Research on Innovative Application of Virtual Reality Technology in Digital Media Education

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Abstract. With the continuous development of modern society, more and more forms of visual expression are presented to everyone's view. The concept of immersive creation represented by virtual reality and augmented reality is also gradually applied to the artistic creation of digital media, so that education and teaching maintain sustainable development and innovation. Digital media has become ubiquitous in daily life, and digital media education also needs to help students understand the focus of the development of the profession, through the sensory, interactive and cognitive experience as the basis for the teaching process, to meet the requirements of the students in the sensory, interactive and cognitive aspects, and to effectively give full play to the advantages of diversified technologies, increase learning interest and improve the comprehensive literacy of students.

Keywords: Virtual Reality Technology; Digital Media Education; Innovative

1 Introduction

The 19th National Congress clearly pointed out that innovation is the first driving force leading development and the strategic support for building a modernised economic system. Especially in the "863 programme", virtual reality has become an important field to assist the development of digital media education [1]. Virtual reality video is a new technology in virtual reality. Virtual reality (VR) is a promising technological advancement that provides learners with immersive and interactive experiences that closely resemble reality (Wexelblat, Citation2014). The immersive environment is created by utilising the visual, auditory, tactile, and olfactory senses (Sherman & Craig, Citation2003) [2].According to the basic characteristics of virtual reality video immersion, interaction, and association, the focus is on creating a virtual environment in a full 360° view, but can give an immersive effect [3]. Digital media educational content produced as virtual reality videos will better facilitate the learning of the course. It will transform the traditional teaching mode into an interactive teaching mode to attract students' attention and enthusiasm. Virtual reality video can turn abstract into concrete and vivid into image to achieve better teaching effect. Digital media art is designed for people's better life, the need to create positive content images, people-oriented, so that in the long term, can maintain the sustainable development of the industry.

2 Virtual reality technology

To a certain extent, virtual reality is virtual reality technology, belonging to a new interactive way. It can be based on virtual reality equipment, simulated external sensations, so that people can obtain the reality of virtual reality technology brought about by the feeling [4]. VR is a 3-dimensional (3D) digital environment generated to create a fully immersive, realistic environment (Jerald 2016; Virtual Reality Society 2017). This technology is being adopted in a variety of educational environments as a training device. VR in education and training provides the ability to train and practice while encouraging active learning, intuitive decision making, and engagement with a task (Jerald 2016) [5]. The application of virtual reality in reality can mainly exist in the following aspects. Specifically, see Table 1.

Table 1 Examples of common applications of virtual reality

Fields	Virtual Reality Applications
Monuments	Expeditio Presentation of historical monuments
Industry	Product design, destructive testing
Business	Ali Buy+ virtual shopping experience
Medical	Blue Room, psychotherapy
Sports	Ski simulator, virtual rollercoaster
Entertainment	Virtual concerts, virtual actors
Travel	4D virtual travel
Games	PP GUN, virtual gunfight
Astronomy	Star Chart, Virtual Planetarium
Traffic	Traffic simulation training, road design

Virtual reality is particularly advantageous in the field of digital media education, immersive in terms of immersion, engaging in terms of conceptualisation, and interactive in terms of increased efficiency. Focused and deep learning experiences are achieved through motion capture devices. In the virtual world of Virtual Reality, technology presents concrete abstract concepts. Commonly used PC external devices such as mouse, keyboard, digital board, etc., can be visualised and operated to achieve human-computer interaction and improve the efficiency and quality of learning [6].

3 The innovative application of virtual reality technology in digital media education

3.1 The establishment of virtual reality technology teaching application of digital media information sharing mechanism

The teaching application of virtual reality technology needs to be based on the digital media platform to increase the realisation of the platform. At this time, according to the actual situation, we need to establish the virtual reality course teaching digital media information

sharing technology, maintain the inforldia want to implement the teaching resources of the curriculum in a real way, it is necessary to combine the reality and establish a sharing mechanism to meet the characteristics of the development of data media and complete the construction of an effective ecosystem. Increase the docking between the courses to provide a good foundation for the preparation of future sustainable development [7].

