

Rural Ecological Environment Landscape Design of Ceramic Art Elements

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Abstract

Ceramics has a very long history in China, and has developed a very brilliant art from it, and can even be said to be one of China's business cards, China has a long history of ceramic art, and the excavated pottery has a history of more than 8,000 years ago, with pottery and the famous Yang shao culture. And porcelain is about four thousand two hundred years ago when found in Xia County, Shanxi, which is the earliest primitive celadon has been excavated in China. Pottery and porcelain in China have at least a thousand years of history, and through the continuous evolution of history, ceramic products have now become an important symbol of each cultural period, has also become an important symbol of China. Since ancient times, China has been a traditional agricultural country, and ceramic products have gradually developed from simple use to many artistic functions in our countryside. The development of ceramic art and the design of rural ecological environment landscapes have become more attention, so this paper will also analyze the specific application strategy through the application practice of ceramic art in rural ecological environment landscape design.

Keywords

Ceramic art elements, Rural ecological environment, Landscape design

Introduction

Along with the development of China's economy and technology, people's demand for spiritual materials has become higher, especially after the reform and opening in the 1970s and 1980s, Western culture has made a lot of impact on China's inherent culture. China has learned and absorbed the rich culture of other countries and nations, from which Chinese traditional culture has continuously drawn influence and made great development, including this includes our ceramic culture and art [1].

The current research on ceramic culture and art in China has also made considerable achievements, and these studies are currently focused on four aspects, namely the creation of ceramic art, the aesthetics of ceramic art, the current state of modern ceramic art, and the ideas related to ceramic art and

culture. The introduction of these related concepts and ideas has provided a wealth of material and theoretical support for the study of ceramic art. In terms of Chinese popular art and culture, researchers in China usually believe that there is usually an inverse connection between contemporary art and popular culture [2].

That is, contemporary art is to be public more radical, its forms are becoming increasingly diverse, and the meanings behind them are becoming increasingly sensitive and nuanced, with a close connection to the ideas of contemporary artists, while popular culture, which is currently in vogue, usually has the quality of being accepted and loved by the public.

How to find a balance between contemporary art and popular culture is a problem that all forms of

culture and art face. However, ceramic art has the unique advantage of being inextricably linked to the traditional agricultural culture of China and is therefore far more accepted in China than in other regions, especially in rural areas, where it has multiple meanings [3].

Nowadays, various cultural genres have developed in China, among which the art of landscape and environment in rural areas has gradually received attention from various art scholars. China has always been a large agricultural country, and with the increasing urbanization, the degree of urbanization has become increasingly urbanized, so how to protect the rural landscape and how to preserve the rural landscape in the wave of urbanization has become a more concerned issue.

The protection of agricultural landscape is not only out of the need to protect the countryside art but also based on the requirements of China's environmental protection policy, the past rough agricultural land use will be gradually eliminated by modern life and modern requirements, and replaced by a more flexible, more refined agricultural development according to local conditions.

The rural ecological environment landscape design is also out of the current requirements for the development and protection of rural economy and ecological environment.

In countries with a high degree of urbanization, the ecology and environment of rural areas are more widely concerned by society and the state, which also reflects the higher requirements of countries for environment and ecology under the current economic and social development.

In summary, in the design of rural ecological landscape, the focus on the use of ceramic art elements in this design is not only based on the long history and characteristics of China, but also based on the requirements of modern society, which has important significance in both the development and inheritance of culture. Establishing deeper connections between culture, nature, and sustainable development is helpful.

Materials and methods

Advantages of ceramic materials in landscape design

Pottery and porcelain products have a long history of use and development in China, therefore, the technology of smelting and firing of pottery and porcelain in China has been very sophisticated. In addition, due to the material characteristics of ceramics itself, its high melting point and very high hardness, it can undergo a long period of weathering, oxidation and other effects without discoloration, while in the molding process is very wear-resistant, in the smelting process of drawing patterns and patterns are not easy to wear away, and therefore can be preserved for a thousand years [4].

It is the use of this feature of ceramic materials, combined with our folk ceramic smelting technology is very pure, in the process of rural ecological landscape design, ceramic products can be used in large quantities, while ensuring the quantity and specifications, but also to ensure the quality, while the ceramic products can be produced in bulk to express the spirit of the village patterns and patterns. This has obvious advantages for landscape design [5].

Ornamental advantages of ceramic art in landscape design

Ceramics has been a very important part of Chinese culture since ancient times. It not only has important practical significance but also has become an important cultural carrier for many literati. Due to the characteristics of ceramic materials, many artistic results drawn on ceramic products can be retained and handed down and become an important part of Chinese traditional culture [6].

