity of cutting-edge technologies such as virtual reality (VR), artificial intelligence, and big data, virtual practice has gradually become an important component of human practical activities. The teaching of ideological and political courses in universities can adapt to this trend, actively integrate VR technology, upgrade traditional flat narrative methods to three-dimensional narrative methods, and meet the needs of college students for smart classrooms.

VR technology can endow ideological and political education with new features, such as physical and mental immersion and free interaction, thus making up for the shortcomings of traditional ideological and political education. Through VR technology, students can immerse themselves in virtual scenes of historical events, experiencing firsthand the struggles and lofty ideals of revolutionary martyrs. This immersive experience not only enhances the infectiousness and empathy of teaching, but also makes abstract theoretical knowledge more concrete and vivid. In addition, the application of VR technology can also break the limitations of time and space, allowing students to freely explore and interact in virtual environments, thereby stimulating their learning interest and initiative.

In terms of educational methods, VR technology has introduced more diverse and interactive teaching modes, making ideological and political education no longer limited to traditional classroom lectures, but through interactive experiences in virtual reality, enhancing students' sense of participation and experience. In terms of teaching content, VR technology can present complex historical events and social phenomena in a three-dimensional and dynamic form, enabling students to have a deeper and more comprehensive understanding of knowledge. In terms of teaching evaluation, the application of VR technology also provides a new quantitative evaluation method, which records students' behavior data in virtual environments, analyzes their learning trajectories and effects, and provides scientific basis for monitoring and improving teaching quality.

The integration of VR technology into ideological and political education has demonstrated unique technological and educational advantages such as rich practical forms, enhanced empathy experiences, and quantitative evaluation of teaching effectiveness, which helps to achieve the fundamental task of cultivating morality and educating people. Through this innovative teaching method, students can not only better understand and identify with the core socialist values, but also cultivate patriotism and social responsibility unconsciously. In short, the application of VR technology in the teaching of ideological and political courses in universities is not only an inevitable trend in technological development, but also an important direction for educational reform. It is of great significance for improving the quality of ideological and political course teaching, innovating teaching models, and enhancing educational effectiveness.

3.2. Design ideas for integrating VR technology into ideological and political education courses in universities

3.2.1. Situational construction

The design concept of applying VR technology in practical teaching of ideological and political courses should first focus on the course objectives and teaching content, select themes suitable for using VR technology to enhance teaching effectiveness, such as historical event reproduction, virtual visits to important scenes, etc., so that students can obtain real experiences in the virtual environment.

3.2.2. Interactive design

Set up interactive objects in a virtual environment, develop immersive and highly interactive VR teaching resources, so that students can "experience" history in the virtual environment, interact with virtual scenes and tasks, and deeply understand the course content. At the same time, teachers should receive systematic VR technology training, master basic operations and teaching application methods, and flexibly apply VR technology in combination with traditional teaching methods to ensure the comprehensive achievement of teaching objectives and stimulate students' interest and participation in learning.

3.2.3. Integration of knowledge

Through VR technology, abstract theoretical knowledge can be presented intuitively. By using virtual reality technology to construct comprehensive teaching scenarios, students can engage in multidimensional learning and thinking in a virtual environment, cultivating their comprehensive literacy and systematic thinking abilities. Virtual reality technology can also be used to reproduce important historical events, allowing students to have a more intuitive understanding of the background and process of historical events, enhancing the sense of authenticity and participation in history learning.

