

Research on Digital Picture Book Creation and Cultural Inheritance of Guangxi Ancient Stage Architecture

Qingyun Lei^{1*}, Guiling Zhong²

¹ School of Culture and Media, Hezhou University, Hezhou, China

² School of Marxism, Hezhou University, Hezhou, China

Email Address

leiqingyun2023163@163.com (Qingyun Lei)

*Correspondence: leiqingyun2023163@163.com

Received: 6 July 2024; Accepted: 29 July 2024; Published: 16 August 2024

Abstract:

This paper aims to discuss the creation of digital picture books of ancient stage architecture in Guangxi and their important role in the inheritance and protection of intangible cultural heritage. With the rapid development of digital technology, digital picture books, as an emerging form of art expression, are gradually becoming an important means to spread and preserve cultural heritage. This paper first summarizes the historical background and cultural value of ancient stage buildings in Guangxi, then analyzes the unique advantages of digital picture books in the inheritance of intangible cultural heritage, and expounds the creation process and technical application of digital picture books in Guangxi in the fields of education and cultural communication. Finally, this paper puts forward the challenges and countermeasures faced by digital picture books in the inheritance and protection of intangible cultural heritage, in order to provide reference for the research and practice in related fields.

Keywords:

Guangxi, Ancient Stage Architecture, Digital Picture Books, Cultural Inheritance

1. Introduction

Guangxi, as an important region of multi-ethnic cultures in China, has rich historical and cultural heritage. Among them, the ancient stage, as an important carrier of folk opera culture, not only carries rich historical and cultural information, but also reflects the aesthetic taste and artistic creativity of the local people. However, with the acceleration of the modernization process, many ancient stage buildings are facing the risk of being forgotten, destroyed and even disappeared. Therefore, how to effectively inherit and protect these precious cultural heritage has become an urgent problem to be solved. With their unique artistic expression and extensive dissemination ability, digital picture books provide new ideas and methods for the protection and inheritance of the ancient stage architecture in Guangxi.

2. The Historical Background and Cultural Value of the Ancient Stage Architecture in Guangxi

2.1. Historical background

The ancient stage architecture in Guangxi has a long history, dating back to the Ming and Qing Dynasties, or even earlier. As an important place for local people's opera performances, sacrificial activities and social gatherings, these opera stages are especially common in rural areas and ethnic minority areas. They not only show their superb architectural skills, but also are a vivid witness of the local history and culture. The ancient stage is often located and built in the center of the village or near important landmarks according to local conditions, becoming a part of the villagers' life. The architectural style of the stage is diverse, integrating the local environmental characteristics and ethnic characteristics, exquisite structure, carved beams and painted buildings, quite ornamental value. The plays performed on the stage are rich and colorful, covering historical stories, folklore and ethical education, which are deeply loved by the masses. These stages not only provide rich cultural entertainment for the public, but also assume the functions of education and social education to a certain extent. With the change of times, many ancient opera stages have experienced the erosion of wind and rain, but they still retain their unique historical charm and become an important material material for the study of Guangxi history, culture and architectural art. The existence of the ancient stage enables people to glimpse the social life scene of hundreds of years ago, and experience the local customs and artistic charm of that era. The ancient stage architecture in Guangxi occupies a unique position in the treasure house of Chinese culture, and its protection and research are of great significance [1].

2.2. Cultural value

The ancient stage architecture in Guangxi has a very high cultural value, showing the outstanding architectural wisdom and artistic creativity of the local people. As the main carrier of opera culture, these ancient stages not only inherit rich historical stories and folk traditions, but also record the way of life, social structure and ethical concepts of the people in the past dynasties. The carving, painting and architectural details on the stage all reflect the exquisite craftsmanship and profound cultural deposits, and become the vivid expression of folk aesthetics. The ancient stage is not only a stage of the performing arts, but also an important symbol of the cultural identity and spiritual sustenance of the community. During every festival or major event, the villagers will gather in front of the stage, convey traditional values and moral norms through opera performances, and enhance social cohesion. As a public space, the stage provides a platform for communication and interaction, and promotes the emotional connection and cultural inheritance among the community members. They are not only witnesses of local history, but also an important part of living culture. Today, with the continuous advancement of the modernization process, the ancient stage still retains its unique cultural charm, and has become an important place for people to look back to the history and seek cultural identity. The protection and study of these ancient stages is of great significance for inheriting and carrying forward the excellent traditional Chinese culture, and can stimulate people's love and respect for the traditional culture [2].

