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# Digital Cultural and Creative Product Design of The Three Kinds of Carvings in Huizhou

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## Abstract:

Through studying the design innovation of digital cultural and creative products of the three kinds of carvings in Huizhou, the design methods of digital cultural and creative products of the three kinds of carvings are summarized, and the optimization and expansion are explored under the application of new media and new technologies through specific digital cultural and creative product design practice. In terms of research methods, the new methods of digital cultural and creative product design based on digital media technology and interactive experience are analyzed, the digital cultural and creative product design methods of graphic transfer, dimensional transformation and media application are summarized, a graphic data platform of the three kinds of carvings in Huizhou is built, targeted design research and development is carried out based on use of digitalization technology and mobile media. Through a series of design practices of digital cultural and creative products of the three kinds of carvings in Huizhou, the interactive experience between the products and users is optimized to inherit the culture and crafts of the three kinds of carvings in Huizhou with new ideas and methods.

## Keywords:

Three Kinds of Carvings in Huizhou, Digital Cultural Creation, Experience, Product Design

## 1. Introduction

The three kinds of carvings in Huizhou is a collective name for the three crafts of wood carving, brick carving and stone carving that were passed down in the ancient Huizhou area. They were included in the list of Chinese intangible cultural heritages in the first batch. They are a shining pearl of the intangible cultural heritage of Anhui Province. They are the decorative sculptures by which the craftsmen represent the buildings of Ming and Qing Dynasties in the ancient Huizhou area and the embodiment of the local people's cultural system and folk beliefs, they have complex craftsmanship and superb aesthetic value. At present, the inheritance and development of the three kinds of carvings in Huizhou are facing difficulties. The first is that the

soil on which the three kinds of carvings live is gradually disintegrated due to the impact of modern lifestyles and the transformation of residential buildings, and the "functionality" of the three kinds of s in Huizhou is gradually lost; The second is that the inheritors of the skills of the three kinds of carvings in Huizhou must have the influence of traditional regional culture and aesthetic concepts, and at the same time must have exquisite craftsmanship, which requires a lot of energy and time to hone, whereas the inheritance form of the skills of the three kinds of carvings in Huizhou is mainly the traditional master-apprentice system with more condition restrictions [1]; The third, the culture and products of the three kinds of carvings in Huizhou are out of touch with contemporary society, the market and new Internet media, the inheritance model is outdated, and their development is separated from the new forms of contemporary society, new media and mainstream aesthetics. The live inheritance of the three kinds of carvings in Huizhou should rely on the current new technology, integrate new culture and new media and take a diversified development road. [2]

## 2. Development Ideas of New Technology and New Media

### 2.1. Application of Mobile Self-Media Digital Technology

With the continuous development of the information age, the mobile Internet organically integrates the portability of mobile communication with the rapidity of the Internet to provide a more efficient information exchange platform for the majority of users. Mobile media provides various forms of interactive carriers, such as Weibo, WeChat public account, APP applets, etc. Audiences only need to interact with mobile carriers such as mobile phones to watch the three kinds of carvings in Huizhou. The application of mobile media and digital technology provides a new platform and medium for the interactive experience, online museum and handicraft experience of the three kinds of carvings in Huizhou.

Through the sorting and analysis of mobile media platforms and mobile big data, the accuracy of design, development and marketing of cultural and creative products can be realized, consumer demand can stimulate design, and design can also guide consumption.

### 2.2. Building Graphic Data Platform of the Three Kinds of Carvings in Huizhou

The profound connotation of the decoration art of the three kinds of carvings in Huizhou reflects and reveals the artistic specialization of Huizhou architectural culture. It almost covers all aspects of society, economy, culture, history, customs and folk conditions at that time, it is a live small encyclopedia of urban and rural society in Huizhou, it is an important window for witnessing and looking into the development of Huizhou culture and art at that time. Even a simple carved decoration pattern also shows a certain essence of traditional moral principles, and is the crystallization of the Huizhou people's aesthetic appeal and the hard-working wisdom and artistic talent of folk artists at that time.

The graphic data platform of the three kinds of carvings in Huizhou is to digitally organize the graphics, carving techniques, meanings, background culture and other system elements of the three kinds of carvings in Huizhou, and to record cultural heritage resources in the form of images, audio and video, etc. The establishment of the data platform provides great convenience for the dissemination of the three kinds of carvings in Huizhou and the design and development of digital cultural and creative products. First, digitization of resources facilitates provision of materials for search

and reference for the design of cultural and creative products; Second, the digital data constructed from the three kinds of carvings in Huizhou can store and record research data such as graphics and text for a long time, which is conducive to supplementation; Third, through data sharing, it is convenient for people to experience the artistic charm of the three kinds of carvings in Huizhou through the Internet.

