

Research on the application of digital technology in the safeguarding of intangible cultural heritage

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Abstract

With the rapid development of information technology, digital technology is increasingly widely used in the protection of intangible cultural heritage. This article discusses the importance of digital technology in the safeguarding of intangible cultural heritage, its specific application forms, problems and challenges, and future development directions. Through the research on digital recording and archiving, virtual display and experience, big data analysis and decision support, new media communication and promotion, this paper expound the new opportunities and new ways brought by digital technology for the protection of intangible cultural heritage, and also analyzes the problems that may arise in the application process in terms of technology, capital, talent and culture, and puts forward corresponding solutions, in order to provide useful reference for the effective protection and inheritance of intangible cultural heritage.

The research results are as follows:

1. Digital technology has important application value in the protection of intangible cultural heritage, which can improve the protection effect, expand the scope of dissemination, and promote the sustainable development of intangible cultural heritage.

2. The application of digital technology in the protection of intangible cultural heritage faces problems in terms of technology, capital, talent and culture, and needs to be solved

accordingly.

3. Strengthening policy support, cultivating professionals, establishing technical standards, and promoting the deep integration of culture and technology are the keys to promoting the effective application of digital technology in the safeguarding of intangible cultural heritage.

Keywords: digital technologies, safeguarding intangible cultural heritage, Applied research

1. Introduction

Intangible cultural heritage is the traditional cultural expressions that have been passed down from generation to generation by peoples and are considered part of their cultural heritage, as well as the objects and places associated with traditional cultural expressions, performing arts, social practices, festivals, knowledge and practices about the natural world and the universe, and traditional handicraft skills. Intangible cultural heritage is not only a melting pot of cultural diversity, but also a foundation for sustainable human development, and they are essential for human creativity, social cohesion and cultural identity. As modernization accelerates, much intangible cultural heritage is in danger of disappearing or mutating. Digital preservation refers to the use of modern information technology, such as big data, cloud computing, artificial intelligence, etc., to collect, organize, store, display and disseminate intangible cultural heritage to ensure its permanent preservation and sustainable use. Digital technology can not only effectively solve the problem of difficulty in preserving and inheriting intangible cultural heritage, but also enable more people to understand and appreciate intangible cultural heritage through digital means, thereby enhancing cultural awareness and cultural self-confidence. The purpose of this paper is to deeply discuss the application and practice of digital technology in the protection of intangible cultural heritage, analyze the current situation and

problems of digital protection of intangible cultural heritage, and put forward corresponding countermeasures and suggestions. Through this study, it is expected to promote the in-depth development of digital protection of intangible cultural heritage, promote the inheritance and innovation of intangible cultural heritage, and contribute to the inheritance and development of excellent traditional Chinese culture.

Research objective:

1.The significance of analyzing the application of digital technology in the protection of intangible cultural heritage.

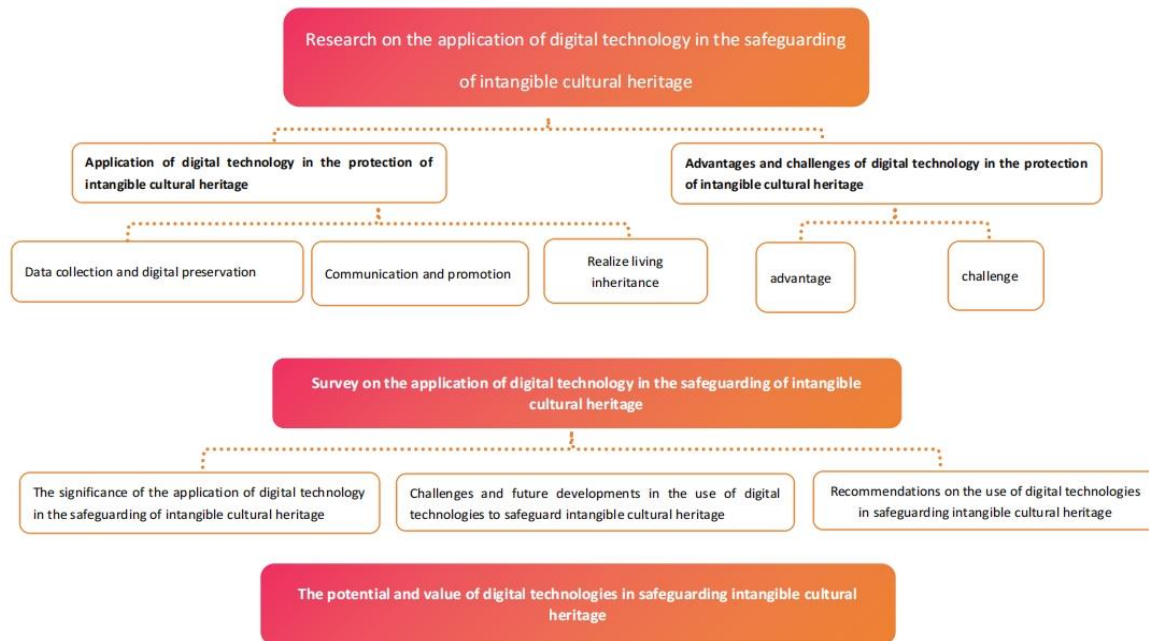
2.The application of digital technology in the protection of intangible cultural heritage is analyzed, and corresponding solutions are proposed.