3. Advantages of Digital Picture Books in the Inheritance of Intangible Cultural Heritage

3.1. *Rich in artistic expression*

Digital picture books use advanced digital technology means, such as three-dimensional modeling and animation production, to create more vivid and vivid visual effects, shining the traditional cultural heritage with new luster. Through these technologies, digital picture books can present unprecedented delicacy and complexity in detail, and give new vitality to traditional stories and images. The rich artistic expression not only improves the visual experience of the audience, but also profoundly enhances their perception and interest in cultural heritage. With the addition of dynamic pictures and interactive elements, the audience is no longer just a passive recipient, but a part of the story, increasing the sense of immersion and participation. Digital picture books can deliver the aesthetic elements and emotional connotations in traditional culture more vividly through color, light and shadow and dynamic effects. When appreciating digital picture books, audiences can feel a kind of cultural communication across time and space, and stimulate their love for traditional culture and the desire to explore. The application of digital technology also enables the complex cultural background and exquisite artistic details to be more comprehensively displayed, breaking through the limitations of traditional paper picture books, and providing a broader space for creation and expression methods. Through digital picture books, traditional culture is no longer distant and strange, but is presented in front of the audience in a modern, close and interactive form, which has become an important cultural experience in People's Daily life. The richness of this artistic expression not only promotes the protection and inheritance of cultural heritage, but also provides a new inspiration and direction for modern art creation [3].

3.2. *Strong communication ability*

With the help of the Internet, social media and other channels, digital picture books achieve rapid dissemination, breaking the regional and time restrictions, and enabling the traditional cultural heritage to be contacted and understood by more people. Through these digital platforms, the content of picture books can quickly spread around the world, both in cities or villages, day or night, and can be easily accessed by viewers through electronic devices. This mode of communication not only improves the accessibility of traditional culture, but also enhances its influence and awareness. The interactive and sharing functions of the Internet and social media make digital picture books become viral spread among audiences. Users participate in comments, thumb up, sharing and other ways, further expanding the scope of the audience. The multi-language support and multimedia form of digital picture books enable audiences with different cultural backgrounds and languages to easily understand and appreciate them, and promote cross-cultural communication and understanding. In the field of education, digital picture books, as a novel and infectious teaching resource, have been widely used in classroom teaching and extracurricular reading, which has stimulated students' interest and enthusiasm for traditional culture. Digital picture books are not only suitable for personal reading, but also for display in public places, such as museums, libraries and cultural centers, through digital screens and projection equipment to attract more people's attention and participation. Through the spread of digital picture books, the traditional cultural heritage is presented in front of modern people in a vivid, dynamic and interactive form, which promotes the inheritance and

innovation of culture. The popularization and application of digital technology provides unprecedented opportunities for the spread of traditional culture, making it show new vitality and vitality in modern society.

3.3. Good interactive experience

Digital picture books have a high degree of interactive experience functions. Through carefully designed interactive elements and story plots, audiences can more deeply participate in the experience of cultural heritage, so as to enhance the understanding and identification of cultural heritage. These interactive elements make the audience not only readers, but also a part of the story, and can directly affect the development and ending of the story by clicking, dragging, sound commands and other ways. The interactive experience allows the audience to actively explore and discover the details and information hidden in the story, and deepen the understanding of the cultural background and historical situation. During the interaction, the audience can solve puzzles, choose paths, and even play roles, adding to the immersion and fun. Through this real-time interaction, the audience can get unique feelings and experience in the communication with the digital picture books, forming a personalized reading experience. Interactive elements help the audience to establish deeper emotional connections, making the cultural heritage no longer only a static historical record, but a dynamic and vibrant existence. Digital picture books with superior interactive experience have been widely used in the fields of education, entertainment and cultural inheritance, and have stimulated the interest and curiosity of audiences of all ages. In the process of interaction, the audience not only gained knowledge, but also experiences the aesthetics and wisdom of traditional culture, which enhances the sense of identity and pride in cultural heritage.

