

Research on the Education of Party History Based on Virtual Reality

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Abstract: The traditional learning and education form of party history is single, and watching and listening are the main ways of experience, which lack appeal. Therefore, we apply virtual reality technology to the development of party history learning and education in combination with the current upsurge of information based party building. By designing the environment, characters and voices, the party history is the core material, 3D max and C# programming language are the technical support, and a variety of hardware terminals are combined to create a party history learning and education system with high simulation and strong immersion. Through the integration of virtual reality technology and party history education, the restriction between the real world and the virtual world can be broken, and the vividness and interactivity of the study and education of party history can be enhanced, which will help spread and carry forward the spirit of the party, and at the same time promote the development of party building and ideological and political education towards more efficient and perfect aspects.

Keywords: Virtual reality, Party history education, Immersion.

1. Introduction

Virtual Reality VR (Virtual Reality VR) refers to a current technology that uses computer graphics, multimedia, artificial intelligence and other technologies, and generates a kind of visual, auditory and tactile feelings directly to users through peripheral devices, such as sensor glasses, helmets, gloves and additional devices, and allows them to observe and operate interactively, and is used to build a virtual environment. It is now widely used in games, architecture, education, healthcare and other industries.

At present, the Communist Party of China (CPC) has attached great importance to the study and education of Chinese youth's party history, emphasizing that it is a critical link to carry forward and inherit the genes of party history. The history of the Chinese revolution is the best nourishment. Reviewing this great history can be vividly educated by the party's initial mission, nature and purpose, ideals and beliefs, and we must remember the glorious history and inherit the genes of party history." Therefore, the Central Committee of CPC called on all Party members to learn from history, learn from history, increase confidence, learn from history, and learn from history. This has pointed out the direction of the country's Party history research and education, and is conducive to the in-depth development of the study and education of Party history among domestic teenagers.

VR+party history learning and education is a brand-new way of experience by using the current popular VR technology and combining party history. Wearing VR glasses allows people to experience the party's cultural history in an immersive and interactive way. It is a new type of VR party history learning and education mode. Therefore, it is of great practical significance to combine the virtual reality technology with the study and education of party history, and carry out the study and dissemination through VR, an online virtual system with immersion and interaction, to enhance the study and education of party history of Chinese teenagers.

From this point of view, this study puts forward the construction scheme of the study and education system of the party history based on VR technology, and creates an immersive and interactive visiting environment for users through the call of visual, auditory and tactile channels.

2. Overview of Virtual Reality

Back in 1956, a 3D interactive terminal with an integrated somatosensory device, invented by photographer Morton Heilig, put virtual reality in people's field of vision for the first time. In 1987, Jaron Lanier, the founder of American VPL Company, put forward virtual reality technology for the first time, and was called "the father of virtual reality" by the industry. Virtual reality is a new type of integrated information technology. With the continuous improvement of science and technology, VR technology also develops. In recent years, the application of virtual reality technology has entered people's lives and expanded into education and teaching.

Virtual reality has obvious advantages in perception, immersion and interactivity. Therefore, the application of virtual reality technology in domestic education and teaching can improve the original human-computer interaction mode, and introduce users into the virtual world in terms of touch, vision, hearing, etc., to show relevant knowledge in all directions, so as to improve the teaching effect. At the same time, better designs in terms of conception and sentiment can be made to engage the attention of users and enable them to learn more actively and efficiently.

3. The Importance of Party History Education and Study

3.1. Continue spiritual blood and bravely revive the Chinese dream

The teenagers of the new era were born into a peaceful era of prosperity and development, so they had no actual

perception of the frequent wars and untold suffering of life in modern China. Only through the explanation in history books, they can't be highly valued spiritually. It is necessary to intensify the study of young people's party history, enhance everyone's spiritual realm for today's China, vigorously carry forward the revolutionary spirit tradition, continue the revolutionary spirit, and cultivate more high-quality talents who will promote the prosperity and rejuvenation of the motherland. In the history of the CPC, many ordinary heroes have sprung up. The power of example will never go out of style, and the power of spirit will never be defeated. Today's powerful China is the result of the heroic struggle of the people of all ethnic groups under the correct leadership of the CPC. The CPC's great revolutionary forces have built the spiritual pedigree of our party, and it is the college youth in the new era that makes the spiritual pedigree endless. It is necessary to educate and guide the whole party to vigorously carry forward the tradition of party history, inherit the genes of party history, continue the spirit and blood of communists, always maintain the revolutionary's fearless struggle spirit, and summon up the spirit of a new journey and forge ahead in a different era. Strengthening party history education in colleges and universities in the new era is to enable young people to continue their spiritual blood in the process of reviewing the party's struggle journey, learning lessons from failures, learning experience from victories, and making their own modest contribution to realizing the Chinese dream.