3.2 Strengthen the ability of virtual reality technology course teaching education practice linkage

In the diversification and systematic promotion of professional education in colleges and universities, the construction of the education system has become the focus and difficulty that needs to be implemented. Some colleges and universities in the implementation of diversified courses, need to be combined with the strategic layout of different professions, from the perspective of technical practice, to make up for the lack of diversification of practical problems. Professional teachers also need to combine the practical, and digital media platform, using online virtual reality teaching methods, rational co-ordination and planning, to maintain a two-way progress. In the play of digital media diversified teaching practice at the same time, the need for professional education on the basis of steady progress, to solve the problem of the lack of digital media in colleges and universities, for the future development of professional quality to provide a good foundation for the preparation [8]. Strengthen the way of virtual reality technology application teaching linkage, you can achieve the integration of resources and synergistic development. It is necessary to combine the basic mode of school-enterprise cooperation to establish a multidimensional integrated development path. For colleges and universities, it is necessary to provide teaching support for digital media courses under the vision of virtual reality technology application. These contents need to be docked with professional teachers immediately after, under the supervision of enterprises, reasonable debugging, providing corresponding education and training for professional teachers in colleges and universities, and maximising the strengthening of teachers' ability to apply virtual reality technology. This long-term, not only can improve the quality of teaching virtual reality technology application courses, but also to a certain extent, joint teaching to implement the basic practical education programme. Teachers in this school need to provide students with independent learning environment on the basis of assisted teaching, the reasonable use of virtual reality technology successfully used in the field of education, the implementation of professional content from different perspectives, to maintain the concept of sustainable development [9].

3.3 Innovative diversified virtual reality technology course teaching application system

The use of virtual reality technology in colleges and universities, the demand for courses in different professions is not the same. At this time, it is necessary to combine the rationalisation of the software system, digital media resources customised to meet the use of virtual reality technology. The higher technical cost of virtual reality technology, the need for reasonable integrated planning, the implementation of the key points and difficulties. Diversified virtual reality technology courses teaching and applying innovation, not only the teaching method is insufficient, but also the teaching system is insufficient. In the method of education, professional course teachers need to be in the professional learning requirements, a reasonable choice of teaching mode, in the effective integration, the implementation of the main

educational content of the multi-pronged approach. The application of virtual reality technology course teaching, but also need to be well into the different links and details. In the face of the innovation of the teaching system, teachers need to uphold the main idea of the scientific concept of development, in accordance with a certain teaching ratio, improve the practical teaching part of the digital media informatisation, and constantly expand the new course functions, to provide basic preparation for the advantages of diversified education [10].

3.4 Virtual reality application and effect analysis

Virtual reality The design of the video fully embodies the educational purpose of the teaching content and realistically conveys the knowledge points of the textbook. Through learning, we can learn about the deep cultural heritage of the Beijing courtyard house, and inspire students to aspire to and learn about traditional culture. As an educational resource, it can also stimulate students' interest in learning. Fully demonstrate the characteristics of virtual reality video to attract students' attention and interest. Focus on colour matching and overall layout to increase the construction of good effects. At the time of design, it is necessary to implement the design of teaching objectives, show the overall teaching content, meet the characteristics of the learner, reasonably implement the choice of teaching media, and maintain a diversified evaluation. Combining the content of the entire textbook and teaching objectives, teaching key points, grafting important knowledge points into the virtual reality video. Not only that, but also need to be matched with the corresponding text commentary, with the help of equipment to watch the video for learning. In the comprehensive base voyage, maintain a certain application prospect. Constantly develop new processes and effectively increase the allocation of resources. Students are required to truly grasp the technical and artistic values embedded in the Beijing Courtyard, and to dismantle in detail the local as well as the overall artistic characteristics of the Beijing Courtyard. Learners are immersed in them, not only can they perceive the emotional values, but also complete the teaching objectives in the emotional blend. Teaching content design, the need to implement the key points and difficult points, to enhance students' interest in digital media art, the use of a real virtual reality video case - beyond the time and space of the Forbidden City. The integration of digital cinema and virtual interactive art has achieved the perfect combination of "technology" and "art" [11]. Students can feel as if they have stepped into these great artistic creations, which on the one hand creates a deep sense of immersion, and on the other hand increases the corresponding sense of interaction. Learning digital media art and creative industries, exploring the full range of application fields of digital media art, maintaining a reasonable integration. development dynamics and cutting-edge knowledge, improve the sense of innovation, possess certain practical skills, establish aesthetic awareness, and maintain an integrated path of development in the natural sciences, social sciences and humanities. After that, it is also necessary to help students develop good thinking habits, establish correct values, and complete the development needs of digital media education. Under the vision of "mastering the interactivity of digital art" and "the unity of science and art", we help students overcome difficulties, increase interactivity, transform text content into virtual reality videos, make students want to participate in the work from the bottom of their hearts, promote the development of thinking and strengthen students' memory. and enhance students' memory. Considering the actual situation of the research subjects, the viewing angle is chosen independently in a wide experimental environment. The eight cameras reflect the idea of "unity of heaven and mankind", the integration of science and art, and the reasonable spatial layout.