4. The Creation Process and Technology Realization of the Digital Picture Book of Guangxi Ancient Stage Architecture

4.1. Creation process

4.1.1. Material collection and arrangement

In order to collect and sort out the materials of the ancient stage construction in Guangxi, first of all, it is necessary to carry out detailed field investigation and shooting of the ancient stage stage in Guangxi, and accumulate rich materials such as pictures and videos. In this process, the appearance, internal structure, decorative details, as well as its surrounding environment, through different angles and different time periods of shooting, to ensure the diversity and comprehensiveness of the material. In addition to the live shooting, we also need to consult a large number of relevant documents to have a deep understanding of the historical background and cultural connotation of the ancient stage. This includes reading academic papers, historical archives, local Chronicles, etc., collecting written records, historical photos and old newspaper reports, to enrich the understanding of the ancient stage. Through interviews with local experts, scholars, old artists and other relevant people, the oral history and first-hand information were obtained to further supplement and verify the information in the literature. In the process of material sorting, the collected pictures and videos should be classified, screened and marked to ensure that each piece of material can accurately reflect the characteristics and cultural value of the ancient stage. The documents need to be systematically sorted out and analyzed, to extract the

key information, and to form a comprehensive introduction and in-depth interpretation of the ancient stage. Finally, through the integration of the materials obtained by the field investigation and literature research institute, a rich and detailed database of Guangxi ancient stage construction was built, laying a solid foundation for the subsequent research, protection and promotion work [4].

4.1.2. Script writing and story design

Based on the collected rich material materials, when writing the script and design story of digital picture books, it is necessary to closely combine the historical and cultural background and unique architectural characteristics of the ancient stage, and ensure that the story plot is interesting and educational. In the process of writing, the history and cultural connotation of the ancient stage should first be integrated into the main line of the story, so that the audience can naturally feel the cultural atmosphere of the ancient stage in the process of reading. The design of the story should be lively. Through the fascinating plot and distinct character setting, readers can gain knowledge in the interaction and deepen their understanding of the ancient stage. The background of the story is set in the real environment of the ancient stage. Through exquisite depiction and interactive elements, readers can feel immersive and feel the charm of the ancient stage. In terms of character design, historical figures or fictional characters of the ancient stage can be added to show the historical events and cultural stories of the ancient stage through their perspectives and experiences. In terms of plot arrangement, we need to balance educational and entertaining qualities, not only have fascinating plots, but also convey the knowledge and value of cultural heritage at key nodes. The dialogue and narration should be concise and infectious, so that readers of different ages can easily understand and accept it. Through clever story design and carefully written scripts, digital picture books have not only become a medium to convey knowledge, but also become an interesting experience that can stimulate readers' interest and curiosity, finally making the ancient stage, an important cultural heritage, shine with new luster in the hearts of modern readers [5].

4.1.3. Art design and animation production

After the script and story design were completed, the art design and animation sessions became crucial. Art design needs to pay special attention to color collocation and composition layout, and these elements should be able to fully reflect the unique style and historical charm of the ancient stage architecture. Through careful color selection and picture composition, we strive to visually reproduce the solemnity and magnificence of the ancient stage, so that readers can feel the strong cultural atmosphere. In terms of animation production, advanced technical means such as three-dimensional modeling and rendering are used to realize the dynamic display of the ancient stage architecture, which includes not only the details of the appearance of the building, but also the fine presentation of the internal structure. Through these technologies, the audience can not only see every corner of the ancient stage, but also interact with it and get an immersive experience. The movements and scene changes of the characters in the animation need to be smooth and natural, so that the audience can experience the real existence of the ancient stage both visually and emotionally. The lighting effect and shadow processing also need to be carefully designed to increase the stereo sense and reality of the picture. Throughout the production process, the art designers and the animation team need to work closely together to constantly adjust and optimize the details to ensure that every frame can achieve the desired

results. Through these efforts, the digital picture books finally presented is not only an extension of words and stories, but also a feast of visual and sensory, making the ancient stage, a cultural treasure, glow through modern technology and attract more people to understand and protect it [6].

