RESEARCH ARTICLE

Exploring the Application of Digital Technology in the Protection and Dissemination of Intangible Cultural Heritage of Dragon and Lion Dance Sports

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Abstract: With the rapid development of digital technology, the time is ripe for digital technology to be integrated into the protection and transmission of intangible cultural heritage of dragon and lion dance sports (dragon and lion dance). This paper discusses the application paths of digital technology in the protection and dissemination of dragon and lion dance, including the construction of a digital system, the establishment of a digital cultural archive, the construction of a digital display platform, the development of intangible cultural heritage online courses and the promotion of digital innovation. These paths are aimed at accurately recording and preserving dragon and lion dance skills through high-tech means, broadening dissemination channels, enhancing interactive cultural experiences, and promoting international dissemination. The integration of digital technology not only provides a new means for the protection of dragon and lion dance, but also injects new vitality into its inheritance and development, which is of great significance for the promotion of Chinese outstanding traditional culture.

Keywords: digital technology; dragon and lion dance; sports cultural heritage; intangible cultural heritage protection and inheritance; cultural confidence

Introduction

Dragon and lion dances are widely distributed in China, especially prevalent in the southeastern region and coastal cities. This sports intangible cultural heritage has a unique artistic charm, rich cultural connotation and a wide mass base, carrying deep national emotions and historical memories. In the wave of globalisation and modernisation, the Dragon and Lion Dance also needs to explore the direction of inheritance and innovative development, and strive for new vitality and vigour in the new era. The current rapid development of digital technology provides unprecedented opportunities for the protection and dissemination of intangible cultural heritage. Through digital means, accurate collection, efficient storage and wide dissemination of intangible cultural heritage resources can be achieved, breaking the limitations of time and space, so that more people can understand, contact and love these valuable cultural heritage. Therefore, it is of far-reaching significance to explore the application path of digital technology in the protection and dissemination of

dragon and lion dance sports intangible cultural heritages, which not only helps to pass on and carry forward the excellent traditional Chinese culture, but also stimulates the innovative vitality of intangible cultural heritage culture and promotes its deep integration with the modern society.

1. The Current Situation of the Protection and Dissemination of Dragon and Lion Dance Intangible Cultural Heritage of Sports

Dragon and lion dance is the traditional sports intangible cultural heritage of the Chinese nation, carrying a profound cultural heritage and national spirit, and has a wide distribution and a deep mass base throughout the country. However, with the acceleration of the modernisation process, the inheritance and development of the Dragon and Lion Dance is facing many challenges. On the one hand, the interest of the younger generation in traditional culture is gradually weakening, and the inheritors of the Dragon and Lion Dance are aging seriously, with many skills facing the risk of being lost. On the other hand, the dissemination channels of dragon and lion dance are relatively single, relying mainly on traditional festivals and folk performances, making it

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difficult to reach a wider audience. In terms of protection, although the national and local governments have taken a series of measures, such as listing dragon and lion dance on the intangible cultural heritage list and setting up inheritance bases, they still face the problems of insufficient funds and a lack of professional talents in actual operation. Moreover, the digital protection of dragon and lion dance is still in its infancy, and the digital collection, collation and storage of related resources have not yet been fully carried out. In terms of dissemination, although some regions have tried to publicise and promote the dragon and lion dance through new media platforms, the overall effect is limited and no effective dissemination mechanism has been formed. Therefore, it is of great significance to explore the application of digital technology in the protection and dissemination of dragon and lion dance sports intangible cultural heritages, in order to promote their inheritance and development in the new era.

2. The Scope of Application of Digital Technology in the Protection and Dissemination of Dragon and Lion Dance

2.1. Digital collection and recording

In the protection of sports intangible cultural heritage, digital technology, such as high-definition camera, three-dimensional scanning, drone aerial photography and other advanced technical means, can achieve all-round, multi-angle, high-precision data collection of dragon and lion dance and other sports intangible cultural heritage projects. These technologies can not only accurately capture the movement details, performance scenes and costume features of dragon and lion dances, but also record the historical and cultural background and inheritance stories behind them, providing a solid foundation for subsequent digital processing, storage and dissemination (Song, Fu, & Li, 2024). Through digital collection and recording, sports intangible cultural heritage items can be permanently preserved, avoiding the loss of skills and cultural oblivion due to the passage of time, environmental changes and other factors. At the same time, these digital resources can also be used to produce digital museums, virtual reality experiences, etc., so that more people can immerse themselves in the glamour of sports intangible cultural heritage, thus promoting its inheritance and development.