3.To explore the application of digital technology in the protection of intangible cultural heritage, and to provide theoretical support and practical guidance for the protection and inheritance of intangible cultural heritage.

2. Methodology

The purpose of this study is to deeply explore the application of digital technology in the protection of intangible cultural heritage, analyze its advantages and disadvantages, and propose corresponding solutions, so as to provide theoretical support and practical guidance for the protection and inheritance of intangible cultural heritage. Enrich the theoretical system of intangible cultural heritage protection and provide a theoretical basis for the application of digital technology in the cultural field. Provide new technical means and methods for the protection and inheritance of intangible cultural heritage, improve the effectiveness of protection, expand the scope of dissemination, and promote the sustainable development of

intangible cultural heritage. The main conceptual framework of this study adopts the following mind map:



Research methods

(1) Through panel discussions, relevant information was gathered and theoretical support and practical guidance for the safeguarding and transmission of intangible cultural heritage were discussed.

(2) Analyze the data through the following content:

(a) The intrinsic significance of digital technology protection in Zibo glaze.

(b) Application of digital technology in the protection of intangible cultural heritage.

(c) Advantages and challenges of digital technology in the protection of intangible cultural heritage

(3) Analyzes the application of digital technology in the design innovation of Zibo glaze.

(4) Case studies on the application of digital technologies to the safeguarding of intangible cultural heritage

(5) Specific applications of digital technologies in the safeguarding of intangible cultural heritage.

(6) Conclusion and Outlook.

Application of digital technology in the protection of intangible cultural heritage

As a treasure of human civilization, intangible cultural heritage (hereinafter referred to as "intangible cultural heritage") carries rich historical and cultural information and national feelings. However, with the acceleration of modernization and globalization, many intangible cultural heritage items are at risk of disappearing. The vigorous development of digital technology has brought new opportunities for the protection and inheritance of intangible cultural heritage. This article will discuss the application of digital technology in the safeguarding of intangible cultural heritage from multiple perspectives.

1) Digital storage and documentation: Digital storage and recording is the foundation of intangible cultural heritage protection. Through digital technology, intangible cultural heritage can be converted into a digital format for long-term and stable storage and recording. This includes filming, recording, and digitizing performances such as traditional crafts, music, dance, and opera, as well as the use of 3D scanning, virtual reality, and other technologies to digitally model physical objects. For example, digital image processing technology can be used to capture details such as patterns and textures of intangible cultural heritage with high precision, ensuring that the original information of intangible cultural heritage can be completely preserved. At the same time, through big data technology, the diversified information of intangible cultural heritage can be integrated and analyzed, revealing the laws and trends of the evolution of intangible cultural heritage, and providing a scientific basis for the protection and inheritance of intangible cultural heritage.

2) Digital Restoration & Protection: For some endangered intangible cultural heritage items, digital technology can provide the possibility of restoration and protection. The use of digital technology to restore old materials can restore them to their original appearance; Through digital simulation, it is possible to virtually restore the lost cultural heritage. For example, with the use of 3D scanning and 3D printing technology, damaged intangible cultural heritage can be reproduced and restored to restore their brilliance. At the same time, digital technology can also be used for the monitoring and maintenance of intangible cultural heritage items, and problems in the protection of intangible cultural heritage can be detected and solved in a timely manner.

Advantages and challenges of digital technology in the protection of intangible cultural heritage

Advantage

1) Efficient storage and easy retrieval: Digital technology can achieve high-precision capture and recording of intangible cultural heritage items, ensuring that the original information of intangible cultural heritage is completely preserved. Digitized intangible cultural heritage resources can be stored in the cloud or in a database, which is convenient for rapid retrieval and sharing, and improves the utilization efficiency of intangible cultural heritage resources.

2) Widespread dissemination and deep impact: Digital media has the characteristics of rapid dissemination and wide coverage, and through the Internet, social media and other platforms, the cultural connotation and artistic value of intangible cultural heritage can be conveyed to more people. Virtual reality, augmented reality and other technologies can provide the audience with an immersive experience and make intangible cultural heritage more vivid and intuitive.

