

Research on the Protection and Inheritance of Cultural Heritage under the Integration of Culture, Tourism, Science and Education

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Abstract: Based on the background of the era of 'Internet+', this paper systematically analyses the real dilemmas and development opportunities of cultural heritage protection and inheritance, and focuses on promoting the integrated development of culture, tourism and science and education in order to achieve the sustainable development of the protection and inheritance of cultural heritages. The study shows that modern impact, lack of funds, lagging technical means and other problems are the main dilemmas facing the protection of cultural heritage, and advocates the protection of cultural heritage through living heritage, digital technological innovation, and the popularisation of education as an important link to deepen cultural identity, so as to build up a sustainable circular mechanism of 'protection-use-inheritance', which provides an opportunity for the transformation of cultural heritage into a modernity and provides an opportunity for the development of cultural heritage. It advocates the protection of cultural heritage through living heritage, digital technology innovation, and education popularisation as an important link to deepen cultural identity, and builds a sustainable circular mechanism of 'protection-use-inheritance', which provides a solution path for the transformation of cultural heritage into modernity.

1. Introduction

Cultural heritage refers to all kinds of intangible or tangible cultural resources owned, mastered, controlled or protected by a State, a nation, a group or an individual, which have significant historical, artistic or scientific value, contain special cultural information, bring potential, indirect or direct socio-economic benefits, and are in conformity with the United Nations or national regulations, and can be classified as tangible cultural heritage and intangible cultural heritage. The former encompasses physical carriers such as historical buildings, archaeological sites and movable cultural relics, while the latter encompasses cultural practices such as traditional skills, festive ceremonies and oral traditions. The report of the 20th CPC National Congress proposes: 'Adhere to shaping tourism with culture and highlighting culture with tourism, and promote the deep integration and development of culture and tourism', which provides an important policy guideline for the high-

quality development of China's culture and tourism industry in the new period. As the historical crystallisation of civilisation and the carrier of cultural genes, cultural heritage not only solidifies the wisdom and artistic achievements of a specific historical period in material form, but also preserves the collective memory and spiritual code of the nation through living inheritance. The integration of culture, tourism, science and education can inject new momentum into the protection and inheritance of cultural heritage, in which education can systematically transfer knowledge and cultivate emotional ties, thus playing a key role in enhancing public awareness of cultural heritage protection, while the integration of culture and science and technology is the trend of cultural heritage protection, and the integration of culture and science and technology is not simply additive, but organic integration. In order to realise the creative transformation and innovative development of cultural heritage in the digital era, it is indispensable to further explore the protection and inheritance of cultural heritage under the integration of culture, tourism, science and education.

2. The Current Situation of Cultural Heritage Protection under the Perspective of Integration of Culture, Tourism, Science and Education

Nowadays, the protection of cultural heritage presents a diversified situation: intelligent tourism empowers heritage protection innovation with digital technology, school-enterprise cooperation promotes synergistic efforts in technology research and development and talent cultivation, and study tours deepen cultural cognition and educational inheritance to build a sustainable protection system of cultural heredity.

2.1 Current Status of Smart Tourism Application in Cultural Heritage Protection

Intelligent tourism integrates the latest scientific and technological achievements, through intelligent means and platforms, with the independent experience of tourists as the core, based on all-round and integrated information management service activities of the tourism industry, to provide tourists with a more convenient and personalised tourism experience. The Xi'an City Wall has built a digital square cabin integrated management platform as an example ^[1], in the application of the platform, respectively, the use of big data analysis, Internet of Things sensors, artificial intelligence algorithms and other technologies, real-time monitoring and analysis of cultural heritage data, providing a new perspective and tools for cultural heritage protection, and gradually changing the way people experience the cultural heritage, a profound interpretation of the 'science and technology to make the deeper meaning of 'technology makes cultural heritage "alive"' ^[2]. In addition, the Lijiang Old Town scenic area comprehensively implement the new development concept, accelerate the construction of intelligent tourism big data application project, with digital technology and characteristics of the integration of small town applications, combined with heritage protection, scenic area management, the actual needs of tourism services, the construction of integrated management, intelligent tourism, intelligent services, intelligent innovation four systems, with 'digital' empowered scenic area management, 'digital' empowered scenic area management, and 'digital' empowered scenic area management. 'It empowers the management of scenic spots, promotes the comprehensive transformation and upgrading of all aspects of scenic spots, improves the travelling experience of tourists, and also provides support for the protection and management of cultural heritage. The application of smart tourism in cultural heritage protection not only improves the efficiency and accuracy of protection work, but also provides a richer cultural experience for tourists ^[3]. Through the deep integration of technology and culture, smart tourism provides new ideas and methods for the sustainable development of cultural heritage.