3.2. Take a firm political orientation and establish a correct view of history

Young people in colleges and universities are at the critical juncture of mature thinking. During this period the young men of the colleges and universities are generally intensely curious, interested in new things, and even spontaneously imitate some of these phenomena. Just because they are in the stage of ideological development, their whole value system is in the stage of gradual improvement, and they will be more sensitive to the surrounding environment, easily influenced by some phenomena in the subconscious. It is in this critical period that young people in colleges and universities grow up and establish their own values and outlook on life. Colleges and universities should strengthen the training and guidance of young people. Li Dazhao pointed out: "Therefore, people who view history are the basis of life. If they want to have a correct outlook on life, they must first have a correct view of history". For today's college youth, we must first establish a correct view of history by understanding the history of the CPC, take history as a mirror, and learn from the past to establish a correct outlook on life and values. The cultivation of the historical view is conducive to the college youth's recognition of China's modern national conditions and the opportunities and challenges that China is facing today, so that they can hold the political direction firmly, rain or shine, and forge ahead with perseverance. Strengthening the education of party history in colleges and universities in the new era is conducive to college students' firm political orientation, enhancing their ability to distinguish right from wrong, establishing a correct view of history so as to stand firm in political position and support the leadership of the CPC.

4. Significance of VR Technology in Party History Education

Virtual reality technology is the basic technical support for the implementation of virtual party history education. It can simulate the visual, auditory and other sensory information of students by building a realistic virtual three-dimensional space, enabling students to feel and manipulate virtual objects through a virtual reality device, gain immersive experience and deeply perceive the teaching content and educational meaning.

Taking the virtual roaming experience of party history education as an example, with the continuous progress of virtual reality technology, it has gradually been realized from simply watching videos in an immersive way to being able to choose a roaming path by itself, and then interacting with buildings and people in the scene. The roaming scene can be modeled and mapped by 3Dmax software, and the precise model can be built where interaction is needed. The structure of the object is completed by modeling, which has a strong sense of realistic three-dimensional immersion. Later, the movement of the designated block can be realized by programming. Then build a rough model for the appendages, and the structure is finished by mapping, with high efficiency. After the scene is built, it is imported into Unity3D software in fbx format, and the terrain, vegetation, river and sky are made according to the needs of the scene. There is a coordinate system in the Unity3D scene. By adding components and binding code scripts to objects, you can control the movement and change of objects, thus realizing interaction. After the scene interaction is completed, Unity3d can export the data of Web, PC and mobile. Users can interact with the virtual scene through input systems such as VR handle or keyboard, and perceive the virtual scene through the VR helmet or computer screen.

Virtual party history education breaks through the constraints of time and space, conforms to the learning characteristics of the students, stimulates their desire to learn, and increases the capacity of teaching and learning. At the same time, virtual party history education is an open system with many social resources available, which can enable resource sharing and build cooperative education models.

4.1. Cater to students' psychological needs and guide students to develop independently

Virtual reality party history education depends on computer science and technology, and is not limited by time and space. It can construct corresponding scenes, characters and plot levels according to the needs of historical materials and heroic deeds of party history education. Through the application of cutting-edge high technology and the sensory stimulation of dynamic sound and painting, it caters to the psychological needs of college students, completely arouses the enthusiasm of students, and makes students change from passive educated to active experience and explorer. Students can study independently at anytime via the Internet and virtual reality devices. At the same time, through social practice in winter and summer vacation, students can go to the Party history education base, the revolutionary memorial hall, etc., choose interesting, resonating and inspiring materials, shoot virtual reality maps with panoramic cameras, and cooperate with computers or mobile phones to independently develop the simplest virtual educational resources of Party history, so as to stimulate students' enthusiasm for participation, enrich

educational resources of Party history, and build an independent educational model.