## 3. Design Method of Digital Cultural and Creative Products of the Three Kinds of Carvings in Huizhou

### 3.1. Translation of Graphic Symbols

The premise for graphics to communicate is the common cultural background and identity of social customs. E. H. Gombrich once mentioned that graphic symbols are the "characters formed by cultural environment" [3]. Graphic design is the process of transforming ideas into visual language. The Three kinds of carvings in Huizhou contain rich folk graphic resources. For example, in Huizhou woodcarving, the themes of looking for persons of talents and virtue: "Emperor Shun cultivates in Lishan Mountain", "King Wen of the Zhou Dynasty visits the social elite", "Three Visits to the Cottage" and other graphic elements, most of which are high-quality materials for character symbols and animated characters. Landscape theme: "Eight Views of Xiaoxiang", the auspicious graphics of Huizhou brick carvings, such as rare birds and auspicious animals, seasonal flowers and birds, decorative patterns, and antique design vases are the resources that can be deeply used in product design and decoration. [4] The graphic design of digital cultural and creative products is widely used in new media platforms, such as the symbolic expression in UI design, the VI system of APP, these graphic expression designs have distinct characteristics of the times. The elements of the three kinds of carvings in Huizhou have rich categories and strong nature of folklore, culture and art, and have rich information expression. Their unique graphic style can highlight the advantages of visual presentation. In the design and expression of digital cultural and creative products, the original graphics can be translated and expressed through modern design, that is, retaining the simple and unadorned, vigorous, exaggerated and condensed shaping form, and using specific methods such as abstraction, deformation, intensification, reconstruction and replacement to translate and express them [5].

### 3.2. Dimensional Transformation

With the development of science and technology, three-dimensional virtual technology is continuously being optimized and upgraded, followed by the optimization of the entire art design system. Three-dimensional rendering technology has prompted computers, digital tablets, scanners and other equipment to begin to replace traditional paper, pens and other tools. The three-dimensional effect it renders is more superior. Dimensional transformation is an important method of digital cultural and creative product design, that is, the transformation between two-dimensional plane and three-dimensional animation or three-dimensional product expression. Among the creative techniques of the three kinds of carvings in Huizhou, there are reliefs, open carvings, round carvings, etc. The sculptures presented by these techniques are easier to present through three-dimensional rendering, which have made new breakthroughs compared with the traditional two-dimensional rendering. By using animation, video and other three-dimensional rendering technologies, digital

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cultural and creative products in the direction of education, entertainment, etc. can be developed to inherit the cultural value of the three kinds of carvings in Huizhou.

### 3.3. Media Application

It is said in the "Book of Changes": The metaphysical is the Tao, and the physical is the implement." The relationship between "Tao" and "Implement" can be understood as the connection between metaphysical culture and physical artifacts or media. The design of digital cultural and creative products can flexibly use the transformation relationship carried by the media, from virtual to reality to reflect the virtual with reality. In the APP interface of digital cultural and creative product, users can participate in the adaptive design throughout the process. For example, by setting up a custom design function in the APP, the audience can extract materials for design according to their preferences, select the appropriate graphics of the three kinds of carvings in Huizhou, and after the graphic design is completed, they can choose the items they need for printing or production, and they can also choose the material, craft, color, etc. of the products to complete the personalized design, after paying the fee, they can get the finished design or production material package. [6] The audience participates in the design throughout the whole process, which can not only deepen the cognition and understanding of the cultural and artistic expression of the three kinds of carvings in Huizhou, but also obtain a sense of pleasure and accomplishment from the personalized customization.