2.2 School-enterprise Co-operation in Cultural Heritage Protection Synergy Status

School-enterprise co-operation is of great significance in the protection and inheritance of cultural heritage. Deepening school-enterprise cooperation facilitates the integration of school and enterprise resources, and jointly promotes the protection and inheritance of cultural heritage. Taking the school-enterprise cooperation between Jiangxi University of Traditional Chinese Medicine and Jianchang Gang Pharmaceutical Co., Ltd. as an example, as early as 1995, Liu Xiangbao, inheritor of the Jianchang Gang school of traditional Chinese medicine, set up a laboratory at the Fuzhou Campus of Jiangxi University of Traditional Chinese Medicine. This initiative promoted the integration of traditional Chinese medicine veteran artisans with TCM higher education and professional research institutions. Leveraging high-end professional talents to conduct specialized research, it has opened up a pathway linking skill inheritance with academic education, and facilitated the integrated development of veteran artisan inheritance, TCM higher education and professional research institutions. Enterprises also need to conduct professional research, open up channels for skills transfer and academic education, and build a dedicated workforce that understands the business. Nancheng County also introduces ‘Jianchang Gang’ traditional Chinese medicine culture into the campus^[4], and opens the handmade class of cutting medicinal tablets in primary and secondary schools, so that young people can feel the unique craftsmanship of ‘Jianchang Gang’, and at the same time, carries out the ‘Jianchang Gang’ non-heritage knowledge competition every year, which is a great opportunity for the young people to learn more about traditional Chinese medicine. At the same time, an annual ‘Jianchang Gang’ non-heritage knowledge competition is held to achieve better dissemination of ‘Jianchang Gang’ culture. This mode of cooperation not only protects traditional skills, but also provides students with opportunities for practical learning and fosters a new generation of non-heritage bearers. In addition, the School of Art and Design of Changsha College cooperates with Hunan Province Mabanshan Panorama Culture Digital Innovation Centre ^[5], constructing the ‘Mawangdui Han Culture Big Data Resource Base’, and students digitally design the cultural relics of the Mawangdui Han Tomb under the guidance of the enterprise instructors, learning the basic methods of digital protection of cultural heritage and practical paths. The students learnt the basic methods and practical paths of digital protection of cultural heritage. This mode of school-enterprise cooperation promotes the digital protection of cultural heritage, enhances the professional skills and innovation ability of students, and improves their emotional recognition of the excellent traditional culture and cultural self-confidence. School-enterprise cooperation shows a broad application prospect in the protection and inheritance of cultural heritage, relying on the sharing of resources and complementary advantages, school-enterprise cooperation can cultivate professional talents, promote the development of cultural industry, and inject new vitality into the sustainable development of cultural heritage.

2.3 Status of Study Tours for Education in Cultural Heritage

Study tours take young students as the main body, and carry out educational activities with the purpose of improving skills and increasing knowledge in the process of travelling. It is a comprehensive practical education activity that carries out research study and combines with travelling experience by means of collective travelling and centralised accommodation. With the combination of natural resources and humanistic and historical resources, it guides students to absorb practical knowledge and cultivate comprehensive quality, improves their practical ability, living ability and learning ability, and enhances their sense of cultural identity and national pride. Taking the Xi’an Museum’s ‘Return to the Great Tang Dynasty’ study course as an example, the Xi’an Museum has developed cultural products and digital innovation products jointly constructed with paper media and modern information technology, including study and travel teaching courses for

different educational scenarios such as exploration of cultural heritage sites, visits to exhibition halls, learning in education centres, and museums in schools, which allow students to experience cultural heritage more intuitively and to learn about it. Students feel the charm of cultural heritage more intuitively, so that the museum has become a continuation of the Chinese culture, enhance historical confidence, the transmission of cultural strength of the 'big school'^[6], to better explain and promote the excellent traditional Chinese culture. Study tour is an extension of school education, but also a key path for cultural heritage protection, with the help of scientific and rational design of study courses and activities, study tours can effectively improve students' knowledge of cultural heritage, stimulate children's innovative consciousness and spirit of exploration, and add new vitality to the sustainable development of cultural heritage.