4. The application of VR technology in the practical teaching path of ideological and political courses

4.1. Integrate educational resources and develop diversified teaching content.

The ideological and political education in universities not only involves political science, but also involves multiple fields such as history, philosophy, economics, etc. There are many resources around the system where the various elements of ideological and political education VR activities are located to play a role in ideological and political education. On the one hand, by integrating educational human resources and forming interdisciplinary teacher teams that integrate ideological and political education, computer science, educational technology, history, etc., we can jointly design and develop VR teaching content. Invite experts and technicians in the field of VR technology to provide technical support and guidance, ensuring the professionalism of VR content and the feasibility of technical implementation. Encourage students majoring in computer science and related fields to participate in the development of VR teaching content. Through course projects or internship practices, students

can enhance their skills in practical projects while providing innovative solutions for ideological and political education teaching. On the other hand, integrating educational material resources. VR technology requires a high level of professional background, especially in developing application platforms that meet specific needs by combining hardware and software. The integration of engineering and industry education is the only way to promote the deep integration of VR industry development and the Informa ionization of ideological and political courses in universities. Collaborate with VR technology companies to obtain technical support and resource sharing. Enterprises can provide support such as VR devices and software development platforms, and participate in the design and development of teaching content. Collaborate with social practice bases to simulate real social practice scenarios through VR technology, enhancing students' practical abilities and social cognition. It can help universities reduce development costs as much as possible; It can also help enterprises make precise investments, acquire customers, and expand the market.

4.2. Adhere to the combination of reality and virtuality, and innovate new concepts of ideological and political education.

In the new era of ideological and political education, creating a multidimensional and three-dimensional education approach that combines "virtual" and "real", and guiding its optimization and development with innovative concepts, has become an important way to improve educational effectiveness. Virtual "refers to the use of VR virtual reality technology to present historical events, social phenomena, etc. in a concrete and three-dimensional manner to students through the construction of virtual scenes. For example, by using VR technology to recreate scenes of the Red Revolution, students can feel as if they are in the revolutionary era, deeply experiencing the spirit of struggle and lofty ideals of their predecessors, and inspiring their patriotic enthusiasm and sense of responsibility.

'Reality' refers to actual social practice and experiential education, which allows students to receive education in a real social environment, experience social reality, enhance their sense of social responsibility and practical ability through visiting patriotic education bases, participating in volunteer services, social surveys, and other forms. For example, organizing students to conduct research in the community to understand the actual situation of grassroots governance and enhance their understanding of social operations and national policies. This "virtual" and "real" combination of educational methods not only stays in classroom teaching, but also extends to off campus practice, allowing students to develop comprehensively in a multi-dimensional and multi-level educational environment. Through the organic combination of virtual technology and real experience, ideological and political education can be more vivid, specific, and infectious, thereby enhancing the effectiveness and pertinence of education. In this process, the introduction of innovative ideas is crucial, as it promotes the continuous updating of teaching content, teaching methods, and teaching tools, providing strong impetus for the optimization and development of ideological and political education in the new era.

4.3. Quantify teaching outcomes and enhance the precision of classroom management.

The deep application of VR technology in ideological and political education requires attention to multiple aspects. Firstly, it is important to pay attention to the practical application effects of VR teaching resources and students' performance in the learning process, to ensure that technology truly plays a role in improving the quality of education. Secondly, pay attention to the refinement of classroom management, starting from various aspects of the teaching process, carefully monitoring and optimizing teaching activities to ensure the achievement of teaching objectives. In addition, the implementation effect of "VR+ideological and political courses" will be included in the important assessment index system of teaching supervision to ensure effective evaluation and feedback of the application of VR technology. The ability of teachers to use and develop VR ideological and political resources should also be regarded as an important measure of their teaching ability improvement. Through training and support, teachers' professional level in this field can be continuously improved.

Through these measures, the application of VR technology in ideological and political courses can not only quantify teaching outcomes and improve the refinement of classroom management, but also promote innovation in teaching models and overall education quality improvement.

5. Conclusion

Virtual reality technology, as a model of cutting-edge technology in the information age, is profoundly reshaping human practical activities, cognitive domains, and even thinking patterns with its highly simulated environment. Integrating it into ideological and political education in universities is not only a response to the trend of education development in the new era, but also a key measure to promote the transformation of ideological and political education towards intelligence and enhance the effectiveness of education. During this process, ideological and political education teachers shoulder a heavy responsibility and need to actively explore and practice innovative teaching models, becoming a guiding light and guide for students' growth and success.

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