## 4. Design Practice of the Products of The Three Kinds of Carvings in Huizhou

### 4.1. APP Design of the products of the Three Kinds of Carvings in Huizhou

The popularity of smart phones and the development of mobile media have made APPs a commonly used digital tool in people's lives. Using APPs as a medium, three modules, namely "online exhibition", "paper-cutting lesson" and "DIY digital mall" are set up using the above design methods to realize the functions of digital display, cultural heritage and sales of the products of the three kinds of carvings in Huizhou.
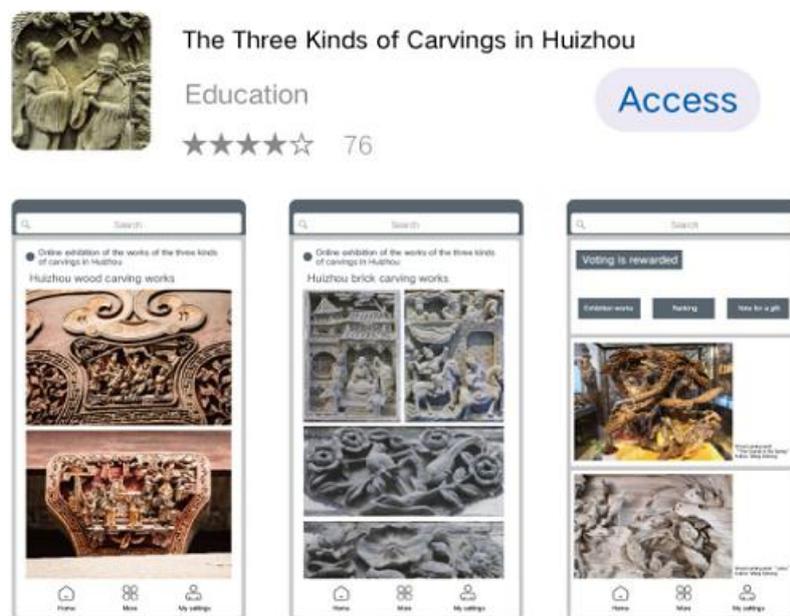


**Figure 1.** *Illustration of APP online exhibition module of the three kinds of carvings in Huizhou.*

The "Online Exhibition" module allows the audience to appreciate the products of the three kinds of carvings in Huizhou from the APP through the mobile phone client anytime and anywhere, and understand the cultural connotations of exquisite patterns of the three kinds of carvings in Huizhou to meet their needs to watch the exhibition without leaving home (Figure 1).

The main advantage of online exhibition is to save the cost of exhibition, effectively control the wastage of resources, and the exhibition forms are rich, and the exhibition cycle is not limited by time. The exhibition can be displayed in various forms such as static two-dimensional pictures, dynamic three-dimensional animation and video, avoiding the risks caused by uncontrollable factors in the on-site exhibition. [7] In the online exhibition section, some interactive links with the audience should be set up, for example, voting for the audience's favorite works or writing about the exhibition experience to win small gifts, etc., so as to obtain the audience's experience feedback, and then optimize and perfect the design of the section.

In the module of "Courses for production process of the products of the three kinds of carvings in Huizhou", courses of online public welfare and paid type production process of the three kinds of carvings in Huizhou are set up, which realize the online teaching function of the carving techniques of the three kinds of carvings in Huizhou (Figure 2).
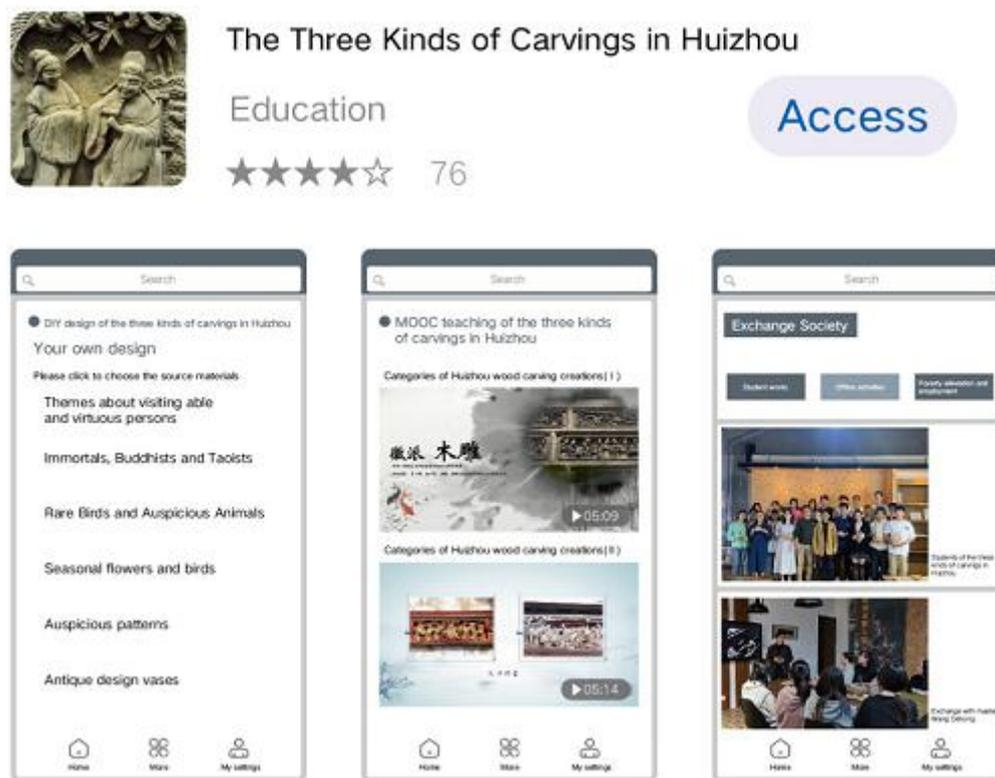