3. The Practice Path of the Integration of Science and Technology with Cultural Tourism Industry

Currently, cultural heritage protection is facing the double-edged sword effect of the application of science and technology, which not only brings innovation to cultural heritage protection but also has the risk of 'dematerialisation'; at the same time, insufficient education and training leads to weak public awareness of cultural heritage protection, and the coexistence of systematic deficiencies and faults in human resources, which requires the optimisation of mechanisms to achieve popularisation of education.

3.1 The Two Sides of Science and Technology in Cultural Heritage Preservation

In today's digital age, technology provides new tools and means for cultural heritage preservation, but at the same time there are some problems. Although digital technologies such as virtual reality, augmented reality and 3D printing have been widely used in cultural heritage protection, there are still some limitations in the practical application of these technologies. Take 3D printing as an example. Although high-precision 3D scanning and modeling technologies can realize the digital documentation of cultural heritage, they still face problems such as incomplete data acquisition and low processing efficiency when applied to large-scale or complex structural relics. However, when dealing with large or complex structures, there is still a risk of incomplete data collection and low processing efficiency. Furthermore, the digitisation of cultural heritage may involve a lot of sensitive data, such as the exact dimensions and materials of the artefacts, which, if leaked, may pose a threat to the protection of cultural heritage. In view of the problems mentioned above, we need to correctly understand the two sides of science and technology in cultural heritage protection. On the one hand, we need to be alert to the risk of technological dependence in order to avoid the 'dematerialisation' of cultural heritage caused by excessive digitisation, which will gradually cause people to lose direct contact with the physical artefacts in cognition, which requires us to maintain the sensory experience and emotional connection in cultural heritage education, and to attach importance to the maintenance of the materiality and authenticity of cultural heritage, so as to prevent the occurrence of excessive digitisation. This requires us to maintain the sensory experience and emotional connection in cultural heritage education, and to pay attention to maintaining the materiality and authenticity of cultural heritage in order to prevent over-digitisation. On the other hand, in practice, we should increase the investment in the research and development of cultural heritage protection technology to improve the accuracy and efficiency of digital technology; the government needs to formulate and improve the relevant laws and regulations on the digital protection of cultural heritage to ensure the security and privacy of cultural heritage data, and to strengthen the supervision of data; in the process of carrying out the digitisation, we also need enterprises, scenic spots, schools and other institutions to ensure that cultural heritage is digitally protected. In the process of digitisation, we also need cooperation

between enterprises, scenic spots and schools to develop user-friendly digital tools, so that more ordinary people can participate in the protection of cultural heritage and achieve the integration of science and technology with culture.

3.2 Inadequate Training of Education in Cultural Heritage Preservation

Education plays a crucial role in cultural heritage protection, but its popularity also faces a series of problems. Although many schools have incorporated cultural heritage protection into their curricula, these programmes are often limited to a few disciplines and lack cross-disciplinary integration, making it difficult for such a single curriculum to comprehensively cultivate students' awareness of and ability to protect cultural heritage. As cultural heritage conservation involves multidisciplinary knowledge, it is all the more necessary for schools to have teachers with professional knowledge and practical experience, but at present, many schools have relatively weak teachers in this area, which makes it difficult to meet the teaching needs. We believe that students' participation and interest also need attention. Due to the abstract nature of disseminating cultural heritage conservation content in the form of in-school education, students may lack interest and this may affect the effectiveness of education. Schools should strengthen the integration of history, science and technology and other multidisciplinary subjects to cultivate students' comprehensive literacy and abilities, offer courses that combine cultural heritage conservation with digital technology so that students can learn to apply them in practice, improve teachers' professional level of cultural heritage conservation by training and introducing professionals, and encourage teachers to participate in cultural heritage conservation projects to accumulate practical experience to improve teaching effectiveness. Schools can organise study tours so that students can experience the charm of cultural heritage in practice.

4. Cultural Heritage Inheritance Strategies under the Perspective of Integration of Culture, Tourism, Science and Education

Based on the perspective of integration of culture, tourism, science and education, in order to cope with the current problems in the protection of cultural heritage, we put forward the relevant inheritance strategy, we believe that we need to promote the inheritance of cultural heritage through the integration of culture, tourism, science and education, can be integrated into the scientific and technological elements to innovate the communication methods, optimise the training of talents to build cross-border teams, and build the revitalization mechanism to make cultural heritage blossom with new vitality in the modern society.

