

Research on Protection, Inheritance and of Sports Intangible Heritage Based on Virtual Technology—Taking Guizhou Sports Intangible Cultural Heritage as an Example

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Abstract: *Virtual reality technology (VR) as a new star of the new media in the 21st century, sports intangible heritage is a precious material culture handed down from human history. Applying virtual reality technology to the inheritance and development of sports intangible cultural heritage is an inevitable means to promote the high-quality development of sports intangible cultural heritage in the new era. The practical advantage of virtual reality technology applied to sports intangible heritage is that it can create a diversified learning platform and break the boundaries of space. Virtual reality technology promotes the high-quality development of sports intangible cultural heritage in several ways: interactive experiential design between users and sports intangible cultural heritage, building virtual reality platform to drive local economic development, and combining virtual-real design to ensure the authenticity of sports intangible cultural heritage.*

Keywords: *Guizhou; Sports intangible cultural heritage; Virtual reality technology (VR); High-quality development*

1. Introduction

Intangible cultural heritage is one of the symbols of the country's soft power and the expression of the country's "intangible culture" [1]. Sports intangible cultural heritage (hereinafter referred to as sports intangible cultural heritage) is the product of the interaction between human group, nature and society. It is constantly spread through human carrier and society as a way of transmission and inheritance. Therefore, it also has the characteristics of living state, folk, life and ecology. Since the 20th century, the society has been affected by the two-way impact of economy and science and technology, and the intangible cultural heritage of sports created by human beings in the long history is gradually falling down. The protection and inheritance of intangible cultural heritage of sports has become a century problem faced by every country. At present, most academic researches on sports intangible cultural heritage focus on "spatial distribution and influencing factors", "protection and inheritance", "tourism development" and other aspects. High-quality development and protection is not only the growth of economy and wealth, but also the common development of politics, culture and society. Virtual technology has become one of the core technologies of modern science and technology. The application of virtual technology in the protection and development of sports intangible cultural heritage will create great value. It is inevitable to apply virtual reality technology to the high quality development of sports intangible cultural heritage. How to effectively and reasonably apply virtual reality technology to the protection and inheritance of sports intangible cultural heritage has become one of the important ways to publicize and promote sports intangible cultural heritage. This paper will take some sports intangible cultural heritage in Guizhou as examples and put forward suggestions: interactive experiential design between users and sports intangible cultural heritage, digital management and preservation of sports intangible cultural heritage, building virtual reality platform to promote regional economic development, and combining virtuality and reality design to ensure the authenticity of sports intangible cultural heritage.

2. Overview

2.1. *Concept of sports Intangible cultural heritage*

On October 17, 2003, UNESCO promulgated the Convention for the Protection of Intangible Cultural Heritage, which put forward the concept of "intangible cultural heritage" for the first time [2]. According to the Convention on the Protection of Intangible cultural heritage, intangible cultural heritage is the product of a group's interaction with nature and history in order to adapt to the living environment. Sports intangible cultural heritage, under the category of non-material cultural heritage, is the most excellent and essential part of Chinese traditional sports culture, which needs to be protected and inherited. The connotation refers to "in the ancient and modern ethnic groups in China, it is regarded as the composition of our national culture, and can be passed down from generation to generation sports cultural activities, including related equipment and venues." Sports intangible cultural heritage, like other intangible cultural heritage projects, has regional, national and inheritance characteristics, but also has its own unique attributes: fitness and fairness. As the active subject of sports intangible cultural heritage, the group provides the basic premise for the dissemination and inheritance of sports intangible cultural heritage. Society as a space for the dissemination of sports intangible cultural heritage, its epochal and historical characteristics provide realistic conditions for the dissemination and innovation of sports intangible cultural heritage. Because of its unique generation background and development mode, the sport intangible cultural heritage inheritance mode is living inheritance. In the process of inheritance, sports intangible heritage is like a living body. In the process of inheritance and innovation from generation to generation, its original genes must be guaranteed to ensure its authenticity. The carrier of sports intangible cultural heritage is people. People are used as media to interact with the real society and exist as a whole with the inheritors and the society. The essence of human being is the sum of all social relations. In essence, sports intangible cultural heritage is also vital and not immutable. Influenced by many subjective and objective factors, it is more difficult to protect and inherit it.

2.2. *Concept of virtual reality technology*

Virtual reality (VR) is a computer simulation system that creates and experiences virtual worlds, using computers to create simulated conditions that allow users to enter virtual environments. Virtual reality technology is that people use electronic signals and various devices to transfer data from real life to the computer. The computer automatically generates 3D models according to the data to generate invisible objects with images and sounds. Although we can't see them with eyes, we can simulate them with computers, which is virtual reality technology. Virtual reality technology has the characteristics of interaction, immersion and imagination. In the application of virtual reality technology, people wear special gloves and glasses, simulate scenes that cannot be experienced in the real world through multiple sensory organs such as vision and hearing, and interact with the scenes. Realistic experience enables users to resonate with the real world. Virtual worlds can also provide users with good conditions for developing divergent thinking that are usually difficult to reach.