3) Innovation, Inheritance and Development: Digital technology has provided new ways and means for the transmission of intangible cultural heritage, such as online education and virtual classrooms, so that more people can have access to the learning and practice of intangible cultural heritage. Through digital technology, intangible cultural heritage elements can be integrated into modern design, fashion industry and other fields, creating cultural products with intangible cultural heritage characteristics, and providing new impetus for the inheritance and development of intangible cultural heritage.

4) Protection of Intellectual Property Rights: Digital technologies, especially blockchain technology, can be used to protect the intellectual property rights of intangible cultural heritage works and ensure that the rights and interests of artists and bearers are protected.

Challenge

1) Technology is updated quickly: The digital preservation of cultural heritage relies on evolving information technologies, such as high-resolution scanning, virtual reality, augmented reality, etc. However, the rapid evolution of technology means that the technologies adopted today may become obsolete in the near future, leading to wasted upfront investment and compatibility issues with digital outcomes.

An overview of digital technologies and their applicability in the safeguarding of intangible cultural heritage

1) Digital collection technology includes image collection, audio collection, video collection, etc., which can record the physical objects, performances, and skills of intangible cultural heritage in digital form. Digital storage technologies include hard disk storage, optical disc storage, cloud storage, etc., which can preserve digitized intangible cultural heritage resources for a long time. Virtual reality technology allows users to immerse themselves in the charm of intangible cultural heritage through a computer-generated virtual environment.

Augmented reality technology combines virtual information with real-world scenes to provide users with a richer intangible cultural heritage experience. Big data technology can collect and analyze large amounts of intangible cultural heritage data to support conservation decisions. Artificial intelligence technology can be used to classify, retrieve, and identify intangible cultural heritage to improve the efficiency of protection.

2) Use VR/AR technology to build virtual intangible cultural heritage scenes. Through virtual reality and augmented reality technology, a virtual scene of intangible cultural heritage is constructed, so that the audience can feel the charm of intangible cultural heritage in an immersive way. Design interactive intangible cultural heritage experience programs to engage the audience and enhance their sense of experience and participation.

Successful case study in China

1) A case study of digital preservation and display at the Palace Museum

The Palace Museum has used digital technology to comprehensively record and archive the cultural relics of the Palace Museum, and has established a database of cultural relics of the Palace Museum. At the same time, using virtual reality and augmented reality technology, the virtual exhibition project of the Forbidden City has been developed, allowing the audience to experience the charm of the Forbidden City in an immersive way.

2) A digital experience project in Yunnan Nationalities Village: Using virtual reality and augmented reality technology, Yunnan Nationalities Village has developed a Yunnan ethnic culture experience project, allowing tourists to experience the traditional culture and folk customs of various ethnic groups in Yunnan in a virtual environment.

Successful cases abroad

1) Digitized museum of the Louvre, France.

The Louvre Museum in France has established the Louvre Digital Museum using digital

technology, allowing visitors to enjoy the Louvre's cultural relics and artworks anytime and anywhere through the Internet.



Figure1, Digital artwork "The Forbidden City Digital Museum" Image source: Baidu, 2024, intercepted

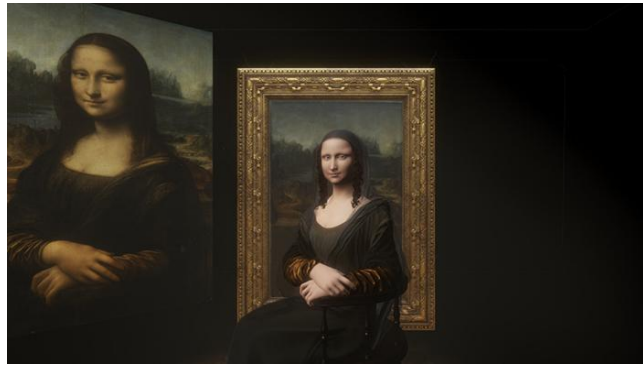


Figure2, Digital Museum "Virtual Mona Lisa" Image source: Baidu, 2024, intercepted

Summary and enlightenment of case experience

1) Strengthen technological innovation and application

We will continue to explore and innovate the application of digital technology in the protection of intangible cultural heritage, and improve the effectiveness and experience of protection.

2) The excavation and display of cultural connotation

In the process of digital technology application, we should pay attention to excavating and displaying the cultural connotation of intangible cultural heritage, and avoid technological abuse and cultural distortion.

3. Conclusion

With the continuous development of digital technology, the application of digital technology in the protection of intangible cultural heritage will be more extensive and in-depth in the future,

bringing more opportunities and challenges to the protection and inheritance of intangible cultural heritage. In the future, it is necessary to further strengthen the integration and innovation of digital technology and intangible cultural heritage, explore more effective ways of protection and inheritance, and make greater contributions to the inheritance and development of human civilization. In short, digital technology provides new opportunities and ways for the protection and transmission of intangible cultural heritage.

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