2.2. Digital display and dissemination

In terms of digital display and dissemination, digital technology through high-precision 3D scanning, virtual reality (VR) and augmented reality (AR) technology can present the sports intangible cultural heritage projects to the audience in a three-dimensional and vivid way, breaking the time and space constraints, so that the audience can immersively experience the essence of traditional skills. On this basis, a complete database of sports intangible cultural heritage can also be established to store, describe, integrate, retrieve and backup the text, picture, video and audio content of each sports intangible cultural heritage, and further carry out digital simulation, restoration and display, which provides rich digital resources for the inheritance of sports intangible cultural heritage (He, 2019). At the same time, using diversified communication channels such as short videos, live broadcasts, special apps and mainstream media platforms, digital technology has greatly broadened the dissemination scope and audience groups of sports intangible cultural heritage, enhanced the public's sense of identity and sense of belonging to sports intangible cultural heritage, and promoted the popularisation and innovative development of sports intangible cultural heritage culture.

2.3. Digital interaction and experience

In terms of digital interaction and experience, traditional sports intangible cultural heritage projects are presented in a more vivid and intuitive way through digital technology. Using virtual reality (VR), augmented reality (AR) and other technologies, the audience can immersively participate in the interactive experience of sports intangible cultural heritage and feel the unique charm and cultural connotation of traditional sports projects. This digital interactive way not only breaks the limitation of time and space, so that more people can understand and experience sports intangible cultural heritage anytime and anywhere, but also greatly enhances the dissemination and influence of sports intangible cultural heritage. At the same time, the digital interactive experience also provides new ideas and methods for the inheritance of sports intangible cultural heritage, stimulates the interest and love of the younger generation in traditional culture, and injects new vitality into the protection and inheritance of sports intangible cultural heritage.

2.4. Digital Innovation and Integration

In terms of digital innovation and integration, through the innovative use of digital technology, sports intangible cultural heritage projects can be

integrated with modern technology elements to create a new presentation and experience mode. For example, the use of 3D scanning and modelling technology can accurately restore the movements and techniques of sports intangible cultural heritage projects, allowing the audience to learn and feel immersively in the digital space. At the same time, digital platforms have also become a new channel for the dissemination of sports intangible cultural heritage, allowing more people to come into contact with and fall in love with these traditional sports programmes through online exhibitions, interactive games and other forms. Digital innovation and integration not only provide a new path for the protection of sports intangible cultural heritage, but also inject new impetus into its inheritance and development, giving sports intangible cultural heritage a new lease of life in the digital era.

3. The Value of Digital Technology Empowering the Preservation and Dissemination of Dragon and Lion Dance Sports Intangible Heritage

First of all, digital technology provides a new way of preservation and dissemination for the traditional sport of dragon and lion dance, ensuring the integrity and authenticity of its skills and culture. Traditional dragon and lion dance skills often rely on oral transmission and hand-to-hand teaching, which are easily limited by time and space, while digital technology can record and preserve every detail of dragon and lion dance with high precision, forming a digital archive, so that the inheritance of skills is no longer subject to these limitations, thus effectively avoiding the loss and deformation of skills (Zhong, 2024). Secondly, digital technology has greatly expanded the dissemination range and influence of dragon and lion dance. While traditional dragon and lion dance performances are often confined to specific geographical and cultural circles, digital technology allows dragon and lion dance to spread rapidly across the globe through the Internet, social media and other platforms, attracting the attention and participation of more people. This not only helps to enhance the popularity and influence of dragon and lion dance, but also injects new vitality into its survival and development in modern society. Again, digital technology also provides new opportunities for the innovative development of dragon and lion dance. By combining with modern technology, dragon and lion dance can incorporate new creativity and elements on the basis of retaining the essence of

tradition and realising the fusion of tradition and modernity. This kind of innovation not only helps to enhance the attractiveness and competitiveness of dragon and lion dance, but also provides new impetus for its inheritance and development in modern society. Overall, digital technology empowers the protection and dissemination of dragon and lion dance, which is of great significance for the inheritance and promotion of Chinese outstanding traditional culture, the promotion of cultural diversity and social harmony, and the enhancement of national self-confidence and international influence. It allows us to better protect and pass on the dragon and lion dance as a traditional sport in modern society, and let it shine in the digital era.