This includes ceramic murals, ceramic sculptures, ceramic products and many other ceramic art forms. Ceramic murals represent the peak application of ceramic characteristics. Because ceramic can permanently retain all kinds of calligraphy, writing and painting works, so the use of ceramic paint murals, this material can not only many arts now on

the same carrier, can more culture spread, through the baptism of the time not fade, the scenic landscape design has important significance to [7]. In addition, the use of ceramic materials for sculpture is also an important form of expression. When a region forms its own culture and preserves its culture as a result, it must adopt certain careers, and sculpture is one of the choices that cannot be ignored. In landscape design, sculpture is the result and crystallization of cultural cohesion, which is usually of great significance to the culture of the region. The selection of ceramic as a sculpture material, on the one hand, can provide more artistic space for sculpture, so that sculpture, an artistic expression form, is not only confined to the overall appearance. The patterns and designs of the sculpture itself can be more carefully crafted, so that the art forms become more diverse.

On the other hand, also can ensure that the sculptures are usually placed outdoors for all kinds of people to visit, and the oxidation resistance and wear resistance of the ceramic to ceramic sculptures preserved provide an important basis for a long time. It also allows the culture of the time to be handed down for a long time. In the long history, ceramics and other popular products have long played an important role in disseminating culture and aesthetics and have been practiced and verified for a long time. Therefore, there is no need to say too much here [8].

China also has corresponding requirements for environmental protection and low-carbon life in the design of rural ecological environment and landscape, and the fragments of ceramic products are often used as the carrier of contemporary ceramic art, and are found in various works of art. Therefore, in rural landscape design, ceramic fragments can also be used for landscape design. On the one hand, contemporary ceramic art can be integrated into rural landscape design. On the other hand, it can also respond to the national requirements for environmental protection and low carbon.

The significance of ceramic art for rural landscape design

According to the unearthed time of ceramic products, the use of pottery by the Chinese nation can be traced back to the Neolithic Period. People gradually discovered and mastered the manufacturing method of ceramics and used pottery to improve their living conditions. Marx once said: the biggest difference between man and animals is that man can make tools. Therefore, the difference between humans and animals is also distinguished from the making and use of pottery [9].

With the increasing use of ceramic products by human beings, pottery and porcelain began to play the role of storing seeds at the beginning and gradually changed into tools that are often used in daily life. Pottery and porcelain appliances assume the use as tableware and tea service, and the daily life of the people is more closely linked to rise. The reason why ceramic products can beat other materials and stand out in the long river of history is mainly because of their material characteristics. These characteristics make pottery and porcelain not only meet the needs of human daily life, but also gradually become the carrier of human culture and art transmission and inheritance.

In rural landscape design, this feature of ceramic art is of great significance to the practical practice of the countryside. Because rural landscape design usually not only has high requirements in aesthetic aspects, but also has corresponding requirements for its practicality, which is also the difference between rural landscape design and urban landscape design. Ceramic products can be widely selected in rural areas because of their dual properties of practicality and artistry, which can meet the requirements of cultural facilities construction without harming the use of daily appliances in rural landscape design [10].

Landscape design of rural ecological environment

Landscape design in rural areas usually needs to meet the needs of national policies to protect the environment and green ecology. Therefore, in the

aspect of environmental landscape design, it is also necessary to consider the specific requirements of ecology, start from the overall idea, and integrate the details of ecological requirements into the design of environmental landscape. Over the past few decades, China's urbanization process accelerated, many landscapes of the countryside from the huge impact, many rural environments landscape design learning city blindly, causing most of the rural landscape and water same situation, for the rural ecological environment is also a kind of damage [11].

Therefore, under the current background of increased attention to the construction of rural ecological civilization, it is necessary to combine the ecological environment characteristics of rural areas, carry out environmental landscape design according to local conditions, integrate the local landscape and characteristics, and finally realize the ideal requirements of rural ecological environment landscape design. To give full play to the ecological benefits of the rural ecological environment and the whole rural landscape design can continue in daily life, forming a sustainable and well-run ecological landscape system.

To achieve a design that truly adapts to local conditions, it is essential for the designer to conduct field investigations, gain a comprehensive understanding of local customs, and document distinctive regional features. These unique characteristics, which distinguish the area from others, should be carefully considered in the design process. Such an approach helps avoid the homogeneity and lack of identity often observed in contemporary urban construction. Let the rural landscape construction out of a unique rural but innovative road, so that the rural landscape design can realize the late start, but in their own track to obtain their own advantages.

In the process of field investigation in rural areas, it is necessary to formulate the design concept of the rural area in advance, differentiate key aspects to be investigated from this concept, and conduct field

investigation under the guidance of an overall idea can avoid the waste of resources.