First, the choice of teaching strategies. Students in the field of virtual reality video know less, and some students have not even come into contact with this aspect of the content. The content of the video includes the introduction of the characteristics of virtual reality video, the use of methods and so on. At the same time, the application of virtual reality video in the Forbidden City Museum is also shared to ensure the depth and breadth of the teaching content. In addition, it is also necessary to understand the students' learning situation, combined with the students' latest development zone, student-centred, adding "transfer and application", to achieve the main role of knowledge consolidation. Learning mode positioning students "active discovery" learning, students can choose the content of learning according to their own actual situation, better consolidation of the knowledge learned, and ultimately the technical and artistic characteristics of teaching presented to the out.

Secondly, in the selection of the application implementation object, it is mainly students majoring in digital media. Need to "Introduction to Digital Media Art" course and virtual reality video organic combination, effective implementation of interest needs, information ability, knowledge experience, learning motivation and other aspects of the main content. Students will have a strong motivation and positive learning attitude when they watch virtual reality videos. When teaching with virtual reality videos, students have different information processing abilities and acceptance effects are biased. The "courtyard" scenario also helps students to be guided correctly to the uncharted learning content, and to solve practical problems and implement the main content [12].

After that, the application implements environment analysis. The virtual environment created by the virtual reality video, the colour combination and the spatial layout are different, and the students' immersion is different. In the "Beijing courtyard house" virtual reality video, not only the colour is gorgeous, but also attracts students' attention to a large extent. The laboratory hardware facilities of the digital media art major are highly equipped, and students can turn their bodies freely when watching the virtual reality video, which not only reduces the interference from the outside, but also gives students a maximum sense of security and maintains a strong sense of immersion. Interactive virtual reality video is more in line with the subjective feelings of students, watching the overall layout of the Beijing courtyard house, transforming the location, reflecting the different development scenarios, on the basis of interactive, to maintain the momentum of scientific development.

Before the implementation of the preparation, choose a well-closed, well-lit laboratory, the virtual reality video - Beijing Courtyard MOBIL.pno shared to the class of the group, students need to download it, playback software ivisit360. from the results, the virtual reality video presents the immersive, interactive, conceptualisation characteristics, and the sensory experience can be given to students to maximise the impact. It allows students to gain more forward momentum on the basis of immersive experience and to participate in the scene. Virtual Reality The video conforms to the overall layout, shows the real mood, the layout is relatively reasonable, the colour reproduction is real, and it is more comfortable to watch, with a stronger sense of immersion. In the interactive experience, it is necessary to ensure that the operation is simple and controllable. Virtual reality video to express the content is clear, easy to understand, the operation process is relatively simple, the feedback effect is better, on the basis of interactive, maintain good innovation. In the cognitive experience, it can help students better trace the cultural symbolism of the "courtyard", bring strong exploration, maintain a high sense of pleasure, in line with the development needs of education. In the feedback effect,

the main objective conditions can provide the virtual reality equipment is really limited, need to combine with the actual, further enhancement.