4.2. Technical implementation

4.2.1. 3 D modeling and rendering

In the process of 3 D modeling and rendering, it is the primary task to use advanced 3 D modeling software to accurately model the ancient stage buildings in Guangxi. In the modeling process, high attention must be paid to the details to ensure the accuracy of the building structure and the authenticity of the materials. Every architectural element needs to be carefully studied, whether in the tile arrangement of the roof, or in the texture of the wooden beams, they have to be accurately restored in the model. Through the detailed mapping of the ancient stage and the reference of historical data, to ensure that each proportion and scale are correct, and strive to truly reproduce the whole picture of the ancient stage. The selection and application of materials are also crucial. Through the fine depiction of wood, masonry and other materials, the high-resolution stickers and complex material nodes are used to show the texture and sense of age of the ancient stage architecture. The application of rendering technology is even more indispensable. Through the high-quality rendering engine, it simulates the real light and shadow effects, so that the model presents a realistic visual effect under the light. The change of light and shadow, the reflection of the material and the delicate processing of the shadow will enhance the overall visual fidelity. To achieve these effects, the parameters must be constantly adjusted and tested to ensure that the final rendered image reaches the most desired state. Through these fine modeling and rendering work, the three-dimensional model of the ancient Guangxi stage can not only be visually lifelike, but also provide a solid foundation for the subsequent animation production and interactive experience, finally presenting the digital works with a sense of historical weight and modern science and technology.[7]

4.2.2. Animation production and interaction design

On the basis of 3 D modeling, animation production and interaction design have become the key links. Animation production needs to ensure the fluency and consistency of the action, and design the action path and a reasonable camera switch combined with the story plot, so as to make the whole animation process smooth and natural. The movements of each character and the changes of each scene need to be carefully designed to ensure that the audience does not have any abrupt sense in the visual experience. The use of the lens needs to be flexible and clever, not only to show the grand structure of the ancient stage, but also to capture the beauty of the details, to create a strong visual impact. Interaction design focuses on the audience's participation and experience, and enhances the audience's sense of participation and immersion by adding interactive elements and prompts. In the design process, considering the users' operation habits and psychological expectations, a reasonable interaction mode is set, so that the audience can interact with the ancient stage through simple operation. The interactive elements need to be creative to attract the audience's attention and enhance their experience. The addition of prompt information helps the audience to better understand and operate, and improve the overall operation fluency and user satisfaction. Through these fine design and production, a work with both ornamental and interactive features is finally presented, so that the audience can

appreciate the beauty of the ancient stage and gain great fun and immersive experience. Whether the visual effect of animation or the interactive design, it must achieve a high degree of harmony, so that the whole work can bring unparalleled enjoyment to the audience in both vision and experience.

4.2.3. Platform development and release

After completing the production of digital picture books, the development and release of the platform will become the last step of the project. The core of the platform development is to optimize the user experience and deal with compatibility issues, so as to ensure that audiences can smoothly browse and experience digital picture books on different devices. During development, the screen size, operating system and browser environment of various devices are carefully considered to ensure that the interface design and functional implementation are not affected by device differences. The interface design needs to be simple and intuitive to ensure smooth navigation, so that users can easily find what they are interested in. In terms of functional implementation, the loading speed and response time need to be optimized to avoid the lag or delay in the browsing process. By adopting adaptive design and cross-platform technology, the platform provides a consistent experience on devices such as phones, tablets and computers. To improve the user experience, the platform also needs to integrate social sharing features, allowing users to easily share the content they are interested in with their friends and social networks. The introduction of user feedback mechanism helps the development team to timely understand user needs and experience problems, and make continuous optimization and improvement. In the release stage, through extensive publicity and promotion activities, digital picture books are introduced to more potential users to attract them to browse and experience on the platform. Combined with data analysis tools, track user behavior and usage habits, and provide data support for subsequent content updates and function upgrades. Finally, through these careful development and release work, the platform of digital picture books not only provides the audience with a convenient browsing and interactive experience, but also provides a modern digital channel for the dissemination and promotion of the ancient stage culture.