4.2. Break through the constraints of realistic conditions and improve the carrying capacity of education

Virtual reality party history education turns boring theoretical knowledge and rigid historical data into vivid scene experience. On the one hand, it relieves some teachers' pressure of preparing lessons and the teaching burden; on the other hand, it increases the sense of hardship among teachers due to the reduced demand for teachers and promotes the increase in teacher strength. It also reduces the reliance on the Party's historical educational base and avoids the wasted energy and time of actual visits. Virtual reality equipment and sufficient educational resources can be used by a large number of students numerous times. The virtual "Party History Education Base" can not only give students a more vivid and profound experience, but also effectively ensure the safety of students. Virtual reality party history education breaks through the constraints of teachers, bases, time and space, safety and other realistic conditions, and considerably improves the bearing capacity of party history education. The "party history education base" is virtual, but "experience" is real, which is a new way of practical education. It can help students deepen their studies on the basis of classroom theoretical teaching.

4.3. Provide a fresh carrier of party history activities and build a cooperative education model

Virtual reality party history education is not restricted by realistic conditions, its content is rich and colorful, and its form is flexible and interesting. Online can enrich the website resources of party history education and provide students with

a new carrier of independent learning and virtual interaction. Offline can integrate and innovate existing forms of activities, and provide an effective way for students to receive party history education after class. Although the virtual reality technology is not yet mature, and the cost of developing virtual party history education resources is high, we can make full use of a large number of equipment resources and computer and network technology talent resources in schools, independently develop unified standard virtual party history education resources, establish cooperative sharing mechanism among colleges and universities, and participate in the development of social virtual party history education resources, making it possible to establish a large virtual party history education resource bank, saving teaching costs and establishing cooperative education mode.

Party history education is an indispensable link in China's ideological and political education. Virtual reality technology is in line with modern people's learning characteristics because of its fresh and flexible form, free from the constraints of realistic conditions and open development system. It enhances the carrying capacity of ideological and political education, enriches the educational resources of party history, and becomes an effective way for society and colleges to carry out party history education.

5. System Design

This system is divided into two modules, namely, theme pavilion and historical reappearance. After running the program, users will enter the initial room, which is a small preview room. Users can choose to enter the theme pavilion module or the history simulation module through the interface placed on the wall of the initial room. The detailed function description of the system is shown in Table 1.

Table 1. System function module

Function template	Functional description
Theme exhibition hall	Theme exhibition halls are divided into a series of exhibition halls, such as the Memorial Hall of the People's Liberation Army, the Exhibition Hall of Party History, the Exhibition Hall of Passing on the Fire, and the Long March Exhibition Hall. These exhibition halls record the glorious history of the heroic struggle of the party and the people, not only the great course and touching story of the CPC 's leadership of the Chinese revolution, but also the great efforts and sacrifices made by China in socialist modernization under the leadership of the Communist Party. These are the precious wealth of the party and the country, and they are also vivid teaching materials for strengthening the construction of socialist spiritual civilization, inspiring patriotic enthusiasm and inspiring the national spirit. The cultural relics in the exhibition hall are the direct witness of red history, the "hard disk" for storing red genes, and the most vivid and convincing textbook for studying and educating party history.
history reappear	The simulation is divided into historical events such as Luding Bridge, Zunyi Conference, climbing the snow mountain and crossing the grassland. In the historical simulation of Luding Bridge, users will take the task of capturing Luding Bridge together with the original 22 members as an additional member of the 4th Regiment of the 2nd Division of the Red Army Corps, so that the Red Army can safely cross the Dadu River and get rid of Chiang. Users will lean against the bullets, carry guns and wooden boards, climb on the bare chain, lay wooden boards while advancing, so that the Red Army can smoothly reach the other side of the bridge, engage in crossfire with the national army and occupy Luding City.

6. Key Technologies

6.1. Scene Modeling and Visualization

This system uses UE4 as a virtual scene visualization

engine, which can achieve realistic and real-time rendering results, with the trade-off between system operation efficiency and rendering quality. It provides powerful effects such as light sources, materials, shadows, and reflections, and

can handle complex scene visualization with high quality and high speed. The environment, light, and material can be changed in real time, and it has the ability to render the environment, light, and material in real time. UE4's excellent real-time rendering ability provides a strong guarantee for the visualization of party history education scenes.

In the process of realizing the study and education system of party history based on virtual reality technology, the most essential thing is the design of scenes and characters. The high degree of historical restoration is closely related to scene design. (as shown in Figure 1).