4.1 Innovating the Mode of Transmission of Cultural Heritage

In the current wave of digitalisation sweeping the globe, it is particularly important to innovate the dissemination of cultural heritage, relying on digital means, cultural heritage can break through geographical and time constraints, and be presented to the public in a more vivid and intuitive form. The Palace Museum launched the 'VR to see the Forbidden City' project as an example ^[7], the technology uses high-precision 3D scanning and virtual reality technology, so that tourists can wear VR glasses to 'travel' to the Forbidden City, immersive experience of history and culture of the weight and flavour. The project not only covers the magnificent scenery of the Forbidden City complex, but also innovatively integrates the display of non-heritage projects, such as through the virtual scene to restore the traditional process of craftsmanship, so that the audience in the immersive experience to deepen the knowledge of non-heritage culture and interest. This kind of digital communication not only enhances the public's knowledge and interest in non-heritage to a great extent, but also opens up

a new path for the revitalisation and inheritance of cultural heritage, and gives new vitality to the ancient civilisation in the modern society.

4.2 Optimising the Training and Development of the Talent Pool

The study points out that talents play a vital role in cultural heritage protection and inheritance and are indispensable key resources. As the main position of knowledge dissemination and talent cultivation, colleges and universities should shoulder the primary responsibility of cultivating professionals in cultural heritage protection. To this end, universities should further optimise their professional settings, strengthen the construction of disciplines related to cultural heritage protection, provide students with systematic and comprehensive theoretical knowledge teaching and practical skills training, and lay a solid professional foundation. Through school-enterprise cooperation and industry-university-research combination, students can get in touch with actual projects in the process of learning, and enhance their practical ability and innovative consciousness. Meanwhile, vocational training in enterprises is also an important way to cultivate talents for cultural heritage protection. Enterprises should carry out regular vocational training and exchange and sharing activities for in-service employees and non-heritage inheritors to further enhance their professionalism and innovation ability, and jointly promote the development of cultural heritage protection and inheritance. The government and all walks of life should also actively participate in the cultivation and construction of the talent team, and provide more talent support and resource guarantee for the cause of cultural heritage protection and inheritance. Through joint efforts, a high-quality and professional cultural heritage protection talent team will be built, contributing wisdom and strength to the inheritance and promotion of the excellent traditional culture of the Chinese nation.

4.3 Building Mechanisms for the Revitalisation of Cultural Heritage

The adaptive use of cultural heritage is an important means to revitalise it in modern society^[8]. Functional reuse is a common way of revitalisation, and many historical buildings have been given new social roles after being transformed and reused after the end of their original mission. Some ancient towns with special characteristics can be built into diversified tourism and living spaces by adding functions such as lodging and catering while retaining traditional residential functions. Cultural and creative product development is also a key way to promote the adaptive use of cultural heritage. Nongenetic inheritance bearers can integrate non-heritage elements into modern design, shape cultural and creative IPs with non-heritage characteristics and innovative forms of expression, so that cultural and creative products in the context of modernisation can retain traditional skills and fit in with modern aesthetics. Tourism experience design should also not be neglected, as tourists can rely on the design of various tourism experience projects to deeply understand and feel the charm of cultural heritage in the process of travelling, and enhance their awareness of cultural heritage and its protection. Innovative ways of cultural heritage dissemination, cultivating talents for cultural heritage protection and inheritance, and promoting the adaptive use of cultural heritage are the key paths for cultural heritage inheritance under the perspective of cultural, tourism, science and education integration. Through the exploration and practice of these paths, cultural heritage can once again show new vitality and vigour in modern society and achieve sustainable development of cultural heritage.

5. Conclusion

The integration of culture, tourism, science and education has demonstrated great value and significance in the protection and transmission of cultural heritage. The integration of culture, tourism, science and education not only promotes the innovation of cultural heritage protection technology,

but also facilitates the adaptive use of cultural heritage, giving it a new lease of life in modern society. However, with the continuous development of science and technology, cultural heritage protection is facing new challenges such as digital copyright disputes and imbalance of technological universality, so we need to establish a better cross-border synergy mechanism. ‘How to cope with technological change, how to balance technological innovation and cultural authenticity through policy design, how to deepen the integration of industry, academia, research and application, and how to cultivate multidisciplinary talents for cultural heritage protection will be the topics of our further research.

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