5. The Application of Digital Picture Books of Guangxi Ancient Stage Architecture

5.1. Education field

As an educational resource, digital picture books have wide potential application in school education. Integrating the digital picture books of the ancient stage buildings into the classroom can not only enrich the teaching content, but also stimulate students' interest in learning and curiosity through vivid visual effects. Students explore the architectural structure and historical background of the ancient stage in the interaction, and can feel the charm of traditional culture more intuitively. Through the integration of multimedia elements, the digital picture books make the original boring historical and architectural knowledge become vivid and interesting, and enhance the students' memory and understanding ability. By using these digital resources in the classroom, teachers can build a more interactive teaching environment and encourage students to actively participate in the discussion and inquiry. At the same time, the application of digital picture books also helps to cultivate students' digital literacy and information processing ability. In the process of using these modern tools, they learn

how to effectively obtain, analyze and apply information. For students of different ages, digital picture books provide highly adaptable learning content, which can be found for both basic cognition in primary school and in-depth research in middle school. Through this novel teaching method, students can not only better understand the artistic value and historical significance of the ancient stage architecture, but also accept the influence of traditional culture in a subtle way. The application of digital picture books in the field of education is not only a beneficial supplement to traditional teaching methods, but also an important measure to promote the modernization of education and cultural inheritance, providing strong support for cultivating a new generation of students with cultural confidence and innovative thinking [8].

5.2. Field of cultural communication

The wide dissemination of digital picture books through the Internet, social media and other channels can greatly expand the influence and recognition of the ancient stage buildings in Guangxi, and attract more people to pay attention to and participate in the protection and inheritance of traditional cultural heritage. With the help of digital technology, the historical and artistic value of the ancient stage architecture can be presented to the global audience in a more vivid and intuitive way, so that the cultural treasures originally limited to a specific region can break through the geographical restrictions and move to a broader world. On social media platforms, users can easily share the wonderful content in digital picture books, forming a viral transmission effect, and further enhance the popularity of ancient stage buildings in the public. Through the interactive function, the audience can not only appreciate the exquisite digital picture books, but also participate in the discussion and communication, and deepen the understanding and identification of the ancient stage culture. The network platform provides multi-language support, enabling audiences in different countries and regions to access and experience these cultural resources without barriers, and promote cross-cultural communication and understanding. The update and promotion activities of digital picture books also provide rich materials and tools for cultural institutions and educational institutions, and help them to better display and promote the unique charm of the ancient stage architecture in Guangxi in their cultural communication and educational activities. In this way, the traditional cultural heritage can gain new vitality in the modern society and attract more young people to participate in the team of cultural protection and inheritance. The application of digital picture books in the field of cultural communication is not only an innovation and supplement to the means of traditional cultural communication, but also an important way to promote cultural exchange and protection, providing strong support for the sustainable development of traditional culture and global communication [9].

5.3. Tourism development field

Digital picture books have great application potential in the field of tourism development. Through the production of digital guide system or virtual tourism experience projects of Guangxi ancient stage buildings, they provide tourists with more vivid and convenient tourism experience services, which not only enriches the tourism content, but also enhances the attraction and competitiveness of tourist destinations. Visitors can easily access these digital picture books through mobile phones or tablet devices, and enjoy detailed historical background introduction,