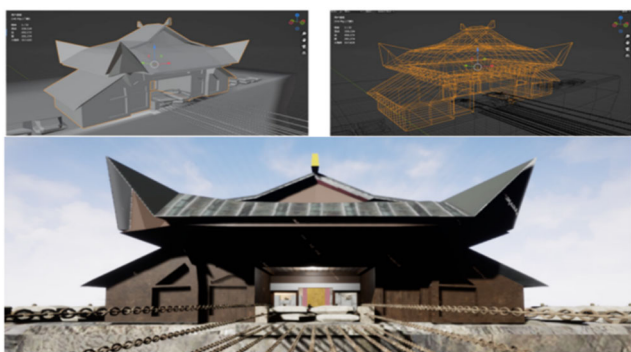


Figure 1. Scene Design of Flying Luding Bridge

The architectural plan of the memorial was completed by AutoCAD, which was then imported into 3Dmax for modeling. The external structure of the memorial hall is roughly modeled, while the internal structure and layout are completed by fine modeling and sub-fine modeling according to the photos of the memorial hall collected on the spot, and materials and textures are given at the same time. The picture presentation of the system is based on real-time rendering of the UE4 engine. In order to build the memorial hall scene accurately and intuitively, the layout of the memorial hall in the real scene and some exhibits are used for simulation modeling. Materials and lighting give the effect of simulating real exhibits. The pavilion is modeled by 3dmax and Style Builder, and the design is made with reference to the real pavilion and red elements (Figure 2).

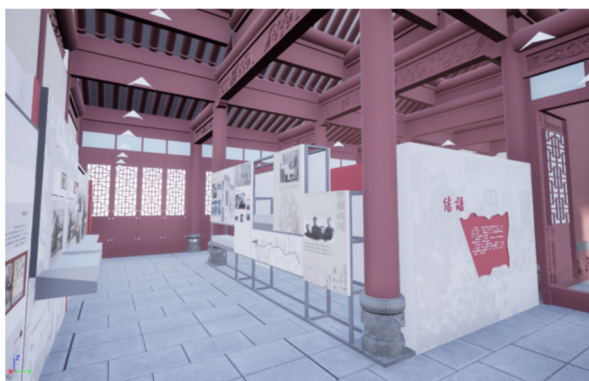


Figure 2. Final exhibition drawing of some exhibition halls

6.2. Virtual characters automatically follow

In the blueprint of teammates' characters, if the characters are manipulated to move, the teammates' characters will automatically follow the movement. In order to track each frame, you need to use the blueprint of setting Timer by events. You can run the next custom events with the time of time, so

that you can follow the player to move in real time. In order to make AI move, you first need to add a navigation grid area in the scene and adjust its size to adapt to the scene. Finally, the AI MoveTo Blueprint is used to make the characters move. The Pawn class of Blueprint selects itself and gets the player's role in Target Actor and adjusts the Acceptance Radius to 200, so that the characters will move to the position 2m away from the player and stop. The specific implementation logic is shown in Figure 3.

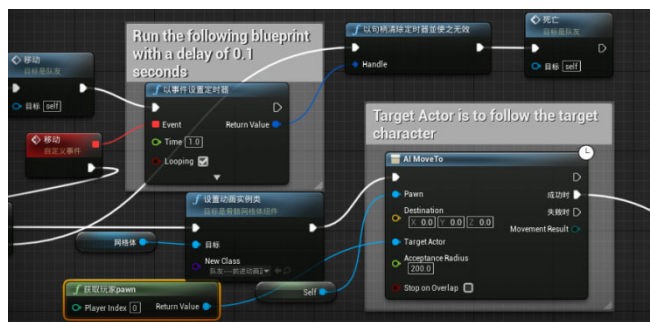


Figure 3. Persona design

6.3. Interactive design

The party history education system adopts Unity 3D unique blueprint programming to realize the design and development of human-computer interaction. Visual script class is very suitable for making interactive resources, such as opening and closing doors, object picking, animation triggering, sound triggering, material transformation, etc. It can respond according to the user's operation, position and voice recognition, and achieve the independent, automatic and intelligent human-computer interaction effect.