Virtual reality technology mainly includes two aspects, namely virtual reality technology and augmented reality technology. The difference between the two is whether the user is in a design space that contains real things. Virtual reality technology design space is completely a simulation, virtual space, does not contain anything in the real world. The augmented reality technology is to add some real elements of the real world in the design of virtual space, combining virtual and real, so that users have more experience.

3. Significance of the integration of virtual reality technology and sports intangible cultural heritage

Because of the national and regional characteristics of sports intangible heritage. At present, sports intangible cultural heritage is mainly passed from mouth to mouth, and the mode of passing from time to time is passed down or spread in a certain range of groups. To file, video and other ways to save. However, once such a single inheritance mode changes the inheritor or the existing cultural environment, it may lead to the endangered release of sports intangible cultural heritage projects. In this era of rapid social development, this single inheritance model has not been well integrated with the modern society. In addition, many sports intangible heritages have complex movement essentials, which require a long time to learn and accumulate. Boring practice day after day is what most

inheritors of sports intangible heritage projects have to go through. In addition, the older generation of inheritors do not pay attention to teaching methods and cannot impart the core essentials of the project to the next generation, which easily leads to the situation of no inheritors or a small number of people. Therefore, if the successor of the non-genetic inheritor makes use of virtual reality technology, the teaching method of sports intangible cultural heritage is easy to understand and accelerate the pace of inheritance. The virtual model of virtual reality can help sports intangible cultural heritage workers observe and learn more comprehensively and intuitively, so that learners can learn more easily and happily. In addition, the regional characteristics of sports intangible cultural heritage limit the inheritance or dissemination space of the project. Use the advantages of virtual reality technology to help eliminate the restrictions of non-inheritance and transmission of sports, let more people know about sports intangible cultural heritage, and better protect intangible culture.

4. Ways for virtual reality technology to promote high-quality development of sports intangible cultural heritage

According to the report of the 19th CPC National Congress, China's economy has shifted from a stage of high-speed growth to a stage of high-quality development^[3]. In 2021, The State Council approved the 14th Five-Year Plan for high-quality development. As social contradictions change, it is necessary to meet the needs of people for a better life with rapid growth. High-quality development is the main body of modern society. Virtual reality technology is one of the core of modern science and technology. Sports intangible cultural heritage is an important part of displaying the cultural characteristics of a country's soft power. It is also the repository of national beliefs, ideals and beliefs. It is the general trend of modern society to apply virtual reality technology and protect and inherit sports intangible heritage. The application scenarios of virtual reality technology in the protection and inheritance of sports intangible cultural heritage mainly include: interactive experiential design between users and sports intangible cultural heritage, building a virtual reality platform to drive regional economic development, and combining virtual-real design to ensure the authenticity of sports intangible cultural heritage.

4.1. Interactive experiential design between users and sports intangible cultural heritage

The interactivity of virtual reality technology means that the computer generates scenes similar to the real world through specific data, including sounds, images and stimulating signals from sensing devices. In the virtual space created by virtual technology, users stimulate the cerebral cortex through auditory, tactile, visual and other sensory systems to generate resonance with the real space. Taking Duzhu bleaching in Chishui, Guizhou as an example, Duzhu bleaching is a unique folk skill, which originated in Chishui. In 2011, Duzhu Piao was listed as a traditional sports event of ethnic minorities, but with the change of times, Duzhu Piao has gradually become a nearly lost skill. With the help of virtual reality technology, participants can use the virtual environment created by computers on the water Duzhu Piao, or design virtual Duzhu Piao games, so that users can fully experience the process of sports, and understand the history and national culture in the process. The experiential learning experience is something that is difficult to achieve with educational technology today. In addition, users can actively participate in the way of thinking and exploring the process of Duzhu Piao movement, which can stimulate participants' interest in learning, bring fun and enhance memory. The diversified interactive forms of virtual reality technology allow users not only to experience the image experience but also to operate in combination with real materials in the virtual space, which greatly improves the user's sense of experience.

Virtual reality technology integrates real scenes and objects for the visual experience of sports intangible heritage design. Combine visualization technology and system integration technology to establish sports intangible heritage production scene, add the practical experience of the successor, and arrange the level between different plates. In the production process of virtual scene, each plate is interrelated and interactive, which fully guarantees the authenticity of sports intangible cultural heritage scene. Application of sports intangible heritage virtual scene sports intangible heritage inheritance can help apprentices integrate into learning faster, feel the production of sports intangible heritage and skills and technologies comprehensive and in-depth. Quickly help the target object build one.