architectural details explanation and interactive exploration functions, which allow visitors to gain a deeper cultural and intellectual experience during the visit. The virtual tourism experience project simulates the real tour scene, through high-quality visual and audio effects, so that the tourists who cannot come to the scene can also feel the charm of the ancient stage. This new way of tourism not only attracts more tourists, but also brings wider exposure and popularity to the tourist attractions. Digital picture books also provide a new means for tourism promotion and promotion. Through platforms such as social media, official websites and tourism applications, tourism departments can more efficiently spread scenic spot information and attract the interest of potential tourists. When tourists share their digital guide experience, they also publicize the scenic spots, forming a virtuous circle. Guangxi ancient stage construction of digital picture books in the field of tourism development, help to enrich the tourist experience, enhance the cultural connotation of tourist attractions and interactive, promote the development of local tourism, inject new vitality to traditional cultural heritage and commercial value, makes the ancient stage in Guangxi construction in the modern tourism market with new vitality.

6. Challenges and Countermeasures of Digital Picture Book Creation and Cultural Inheritance of Guangxi Ancient Stage Architecture

6.1. Challenge

6.1.1. Technical difficulties

The creation of digital picture books needs high technical support and talent reserve, but in Guangxi, especially in remote areas, the technical level and talent resources are relatively scarce, so it is difficult to support the creation of high-quality digital picture books. As digital picture books involve complex image processing technology, animation production, interaction design and other professional skills, they also have high requirements for hardware equipment and software tools. However, these resources are not sufficient in remote areas, leading to many difficulties in the creation process. Many local personnel engaged in the cultural industry have limited experience and knowledge in the application of digital technology, making it difficult to skillfully operate advanced digital creation tools, which makes it difficult to guarantee the creation quality of digital picture books. On the other hand, the production of digital picture books also requires the cooperation of multiple disciplines, including the participation of experts in history, art design, computer science and other fields. In remote areas, such interdisciplinary talents are more scarce, and the lack of human resources directly restricts the development of digital picture book projects. Even if some projects are launched, due to the lack of continuous technical support and professional guidance, it is often difficult to achieve the desired results, which eventually leads to the grounding or low quality of the project. The dual bottleneck of technology and talent not only affects the creative efficiency of digital picture books, but also limits their innovation and diversity, making it difficult for the digital culture industry in Guangxi to compete with the developed regions. In order to solve these problems, it is necessary to start from basic education, vocational training, policy support and other aspects to improve the local technical level and talent reserve, establish a perfect digital cultural industry ecosystem, and provide a solid guarantee for the creation of high-quality digital picture books.

6.1.2. Copyright issues

In the process of the creation and dissemination of digital picture books, copyright is a challenge that cannot be ignored. It is urgent to protect the legitimate rights and interests of creators and avoid the occurrence of infringement. As a new digital publication, the creation of digital picture books involves a large number of original content, including text, illustrations, animation and audio, all of which need to be protected by copyright law. However, due to the easy replication and dissemination of digital content, piracy and unauthorized use are common, which brings great economic loss and mental distress to the original authors and copyright owners. Before publishing digital picture books, creators often need to carry out complex copyright registration and protection measures, but in practice, the enforcement intensity and effect of copyright protection are not ideal. Many digital platforms are not strict enough in the review and supervision of the uploaded content, which leads to the occurrence of infringement behavior from time to time. The process of rights protection is both time-consuming and force-consuming, and many creators appear to be powerless in the face of infringement problems. Moreover, digital transmission across borders aggravates the difficulty of copyright protection, with differences in copyright laws in different countries and regions, and how to coordinate and unify copyright protection policies is a complex issue. Creators and publishers of digital picture books need to improve their copyright awareness and adopt more advanced technical means to protect their works, such as digital watermarking, copyright tracking, etc. At the same time, relevant departments should strengthen the publicity and enforcement of the copyright law, establish a more perfect copyright protection mechanism, promote international copyright cooperation and exchanges, and jointly cope with the copyright challenges in the digital age, so as to provide a reliable legal guarantee for the healthy development of digital picture books.