*Figure 2. Illustration of fabrication process MOOC module of the three kinds of carvings in Huizhou.*

There are two main contents to be taught. The first content is the cultural course of the three kinds of carvings in Huizhou, which mainly tells the development history of the three kinds of carvings in Huizhou and the Huizhou folk culture background; The second content is the explanation of the craftsmanship of the three kinds of carvings in Huizhou, including material selection, flat carving, relief carving, round carving, hollow carving and other specific crafts. The online courses realize inheritance of the

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craftsmanship of the three kinds of carvings in Huizhou, and break through the limitations of the traditional one-to-one master-apprentice teaching system. It is also possible to sell the course products through media traffic. In the module, it is planned to set up course evaluation objectives and a public welfare inheritance reward system, to provide outstanding students with working opportunities in the production of cultural and creative physical products, and provide information and assistance for poverty alleviation industry. The APP teaching courses are combined with offline craft guidance to build a craft inheritance strategy with interaction between digital media and the Internet online and offline.

The "DIY Digital Mall" module provides DIY design and private customization functions (Figure 3). Users can select graphic resources under the classification of characters, animals and plants, and use methods such as reconstruction, topology, distortion, perspective change, two-way continuity, and four-way continuity to obtain their own design patterns of the three kinds of carvings in Huizhou. The mall provides the function of customizing cultural and creative products. Users can choose the patterns of the three kinds of carvings in Huizhou or design their own patterns to customize their favorite products, such as bags, throw pillows, U pillows, tableware, etc. After customers choose the corresponding products, the mall will complete the production and sent out the products within one week. Through digital processing, the patterns of the three kinds of carvings in Huizhou can be reused to convey the cultural meaning behind the patterns.
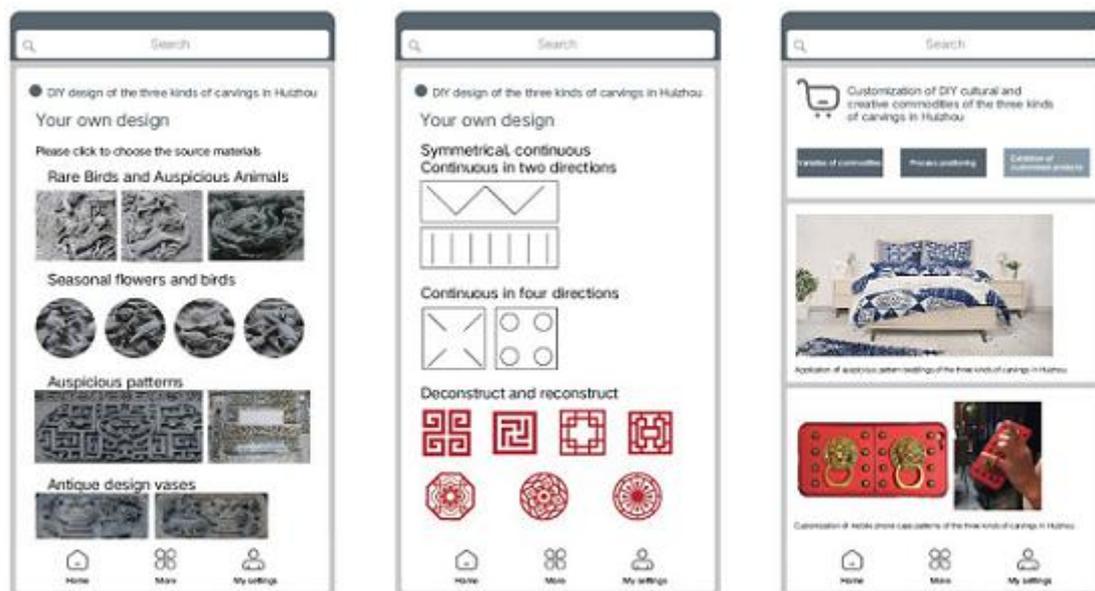