4. Exploring the Application Path of Digital Technology in the Protection and Dissemination of Dragon and Lion Dance Intangible Cultural Heritage Sports
4.1. Constructing a framework for the digitisation system of dragon and lion dance and sports intangible cultural heritage resources

In order to effectively deal with the problems of skill loss and cultural faults that may be caused by traditional recording methods, adopting digital means to permanently preserve and pass on these valuable cultural heritages is the optimal solution for the protection and inheritance of NHs nowadays. First of all, it is necessary to integrate the existing resources, including the declaration materials, performance videos, historical documents, interview records of the inheritors of the national and provincial dragon and lion dance intangible cultural heritage projects, etc., and carry out systematic collation and digital conversion. And the use of digital technology on the traditional skills of dragon and lion dance, performance forms, props production, etc. to carry out a full range of digital records, the formation of high-precision digital models and virtual scenes (Zhou, Guo, & Liu, 2024). Secondly, a digital museum or online platform for dragon and lion dance should be actively built as a centralised display window for digital resources. The platform should be equipped with detailed classification navigation and intelligent search function, so that users can conveniently find and learn the relevant knowledge of dragon and lion dance. Once again, it is also necessary to establish a long-term mechanism for the digital protection and inheritance of dragon and lion dance, including regular updating of data, copyright

protection, and digital skills training for inheritors. Through cooperation with colleges and universities and scientific research institutions, the research and development and innovation of digital technology of dragon and lion dance are carried out to promote the continuous optimisation and upgrading of the digital system. Finally, the digital system needs to introduce inheritors to participate in the creation and review of digital content to ensure the authenticity of digital resources and the accurate communication of cultural connotations. The digital system can broaden the communication channels of dragon and lion dance, enhance its visibility and influence in modern society, and promote the revitalisation and innovative development of traditional culture.

4.2. Establishment of digital cultural archives

In order to establish a digital cultural archive of the dragon and lion dance, it is necessary to comprehensively collect and organise the existing dragon and lion dance related resources, including historical documents, performance videos, props pictures, and records of interviews with inheritors. High-resolution scanning equipment is used to digitally convert paper documents, high-definition camera technology is used to record the performance process, and three-dimensional scanning technology is used to accurately model key props. By providing training and technical support to the inheritors, it is possible to enhance their ability to use digital tools to record and disseminate the skills of dragon and lion dance, providing strong support for the continued enrichment and improvement of the digital cultural archives. Next, these digital resources should be systematically classified and coded, and archived according to the dimensions of different genres, regional characteristics, and history of dragon and lion dance. Detailed metadata descriptions are created for each digital resource item, including information such as time, location, inheritor, and cultural background, to facilitate subsequent retrieval and management (Tu & Park, 2023). In order to guarantee the security and accessibility of digital cultural archives, a stable data storage system needs to be set up, using cloud computing and distributed storage technology to ensure safe backup and fast access to data. The system should provide online browsing, downloading and searching functions for digital cultural archives to facilitate access by the public and researchers. In addition, it is necessary to update and maintain the digital cultural archives on a regular basis to ensure the timeliness and accuracy of the data.

4.3. Build a digital display platform

In order to build a digital display platform for the dragon and lion dance sports intangible cultural heritage, it is necessary to integrate the established digital cultural archives and other multimedia resources, such as high-definition performance videos, three-dimensional models, and virtual reality (VR) experiences. Using advanced web development technology and graphic processing technology, a user-friendly and interactive online display interface is designed. On the platform architecture, a clear navigation menu should be set up, including multiple sections such as historical introduction of dragon and lion dance, genre characteristics, inheritor style, performance appreciation, etc., so as to facilitate users to quickly locate the content according to their interests (Li & Guo, 2022). Using big data and artificial intelligence technology, intelligent recommendation function can be realised to push relevant information on dragon and lion dance according to users' browsing history and preferences. To enhance user immersion and engagement, the platform should support the integration of VR and augmented reality (AR) technologies. Users can experience a virtual dragon and lion dance performance site through VR helmets, or superimpose a 3D model of the dragon and lion dance in the real environment through AR technology to achieve an interactive experience that combines reality and reality. The platform should also provide social functions, such as comment areas and sharing buttons, to encourage users to post after-viewing and exchange ideas, forming a community of dragon and lion dance enthusiasts. At the same time, a special zone for inheritors can also be set up, so that inheritors can directly interact with users and share their skills, further enhancing the dissemination and influence of the Dragon and Lion Dance sports intangible cultural heritage.