6.1.3. Fund shortage

The creation and promotion of digital picture books need a large amount of capital investment, but in Guangxi region, the shortage of funds has affected the full support and promotion of some excellent projects. The production of digital picture books involves many links, from the preliminary planning, creative design, content creation to the technical realization, promotion and distribution in the later stage, each link needs to invest the corresponding funds. The creation of high-quality digital picture books requires not only hiring professional screenwriters, illustrators, animators and programmers, but also the purchase and use advanced hardware and software equipment, all of which require a lot of financial support. Due to the lack of funds, many creators and teams struggle to pay the high production costs, and can only constantly compress the budget in the creation process, resulting in the quality of the work is difficult to reach the expected level. In terms of promotion, the shortage of funds also limits the marketing publicity and channel expansion of digital picture books, and excellent works are difficult to be widely known and accepted. Without sufficient marketing budget, many high-quality digital picture book projects are difficult to enter the mainstream market and gain more readers and users. The shortage of funds also affects the creators' innovation motivation and continuous creative ability, and many potential ideas are shelved or aborted because of the lack of financial support. Although some creators have tried to raise funds through crowdfunding, seeking investment and cooperation, the financing effect is limited due to the lack of market recognition and trust. In order to promote the development of

digital picture books in Guangxi, it is necessary to make the joint efforts of the government and all sectors of society, increase capital investment through various ways, establish a sound financial support system, and provide stable financial guarantee for creators, so as to promote the prosperity and development of the digital picture book industry.

6.2. Countermeasures

6.2.1. Strengthen technical training and personnel training

In view of the technical problem and talent shortage, it is an effective solution to strengthen the technical training and personnel training. To improve the technical level and creative ability of relevant personnel through the holding of training courses and inviting experts to improve the overall quality of digital picture book creation. This training can not only help existing creators master the latest technology and tools, but also inspire them and innovation. In addition, encouraging universities and scientific research institutions in Guangxi to increase their research and teaching efforts in related fields is the key to providing strong talent support for the creation of digital picture books. Universities and scientific research institutions can set up special courses and research projects to cultivate talents with professional skills and theoretical knowledge, so as to bring new blood to the development of the industry. Through school-enterprise cooperation, students can be exposed to practical projects and accumulate practical experience during their study period. After graduation, they can quickly adapt to the needs of the industry and shorten the talent training period. Strengthening technical training and talent training can not only solve the current problem of talent shortage, but also provide a steady stream of power for the continuous innovation of digital picture books. With the support of policies and funds, the establishment of a sound training and education system will help to form a virtuous cycle and promote the development of the whole industry. With the joint efforts of all sectors of society, the creation and promotion of digital picture books in Guangxi will surely usher in a broader prospect.

6.2.2. Improve the copyright protection mechanism

In view of the copyright problems, it is very important to improve the copyright protection mechanism. By formulating relevant laws, regulations, policies and measures to regulate the creation and dissemination of digital picture books, it can effectively prevent the occurrence of infringement phenomenon. As an emerging form of creation, digital picture books are facing the challenge of copyright protection. The establishment of a sound legal framework helps to protect the legitimate rights and interests of creators. Strengthening copyright publicity and education to improve public awareness of copyright and protection is also a key step. In daily life, the popularization of copyright knowledge through various media and educational platforms can make more people understand and respect the fruits of creators' labor, and reduce copyright infringement. The creators of digital picture books often invest a lot of time and energy in their creation. If the copyright is not effectively protected, the enthusiasm of creation will be discouraged. By improving the copyright protection mechanism and establishing convenient and effective channels for copyright registration and rights protection, creators can be more comfortable in the creation. At the same time, according to the characteristics of digital picture books, the research and development and promotion of copyright protection technology, such as digital watermark, digital copyright management system, etc., can provide technical support

for copyright protection. With the joint efforts of all parties, a sound copyright protection mechanism can not only protect the rights and interests of creators, but also promote the healthy development of the entire digital picture book industry. A perfect copyright protection mechanism will provide more powerful support and guarantee for creators, promote the continuous emergence of excellent works, and promote the prosperity and innovation of culture.

