

Article

Reflections on the Application of Virtual Reality (VR) Technology to Morality and Rule of Law in Education

Haoyu Wang

Beijing No.27 High School, Beijing 100006, China; wanghaoyu09@163.com; CHN-HaoyuWang@ieee.org;

Received: Apr 27, 2024; **Revised:** Jun 16, 2024; **Accepted:** June 22, 2024; **Published:** June 30, 2024

Abstract: Virtual reality (VR) technology is applied to teach a subject the “Morality and Rule of Law” by generating a learning environment. In this study, the value of VR technology in the “Morality and Rule of Law” in junior high school was assessed by exploring the current situation of teaching the subject. VR technology is used to create educational scenarios and enhance students’ proactive exploration and autonomy to meet personal demands. The challenges in the integration of VR technology and the subject in teaching design, ethics, and other aspects due to the inherent shortcomings of VR technology were also investigated.

Keywords: Virtual reality (VR) technology, “Morality and Rule of Law”, Teaching, Curriculum reform, Compulsory education

1. Introduction

With the rapid development of science and technology, the era of big data is gradually transitioning to that of artificial intelligence (AI), which has changed people's lifestyles. With the development of the “metaverse”, society is changing from the big data information age to the intelligent age. At the same time, the modernization of education has been accomplished at a high speed, providing innovative education and learning methods. The application of “metaverse” in education, that is, education metaverse, is an opportunity and a challenge. As an important support for the education metaverse, the development and application of virtual reality (VR) technology are of great significance. In recent years, the application of information technology represented by VR has expanded into mass education. Thus, this research aims to explore the application of VR in teaching a subject, “Morality and Rule of Law” in junior high school. The result provides a basis for the application of VR in teaching various subjects.

2. Value of VR Technology

The “Morality and Rule of Law” in junior high school is a comprehensive subject based on students’ daily lives and aimed at guiding and promoting the development of “morality and rule of law” among junior high school students. Specifically, the core value of “Morality and Rule of Law” is to teach students the basic viewpoints of morality and the rule of law, cultivate moral and legal literacy in the new era, and increase social understanding and participation. Different from subjects such as mathematics, Chinese, and chemistry, teaching “Morality and the Rule of Law” requires theoretical knowledge, immersive perception, and participatory experience. Teachers need to be professional in designing activities in teaching so that students can internalize theoretical knowledge and carry out the process from knowledge to practice and from practice to knowledge to combine knowledge and practice, which is the educational goal of the subject. The traditional teaching method of “Morality and Rule of Law” emphasizes the presentation of teaching content, of which the teaching process and outcomes are limited by time and space. Generally, video materials, keynote speeches, and thematic knowledge competitions are used, which are relatively dull and simple. Students' interest in participating is not high, and the activities are not diverse. Thus, it is difficult to gain the effectiveness of teaching. With the advancement and requirements of curriculum reform, more schools are combining different subjects. However, in the implementation, teaching activities are influenced by factors such as location and time and often fail to achieve the expected teaching objectives, affecting students' learning outcomes.

VR, also known as spiritual realm technology, can create and experience virtual worlds (Jiang, 2020). It allows for simulating the environment, perception, natural skills, and sensing equipment. VR is classified into reality augmentation technology, immersive virtual reality technology, interactive virtual reality technology, and desktop virtual reality technology. The main characteristics of VR technology are reflected in providing multiple senses of perception in real and artificial environments and interactivity (Jiang and Li, 2004). VR technology is applied in education to generate a realistically simulated learning

environment. In such a virtual environment, learners can learn knowledge and enhance skills through perception, interaction, and information feedback.

In the virtualization of teaching, teachers construct a virtual teaching environment based on the objectives of subjects using VR devices. Students observe and experience in the virtual environment. This reduces the cost of teaching while improving effectiveness. Based on the research and practice, methods, and guidance of education, VR technology can be used to increase the affinity of students to various subjects (Liu and Pei, 2017). VR technology reproduces real-life scenes without time and space limitations and enriches practical space (Du and Li, 2000). The virtual environment created by educators using VR technology guides learners to construct values and establish awareness of morality and the rule of law.