4.4. Developing online courses on intangible cultural heritage

In order to develop an online curriculum for the dragon and lion dance, a curriculum research and development team consisting of intangible cultural heritage inheritors, cultural scholars, educational technologists and other multi-disciplinary personnel can be formed first. The team will work together to design the course content, covering many aspects of the historical origins, cultural connotations, basic skills, and genre characteristics of dragon and lion

dance to ensure the systematic and professional nature of the course (Sima, Dai, & Peng, 2024). In the course production, high-definition camera and recording equipment are used to record the live teaching of the inheritors, combined with three-dimensional animation and virtual reality technology to simulate the performance scene, and produce a vivid and intuitive teaching video. At the same time, supporting online interactive teaching materials are developed, including graphic tutorials, simulation tests, etc., to help students consolidate what they have learnt. To ensure learning effectiveness, the course platform should support personalised learning path planning and provide customised learning advice based on learners' learning progress and abilities. By setting up an online Q&A area, trainees' questions can be answered regularly by a team of inheritors and experts, forming a good atmosphere of teacher-student interaction. In addition, the course platform should also have the function of learning achievement authentication, issuing electronic certificates to students who have completed the required courses and passed the assessment, so as to enhance the learning motivation and sense of achievement of the students. In order to attract more people who are interested in dragon and lion dance to participate in learning, the dissemination scope and influence of dragon and lion dance can be further expanded through the promotion of courses on social media and online education platforms.

4.5. Promoting digital innovation

In order to promote the development of digital innovation in dragon and lion dance sports NRS, cross-disciplinary cooperation can be strengthened by joining forces with science and technology enterprises, cultural organisations, colleges and universities, and jointly exploring the innovative application of digital technology in the protection and dissemination of dragon and lion dance sports NRS. Firstly, activities such as digital innovation seminars can be organised to stimulate creative inspiration and promote technological exchange and integration. Second, digital product development based on dragon and lion dances, such as games, animations, and virtual reality experiences on the theme of dragon and lion dances, can be encouraged and supported to expand their application space in the modern entertainment industry (Zou, 2024). Once again, the integration of dragon and lion dance elements with modern technology products should be

promoted, such as the development of smart wearable devices with dragon and lion dance motifs and smart household items, so that traditional culture can be integrated into people's daily life in a more fashionable and convenient way. Finally, attention can also be paid to the expansion of the international market, through international cultural exchange activities, online exhibitions and other forms of cooperation with relevant foreign institutions and enterprises, to promote the digital achievements of dragon and lion dance to the world, and to promote the international exchange and mutual understanding of culture.

Conclusion

Digital technology has opened up a brand new path for the protection and dissemination of dragon and lion dance, and its positive impact and potential value should not be ignored. Through digital means, not only can we accurately record and permanently preserve the skills and cultural connotations of dragon and lion dance, effectively avoiding the loss of traditional skills, but also break the geographical limitations, broaden the dissemination channels, so that more people will understand and fall in love with this traditional culture. Digital technology has given new vitality to the dragon and lion dance. Through cutting-edge technologies such as virtual reality and augmented reality, traditional culture is presented to the public in a more vivid and intuitive form, which enhances the interactivity and experience of culture. In addition, digitalisation also helps the international dissemination of dragon and lion dance culture, promotes cultural exchanges and mutual understanding between Chinese and foreign cultures, and enhances the international influence of Chinese culture. It can be said that digital technology for dragon dance and lion dance sports heritage heritage and development of the wings, so that it in the new era glow more brightly.

Conflict of Interest

The authors declare that they have no conflicts of interest to this work.

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