6.2.3. Expand the channels of fund sources

In view of the problem of capital shortage, it is an effective solution to broaden the source channels of funds. It is a key step to actively strive for the financial support and policy support of Guangxi government departments. The intervention of the government can not only provide direct financial assistance, but also create a good environment for creation and development through policy guidance and incentive measures. It is also an important way to attract social capital to participate in the creation and promotion of digital picture books. The injection of social capital can not only relieve the financial pressure, but also bring more resources and business operation experience, and realize a virtuous cycle and sustainable development of capital through market operation. Market-oriented operation can stimulate more creative vitality, and provide a stable source of funds for digital picture book projects through diversified financing methods, such as crowdfunding and investment funds. Through the cooperation with enterprises and investors, we can not only get financial support, but also use their marketing channels and market resources to improve the influence and market share of digital picture books. The establishment of diversified capital source channels can not only solve the current problem of capital shortage, but also lay a solid foundation for the long-term development of the digital picture book industry. With the joint efforts of all parties, through various forms of fund raising and reasonable use of funds, the creation and promotion of digital picture books will usher in a broader development prospect. Expanding the channels of capital sources will drive the development of the entire industrial chain, form a virtuous cycle, and promote the prosperity and innovation of the digital picture book market.

7. Conclusions

As a precious intangible cultural heritage, Guangxi ancient stage architecture has a very high historical and cultural value. As an emerging form of artistic expression, digital picture book plays an important role in the inheritance and protection of intangible cultural heritage. Through the creation and application of digital picture books, the historical and cultural characteristics and artistic charm of ancient stage buildings can be displayed more vividly and realistically; At the same time, they can be widely disseminated and promoted through the Internet and social media, attracting more people's attention and participating in the protection and inheritance of traditional cultural heritage. However, in practice, there are still technical problems, copyright problems and capital shortage challenges. In response to these challenges, we need to strengthen technical training and personnel training, improve the copyright protection mechanism and broaden the source channels of funds and other measures to promote the wide application and development of digital picture books in the inheritance and protection of intangible cultural heritage.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this article.

Funding

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

References

- [1] Wang, X.F. The architectural art and cultural inheritance of the ancient stage in Guangxi - Take Anji Flower Park in Guangxi as an example. *Industrial buildings*, 2019, 49(11), 2. DOI: CNKI:SUN:GYJZ.0.2019-11-042.
- [2] Xie, X.Y.; Xiong, W.; Zhao, Y. Preliminary study of Guangxi ancient stage. *South Building*, 2013, 6, 16-22. DOI:10.3969/j.issn.1000-0232.2013.06.016.
- [3] Peng, J.W. Sacred and secular space: investigation of ancient stage in Hezhou, Guangxi. Guangxi Normal University [2024-07-15]. DOI: CNKI:CDMD:2.1011.246777.
- [4] Gao, H.L.; Kou, Z.; Man, W.J. Analysis of stage building type and shape of Guangxi Han nationality. *Chinese dwellings*, 2014, 000(024), 208-209, 210. DOI: 10.3969/j.issn.1674-3954.2014.24.185.
- [5] Que, Z. The ancient stage in the Qing Dynasty tablet inscription - "Guangxi tablet inscription and opera Research" four. *Guixue Research*, 2015, 1, 6.
- [6] Peng, J.W. Analysis on the social and cultural Function of Hezhou Ancient stage. *Journal of Hezhou University*, 2012, 28(2), 5. DOI: 10.3969/j.issn.1673-8861.2012.02.009.
- [7] Que, Z. The ancient stage in the Qing Dynasty tablet inscription - "Guangxi tablet inscription and opera Research" four. *Guixue Research*, 2015, 148-153.
- [8] Guo, W. Protection and development of ethnic cultural resources in the Xijiang River Basin of Guangxi. Journal of Yulin Normal University, 2005.
- [9] Peng, J.W. Sacred and secular space: investigation of ancient stage in Hezhou, Guangxi. Guangxi Normal University, 2012. DOI: CNKI: CDMD: 2.1011.246777.



© 2024 by the author(s); licensee International Technology and Science Publications (ITS), this work for open access publication is under the Creative Commons Attribution International License (CC BY 4.0). (<http://creativecommons.org/licenses/by/4.0/>)