In virtual reality technology, users can use gloves, data glasses and other electronic devices to visualize the whole movement process of Duzhu Piao inheritors, and carry out physical operations in the virtual world constructed by computers. Secondly, professor Inheritors can be designed to explain

the key points of Duzhu Piao movement in the virtual world. From another perspective, it has actually achieved the effect of cross-domain time and space inheritance of sports intangible cultural heritage. On the other hand, the direct interaction between users and virtual sports intangible cultural heritage carried out by virtual reality technology makes the Duzhu Piao movement in a particular region spread to the world, enhance the confidence of local ethnic culture, improve the diversified ways of experiencing the movement, and improve the protection awareness of local groups.

4.2. Build a virtual reality platform to drive local economic development

Virtual reality technology is only emerging in recent years. Now the virtual reality experience platform on the Internet mainly involves games, movies and TV. Real-time 3D graphics generation technology, 3D display and sensor technology, application system development tools and other technologies are the key to virtual reality technology. These technologies are relatively mature now, so the key is the "real-time" generation. In order to ensure real-time, at least ensure that the refresh rate of graphics is not less than 15 frames per second, and preferably higher than 30 frames per second^[4]. The interactivity of virtual reality technology mainly relies on sensing technology, but at present, the current technology is not perfect. Related research should be further in-depth to meet the needs of applications. The tracking accuracy and range of virtual reality technology need to be improved and enhanced. The key to the application of virtual reality is to find the right occasion and object. Choosing the right object can greatly improve production efficiency, reduce labor intensity and improve product quality. In order to achieve this goal, we need to study the development tools of virtual reality. After defining the key technologies of virtual reality technology, the most important point is to build a legal and operational virtual reality experience platform. First, the platform must comply with laws and regulations, and second, it must be designed according to local policies and regulations as well as feasible development plans. Finally, the core purpose of building a virtual reality technology platform is to promote the inheritance and development of local sports intangible cultural heritage, followed by economic development. When using this platform, the interests of the inheritors shall not be harmed. Most sports intangible cultural heritage is passed down from generation to generation through oral transmission. According to the current reality, the inheritors usually inherit from local nationalities, but they do not make much profit. The first purpose is to protect and inherit. Otherwise, the protection and inheritance of sports intangible cultural heritage will be greatly hindered. Secondly, it is to promote local economic development. Virtual reality technology platform is used to combine online and offline "Internet + tourism" to drive local economic development under the premise of ensuring the protection of intangible sports heritage. For example, Qianhu Miao Village in Guizhou has the national intangible heritage Xijiang Qianhu Miao Village stilt. Qianhu Miao Village achieved a comprehensive tourism income of 6,972,100 yuan during the Dragon Boat Festival in 2022. If the virtual reality platform is opened at the same time during this period, the design of virtual reality street and stilted building image design of Qianhu Miao Village will be a major breakthrough point for local economic development.

4.3. The combination of virtual-real design ensures the authenticity of sports intangible heritage

Although virtual reality technology can transform acquired digital data into virtual space and original materials into visual images, it has outstanding advantages in improving the dissemination of sports intangible cultural heritage. However, in practical application, it also needs to adjust according to the material conditions of objective reality. Some conditional sports intangible heritage may achieve remarkable results by using augmented reality technology. Taking Guizhou Duzhu Piao Movement as an example, virtual reality technology does not replace this traditional skill in the process of virtual environment design. This is despite the fact that virtual reality can mimic real environments and provide psychological and sensory stimulation. However, in essence, it serves to protect and inherit handicrafts. In the design, appropriate modifications should be made according to the actual conditions and design needs. For example, users can add some physical materials to the virtual experience of the vellum craft, such as the bamboo and water environment required for the Duzhu drift movement. Let users have real auditory, tactile and other sensory stimulation in the virtual world. Such a design combining virtuality and reality not only plays an important role in spreading intangible sports heritage skills, but also ensures the authenticity of this traditional skill.

5. Conclusion

The rise of intangible cultural industries further promotes the visual development of virtual reality

technology. Virtual reality technology continuously integrates key technologies to design and optimize the visual model of sports intangible cultural heritage, strengthens the visual experience model of experience, and makes the visual experience more realistic model. For example, dynamic environment modeling technology and virtual environment establishment are the key systems of virtual reality technology. The main purpose of the application is to quickly acquire 3D data of the physical environment objects of the sport intangible cultural heritage, and build the corresponding virtual environment model according to the requirements of the application. In the future, virtual reality technology will be constantly updated, and virtual reality technology will also develop more mature. At this time, virtual reality technology should be integrated into the inheritance and dissemination of sports intangible cultural heritage to improve the development of visual technology industry of sports intangible cultural heritage, so as to achieve high-quality development of sports intangible cultural heritage conforming to the requirements of The Times.

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