In this system, when the user is in the scene of flying the Luding Bridge, press the corresponding handle button, and a wooden board will be generated near the hand after 0.5s. The user can grab the wooden board and place it in the center of the bridge. In the area of the bridge where no wooden boards are placed, users can't pass. When users place wooden boards, they can only walk together. When the user places the plank, the plank will detect the preset plank position nearby, and automatically put it in the corresponding position, so as to prevent the user from placing it too scattered, resulting in the problem that it is always impassable. Shown in Figure 4.

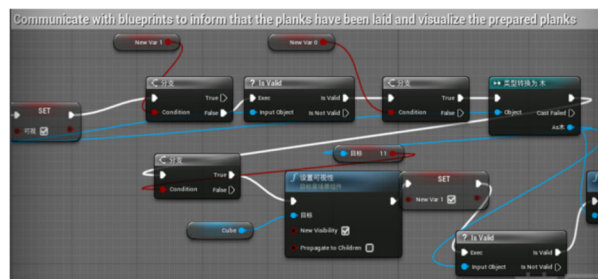


Figure 4. Generation and placement of wooden boards in system interaction

7. Testing and Evaluation

7.1. Experimental design and methods

In order to verify the practicability of the learning and education system of party history based on virtual reality technology, and whether this system can enhance students' learning interests, we randomly selected 12 students to use

this education system.

Before formal use, students will be given an appropriate time to familiarize themselves with the operation of this educational system, so as to minimize the influence of unfamiliar operation on the educational effect. The process is divided into two stages. The first stage is to enter the system for free viewing and learning. The second stage is to enter the system and follow the guide to study. After the completion of the familiarization stage, we additionally investigated students' subjective evaluation of the use of this system. In order to verify whether this system can improve students' learning interest, 10 students who participated in systematic training were randomly selected for investigation as the control group, while 12 students who did not participate in systematic training were selected for investigation. Finally, all 12 students who participated in the training were investigated by questionnaire in terms of their willingness to use the system, improving their practical ability, ease of use and enjoyment of the system. The data were all students' subjective feelings and evaluations.

7.2. Analysis of experimental results

In this study, the LIKERT five-component table method was used in all questionnaires. In the development of VR technology teaching methods, we should not only pay attention to improving students' knowledge level, but also help them generate interest in learning.

All the quantitative data of the experiment were converted into IBM SPSS 26.0 statistical format files for data analysis. The questionnaire included the authenticity of the scene, stimulating learning interest, using the educational system, ease of use and enjoyment of the system, and the Cronbach's alpha coefficient of the questionnaire was 0.781, which indicated that the questionnaire had acceptable consistency. Statistics on students' willingness to use this system, the degree of improving practical ability, the ease of use of the system, the degree of enjoyment and other issues are shown in Figure 5. It can be seen that students have great positive feedback on the use of the system, among which there is some negative feedback on the usability of the system, and it takes some time to practice before they can skillfully use the handle.

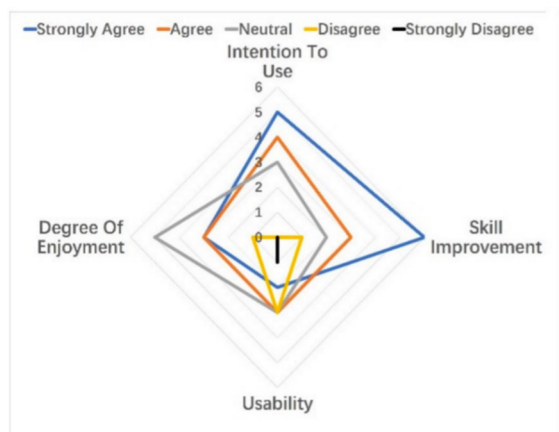


Figure 5. The system uses the feedback radar diagram

8. Conclusion

With the continuous development of virtual reality technology and the gradual reduction of hardware costs, virtual cultural education of the Party's history will be the future trend. The cloud system of party history education based on three-dimensional visualization has the characteristics of high simulation, good interaction, convenient use, abundant digital resources and strong scalability. It can break the constraints of time and space, allowing visitors to experience the scenes of revolutionary martyrs fighting bloody battles in an immersive environment without leaving their homes. It can play a big role in the development of Party history education and the popularization and promotion of the revolutionary spirit of Party history.

Acknowledgment

This work was supported in part by a grant from 2021 Ideological and Political Work Research Project of Hunan University of Humanities, Science and Technology.

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