*Figure 3. Illustration of DIY digital mall module of the three kinds of carvings in Huizhou.*

### 4.2. Design of Animation Characters of the Three Kinds of Carvings in Huizhou

New media animation has been spread to all aspects of people's daily life. To tap its future development potential and open up development space, creating social value is the top priority of the current development of new media animation. From a macro perspective, new media animation technology reflects the comprehensive strength of a country's information technology; from a micro perspective, as one of the expressions of the art level of painting, animation technology has already become an inevitable trend in its industrialization. Chinese ink and wash animations such as "Buffalo Boy and the Flute" and "Feelings of Mountains and Waters", and color animations "Havoc

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In Heaven", "Tale of The White Snake", "Nezha", etc., are all classic successful cases of using dynamic media to disseminate traditional Chinese culture. The three kinds of carvings in Huizhou can use 3D animation to effectively disseminate their culture and folk art to create a new IP image of the three kinds of carvings in Huizhou.

Based on the historical figures of immortals, Buddhas and Taoists in the woodcarving of Chengzhi Hall in the three kinds of carvings in Huizhou, the animated characters in the graphic design not only retain dynamic expressions of the vivid characters in the prototype, but also adds the "Q cute" characteristic in modern cartoon images through cartoon design, which are witty and interesting, easy to be accepted and loved by young people, and integrated into the present time.

### 4.3. Game Design of the Three Kinds of Carvings in Huizhou

As an important part of cultural and creative products in the application of new media, interactive games are intuitive, vivid, entertaining and experiential in story narration, visual presentation and interactive design. Therefore, they are suitable for visual representation and digital innovation of cultural heritage crafts and culture.

The games of the three kinds of carvings in Huizhou are suitable for teenagers to develop puzzles and cultivate their hands-on skills. In the games, a virtual engraving on the screen is set up, the game players complete the engraving pattern of increasing complexity within the specified time, and scores are given through the screen, the player with highest score wins. In the games, it is planned to set up links such as reference cases for the three kinds of carvings in Huizhou, questions and answers about the three kinds of carvings. Finally, through cartoon screens and language encouragement, users are encouraged to try to make sculptures, and they can upload them to interact with other online users. Top three best works will be selected by the artists of the three kinds of carvings today through appraisal, and those who have won the top three rankings ten times consecutively will receive one-on-one craft teaching courses with the artists online.

The folk culture behind the three kinds of carvings in Huizhou is profound and long-standing. The classic characters in the operas of the three kinds of carvings in Huizhou are favored by people because of their typical characteristics. In the early Qing Dynasty, the folk like Yue Fei and Generals of the Yang Family, love the stories about the figures in the period of Three Kingdoms, the Story of Chinese Gods, Heroes of the Marshes, A Journey to the West, Tom, Dick and Hairy, and Romance of the Western Chamber, etc. Among them, the theme of "The Three Kingdoms" is the most widely used, and is almost well-known to every family and women and children. Through the design of the game roles like "Tom, Dick and Hairy", the audience can choose among the three characters Qiu Ranke, Li Jing and Hong Funü in the game to simulate the establishment of ancient city states, develop urban architecture, obtain resources, resist enemy invasions, and develop city-state military power and so on. The game inserts woodcarving works of the three kinds of carvings in Huizhou, allowing players to subtly understand and familiarize themselves with the historical themes and cultural background associated with the three kinds of carvings in Huizhou during the entertainment process.

## 5. Conclusions

Combination of digital media technology with interactive experience design is an innovative form of digital cultural and creative research and development of the three

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kinds of carvings in Huizhou, and it also provides a reference model for the design of similar digital cultural and creative products of cultural heritage. Graphic translation, dimensional transformation and media reprinting are design methods that can be used in the design of digital cultural and creative products. The development of APP products on the smart phone platform that integrates mobile data has broadened the form of inheritance and development of the three kinds of carvings in Huizhou, linking virtual operations with physical manufacturing, and allowing the audience to participate in a pleasant experience from design to personalized customization. [8] Through the design products of new media such as animation and games, we can develop digital cultural and creative products that integrate cultural knowledge and entertainment interaction, break the shackles of traditional propaganda and inheritance forms, and experience the cultural and artistic charm of the three kinds of carvings in Huizhou in a relaxed and pleasant experience, and arouse people's attention and love to traditional culture.

## Conflicts of Interest

The author declaresthat there is no conflict of interest regarding the publication of this article.

## Funding

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