The design of the virtual reality video restores the original appearance of the Beijing courtyard house, in the overall colour tone, reasonable collocation, and the spatial layout are in accordance with the historical records of the reasonable implementation. "Beijing courtyard house" virtual reality video needs to be clicked after switching scenes. There are still some shortcomings, the virtual reality video can not show the whole picture of Beijing courtyard house, each time to see only the part of the Beijing courtyard house, can not see its overall scene. From the point of view of advantages, firstly, it enhances students' perceptual ability. The virtual environment is produced in the same way as the real environment are sleeping, which can be reasonably integrated in the characteristics of pictures, text and sound. Watching virtual reality videos in a wide and bright laboratory is the only way to mobilise strikes, maintain multiple perceptual abilities and increase the overall effect. Secondly, it optimises the way students think. Virtual reality video can be melted into the building, combined with the associative way of thinking, jumping out of the user's thinking framework, presenting a non-linear structure, keeping the mind completely open state. Virtual reality video as a teaching resource applied to digital media teaching, breaking the traditional teaching methods, with a new perspective, so that students are truly involved in it, complete two-way interaction, reduce the objective inconvenience.

4 Possible challenges and constraints of virtual reality technology

The innovative application of virtual reality technology in digital media education adapts to the needs of the times and is the inheritance and innovation of the traditional education model. His innovation lies in the immersive teaching method and has the characteristics of strong interaction. Students experience the course content firsthand in their learning and improve their perceptual ability. The application of virtual reality technology in the field of teaching and learning, which provides more possibilities for teachers and students. However, the process of applying this technology to education and teaching inevitably encounters challenges and some constraints, and we must face up to these difficulties.

First of all, the high cost makes it impossible for some schools to introduce and promote virtual reality technology. For equipment and software with full product features that meet the needs of digital media education are more expensive, which is a great challenge for some schools. In addition, part of the funds will be used for the maintenance of virtual reality technology equipment, software and hardware upgrading, and this part of the capital investment for some areas and schools with insufficient educational resources is a constraint to its promotion.

Secondly, the degree of cognition of virtual reality technology, the degree of application of the technology is also one of the factors that restrict its wide application in digital media education. In the present time, although with the continuous development of information technology, virtual reality technology has been understood by most people and some progress has been made in some fields, it is currently at a basic stage in the field of education and teaching. Teachers and students in many schools are still in the understanding stage of virtual reality technology, without in-depth understanding and mastery. Therefore, applying virtual reality

technology to the field of education and teaching requires training for teachers and guidance for students to improve their knowledge and ability to use virtual reality technology.

In addition, applying virtual reality technology to the field of education and teaching may produce some unfavorable effects. For example, using teaching equipment for a long time will cause students to suffer from eyestrain, dizziness and other symptoms, which will have a certain impact on students' physical and mental health. And excessive use of virtual reality devices will make students lack communication with teachers and classmates and immerse themselves in the virtual world. Therefore, we need to reasonably arrange the time of use and formulate corresponding rules and regulations to ensure that students' physical and mental health is not affected by it in the process of learning and use.

In summary, it is undeniable that the application of virtual reality technology to digital media education, its immersive, interactive and many other advantages will bring many possibilities to education and teaching. But at the same time it also faces many challenges and constraints. In order to give full play to the advantages of virtual reality technology in the field of education and teaching, we need to make some improvements to make it more adaptable to the actual situation in this era, further improve the technology, reduce the price of equipment and maintenance costs, popularize the knowledge in the field of virtual reality, pay attention to the physical and mental health and other aspects of the work, in order to create favourable conditions for the wide application of virtual reality technology in digital media education.

5 Conclusions

With the progress of society, the application of virtual reality technology in college education can not only maintain a good synergistic development on the basis of student-oriented, but also allow people to be immersed in a real state, to achieve emotional interaction, and to easily understand some of the realities of the problem. "Learning by doing" grasps more basic knowledge, solidifies knowledge through repeated comparative observation and practice, and is close to students' learning habits and growth paths.

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