3. Strategies for Applying VR Technology

In teaching “Morality and the Rule of Law”, it is important to practice morality to become virtuous people. However, there are many problems with the current teaching of “Morality and the Rule of Law”. Applying VR technology to “Morality and the Rule of Law” can provide new methods to solve these problems for the vitality of teaching. Based on the requirements for core competencies in the subject in junior high school, VR is not used to replace traditional teaching but to be a supplement. The advantages of VR technology are used to solve problems in traditional teaching and provide the practical aspects of “Morality and the Rule of Law”.

3.1. Creating Scenarios and Enhancing Experience

Conceptualized knowledge is needed to immerse students in experiences and knowledge. When VR is applied, teachers need to combine reality and subjectivity to build a virtual learning environment by creating situations, stories, and characters to let students experience and feel them. For example, in “Safeguarding National Interests”, unit 4 of the eighth-grade volume I, and “National Interests First”, unit 8, teachers can use VR technology to create the “December 9th Movement” in 1935 to teach historical facts. Students can be the “space-time historical participants” to experience “overthrowing Japanese imperialism”, “opposing North China autonomy”, and “stopping civil war and unanimously opening up to the outside world”. They can understand the resistance against Japan and national salvation, and be inspired to serve the country and the people. This practice enables students to experience sound, light, and touch in traveling through time and space, and historical scenes in a virtual practical teaching environment. In the ninth-grade textbook, volume I, unit 3, “Civilization and Homeland”, and unit 6, “Building a Beautiful China”, teachers can use VR technology to create scenes such as “Saihanba Forest Farm”, “Yucun Village, Anji County, Zhejiang Province” and “The Northwest-North-Northeast China Networks of Shelterbelts” by using real scenes and integrating the summary and review so that students can “walk into” these scenes, experience the portrayal of “lucid waters and lush mountains are invaluable assets”. Utilizing the familiar scenery and landscapes, students can create a “Beautiful China” scenario to explore the four seas and experience the beauty of the motherland. This experience in the VR environment is different from traditional videos as the VR environment presents a richer physical experience in multidimensions. Although the scenes and characters are virtual, students can observe and feel the emotions more realistically. In such vivid, innovative, and diverse practical teaching, students can better establish a scientific outlook on life, worldview, and values.

3.2. Proactive Exploration and Enhancing Autonomy

In the application of VR to teaching the subject, students are the main body. The “Statistical Report on the Development of China's Internet” showed that netizens aged 10–19 years accounted for 17.5% of the total number of netizens (China Internet Network Information Center, 2019). Contemporary teenagers have grown up with networks. In the big data and information age, teenagers are no longer satisfied with traditional education and teaching. Teenagers are recipients of information and also the creators of information (Wang, 2014). In classrooms, students are no longer listeners and observers but explorers and practitioners. Teachers must “teach students to fish” instead of “giving students fish”. Teachers can utilize the diverse and multi-dimensional nature of VR technology to stimulate students' learning motivation to transform their tactile experiences into internal exploration (Wang, 2017a). Therefore, teachers need to enhance students' media literacy and enable students to master VR technology and extend their concepts for independent exploration. This change provides active inquiry learning to establish students' confidence and enhance their sense of self-efficacy.

In “Morality and the Rule of Law”, unit 4 of the seventh-grade volume II “Walk into the World of the Rule of Law” and unit 9 “The Law Is Around Us”, teachers can guide students to use VR technology groups to explore the phenomenon, characters, and events of the rule of law in daily life. Under the guidance, students can use technology to create virtual rule of law event scenes based on searched materials and explore independently in the virtual scene by playing different roles. This experience can make students

learn that the law is the norm and guarantee of our daily lives. In “Citizen’s Rights” and “Citizen’s Duties” of unit 2 “Understanding Rights and Duties” of volume II in the eighth-grade textbook, teachers can use VR technology to create scenes for the election and performance of deputies to the National People’s Congress for students to choose the characters in the virtual scene as “representatives of the National People’s Congress” or “voters” or “bystanders” and explore the rights and obligations of their “virtual roles” through students. These activities can deepen their understanding of the relationship between rights and obligations. The exercise of rights and the fulfillment of obligations following the law is related to the dignity of each person, the happiness of the family, the progress of society, and the development of the country. Traditional methods are difficult to meet students’ needs, but VR technology can stimulate students’ enthusiasm and thirst for knowledge enabling them to participate in the virtual learning environment, play a greater role as the main body, and enhance the physical and mental experience.

3.3. Diverse Scenarios and Personalization

Teaching students according to their aptitude is the best-personalized teaching method in education. However, it is often difficult to achieve due to limited educational resources, and standardized and procedural educational activities. In teaching “Morality and the Rule of Law”, many factors affect personalized teaching. For example, teaching forms such as going to Xibaipo, Red Flag Canal, and other patriotic research classes require a huge cost, a long time, and high-security risks in organizational practice. Thus, teachers choose one topic in the practice. Such activities can not standardize practical teaching, and it is difficult to achieve personalization. With their physical and mental development, teenagers need personalized assistance and guidance. In teaching “Morality and the Rule of Law”, VR technology can be used to meet students’ needs for independent learning and exploration. Students can have personalized feelings through the presentation of virtual scenes based on their needs and the guidance of teachers.

The introduction of the subject of “Discover Yourself” in lesson 3 of “Growth Beat” in unit 1 of volume I of the seventh-grade textbook, students can discover three scenes of learning life in junior high school including the scene of learning knowledge in the classroom on campus, participating in activities outside school, and being at home with their parents. Under the guidance of teachers, students can use VR technology to create scenarios in which students can be participants and bystanders. By allowing students to transform their identities and roles in virtual scenarios in scenarios from a multidimensional perspective, teachers can guide students to discover and solve problems. By using a “scene representation” approach, students can better accept themselves and explore their potential. The lesson 4 “Unveiling Emotions” and lesson 5 “Tasting the Flavor of Emotions” in unit 7 of the seventh-grade textbook volume II, teachers can use VR technology to create scenes such as classroom learning environment, outdoor sports environment, and comprehensive practice activities. Students can choose different identities such as “bystanders” or “participants”. By observing others or displaying their expressions, language, and actions in various events, students can experience the information expressed by different emotions. Through teacher guidance, students can exercise emotional management.

Teachers can use VR with the assistance of technicians to solve the problem of personalized teaching of “Morality and the Rule of Law”. They can design different virtual practice teaching environments based on the situation of students, meet the individual needs of students, and provide a rich personalized learning environment.

4. Challenges

Although the integration of VR technology in education has potential, there are challenges in the application process. Firstly, there are technical flaws. Although VR has been popular, software and hardware technology defects are found in its application. Learners immerse themselves in a virtual learning environment and require corresponding devices. Most common VR devices are headgear or eye masks which have different resolutions, making it difficult for learners to feel realistic image quality. At the same time, the glare of bright light affects learners’ vision and causes dizziness (Wang, 2019). Headgear and eye mask devices are expensive, but the user’s vision is not realistic enough, and the size of the equipment is large, which affects the promotion of VR technology in education. Secondly, design issues exist in applying VR technology to teaching. VR has advantages in teaching subjects based on reasonable teaching design to meet the needs of students. If there are problems in the teaching design, no matter how excellent and perfect the software and hardware are, they cannot be effectively applied. At the same time, due to the limitations of the teacher’s technical mastery, interdisciplinary communication with teachers in related disciplines such as information technology and AI is demanded, and professional personnel must assist with teaching design and implementation. Thirdly, the application of VR technology poses moral and ethical challenges. In order to better apply VR technology and ensure that learners have a better immersive experience, VR systems need to collect a large amount of personal data of learners. In the construction of AI subjects, VR systems require learners’ behaviors, habits, concerns, and cognition of things (Wang et al. 2020). In the research on creative teaching, scholars have pointed out that personal information is necessary to react to learners’ usage process for intangible

and subtle impacts (Wang, 2017b). The collection of personal information is related to privacy. At the same time, the leakage of learners' information can occur, leading to negative chain reactions. Education authorities and schools must take appropriate measures and security plans to ensure that the personal information collected is only used for teaching and students' development.

With big data and AI, the integration of VR technology into teaching become inevitable. By applying VR technology to teaching "Morality and the Rule of Law", a virtual learning environment is generated to provide students with a personalized virtual learning environment and enhance the effectiveness of teaching. Students' main roles can effectively solve the problems. The inherent shortcomings of VR technology pose challenges to its integration into education in terms of design, moral ethics, and other aspects. Thus, it is necessary to explore the integration of technology and education further.

5. Conclusions

The application of VR technology to teaching "Morality and the Rule of Law" allows for a new learning environment. The value of VR technology in its application was investigated in this study by analyzing the current situation. The strategies for implementing VR technology in teaching in junior high school include creating scenarios and enhancing experience, proactive exploration, and enhancing autonomy for personalized education. There are challenges in the integration of VR technology and teaching "Morality and the Rule of Law" regarding design, moral ethics, and other aspects due to the inherent shortcomings of VR technology.

Funding: This research did not receive external funding.

Data Availability Statement: The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflicts of Interest: The author declares no conflict of interest.

References

1. China Internet Network Information Center. (2019). 43rd Statistical Report on Internet Development in China. Available online: http://www.cac.gov.cn/2019-02/28/c_1124175677.html (accessed on May 25, 2024)
2. Du, C. Li, Y. (2020). VR: A New Practical Field. *Studies in Dialectics of Nature*, 11, 59–63.
3. Jiang, X., Li, Z. (2004). Present Situation of VR Researching at Home and Abroad. *Journal of Liaoning Technical University*, 2, 238–240.
4. Jiang, Q. (2020). Overview of the Development of VR Technology in Foreign Countries and Regions. *Winged Missiles Journal*, 1, 27–34.
5. Liu, X. Pei, Z. (2017). A Theoretical Study on the Application of VR Technology in Ideological and Political Education: From the Perspective of Marxist Theory of Real People. *Studies in Ideological Education*, 9, 57–61.
6. Wang, H. (2014). On the Integration of Ideological and Moral Education and Media Literacy Education in Middle School. *Teaching References of Middle School Politics*, 33, 76–79.
7. Wang, H. (2017a). Development and Future of Creativity Teaching. Knowledge Economy, Science And Technology, Neurosciences and Creativity. Proceedings of the 3rd International Conference on Arts, Design and Contemporary Education (ICADCE 2017), Moscow, Russia, May 29–30; pp. 780–783. <https://doi.org/10.2991/icadce-17.2017.189>.
8. Wang, H. (2017b). The Integration of Media literacy education into Ideology and morality education at China's High Schools. Proceedings of the 2nd International Conference on Contemporary Education, Social Sciences and Humanities (ICCESSH 2017), Moscow, Russia; June 14–15; pp. 191–197. <https://doi.org/10.2991/iccessh-17.2017.46>.
9. Wang, H. Zhong, T. (2019). Analysis on the Research Hotspots and Trends of the Media Literacy Education for Chinese Students. Proceedings of the 2nd International Conference on Contemporary Education, Social Sciences and Ecological Studies (CESSSES 2019), Moscow, Russia, June 5–6; pp. 146–150. <https://doi.org/10.2991/cesses-19.2019.35>.
10. Wang, H. Liu, Y. Han, Z. Wang, J. (2020). Extension of Media Literacy from the Perspective of Artificial Intelligence and Implementation Strategies of Artificial Intelligence Subjects in Junior High Schools. 2020 International Conference on Artificial Intelligence and Education, Tianjin, China, June 26–28; pp. 63–66. <https://doi.org/10.1109/icaie50891.2020.00022>.

Publisher's Note: IJKII stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



© 2024 The Author(s). Published with license by IJKII, Singapore. This is an Open Access article distributed under the terms of the [Creative Commons Attribution License](https://creativecommons.org/licenses/by/4.0/) (CC BY), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.