Different designers have different ideas when designing the overall architecture, and this paper will list the ideas of different designers for reference [12].

Rural ecological landscape design ideas

In the aspect of rural ecological landscape design, different people have completely different ideas. Of course, the goal is to give full play to local advantages, spread local culture, respond to national policies, and carry out rural construction.

In terms of overall ecological landscape design, different people have different emphasis. They combine landscaping with ecological environment improvement according to the actual landscape environment. This kind of thinking mainly occurs in areas with poor ecological environments, such as desert areas and areas with serious soil and water loss. For local ecosystem itself is relatively vulnerable areas, in carries on the overall architecture design, need to consider the local ecological conditions, whether is suitable for large-scale renovation, if cannot afford to transform the achievements, should focus on minimal ecological landscape design. Furthermore, it is necessary to consider whether the fragile ecosystem can be managed through local ecological landscape environment design and ultimately achieve the purpose of rural ecological landscape environment design [13].

For rural areas with a certain level of development, it is essential to assess the local development status through a comprehensive evaluation of multiple factors, including the types of natural landscapes (such as terrain and topography), the local natural environment (such as dominant crops and plant characteristics), and the condition of landscape development and management. The local landscape often reflects distinctive humanistic and aesthetic qualities, as well as specific features related to nightscape, proximity to urban areas, and the degree of urbanization. All these aspects are closely related

to the design and construction of rural ecological landscape environments.

In addition to considering the above objective requirements, designers should also conduct a subjective analysis of their own design. This includes evaluating whether the ecological landscape design ensures safety, aligns with the overall local style, meets green and ecological requirements, maintains a balance between cost and benefit, and adequately reflects local characteristics and the inheritance of local culture [14].

The above is the overall design idea. Among them, the specific local landscape and environmental construction need to be adjusted according to the local rural situation, so it also needs to be considered in more detail. First, it is necessary to consider the most basic local vegetation characteristics. For the consideration of the ecological environment, the local vegetation will become the most important subject in the design and construction of the local rural ecological environment. At the same time, it is also necessary to consider the characteristics of the local natural environment, which plants or crops are suitable for growth. In the process of field construction, these will become an important part of the local rural ecological construction, and the part with the most local characteristics and style. In addition, due to the ecological environment landscape design is also a kind of cultural inheritance and spread, therefore, the vegetation and crops that have long been cultivated in Longxi should be compared with elements of traditional Chinese culture, so that their cultural value can be highlighted and transmitted, excavated from the traditional culture of our country related plants, crops and cultural value to be spread, Give full consideration to local characteristics. Of course, this part of the design idea is suitable for the region with a large variety of vegetation, healthy growth and profound cultural deposits [15].

Accordingly, a considerable part of China's rural areas is still in the state of waiting for development and construction, so for this part of the rural

ecological environment landscape design, it needs to carry out more bold innovation, because there are less materials available for processing. In fact, it also gives designers a broader space to play. The first thing we need to consider is the ecological environment construction in rural areas. Because it needs to be appreciated and spread by people. If it is only appreciated by local people, the achievements of ecological environment construction will be greatly reduced. Therefore, starting from this idea, we can design an ecological environment design idea suitable for new rural areas by starting from the aspects of sightseeing and tourism routes [16].

Rural ecological landscape design methods

(1) Protection and display of biodiversity

Based on the design idea of rural ecological landscape mentioned in the preceding question, ceramic artworks will be used as infrastructure in the actual design of rural ecological landscape, supplemented by plant materials and building materials with rural characteristics for beautification [17].

First, rural areas need to be analyzed to provide ponds, forests, grasslands and other parts according to the living habits of different organisms for the survival of various organisms [18]. The picture shows the quarry garden of Nanning Garden Expo in China International Garden Expo, located in Nanning, Guangxi. The quarry has suffered different degrees of damage to the local terrain due to long-term mining by blasting, and the uneven cross-section of the nearby cliffs and the uneven terrain in the vicinity are all traces of the quarry. This has created a diverse ecological environment in the area, and it is important to consider how to use the current topography to restore the local vegetation and promote the re-establishment of the biological ecosystem. In the design, the designer uses modern aerial photography technology to scan and collect the local topographic data and build a model, based on which a more detailed record of the changes in local vegetation and water level can be

made, and a targeted analysis can be carried out to better establish the landscape design plan. As shown in Figure 1.



Figure 1. Nanning garden expo park quarry garden.
(photo source: guide design network).

In addition, from the practicality of ceramic products, you can start to build from the habitat of living creatures. Such as using some ceramic products as small pond transition areas, etc. From the artistry of ceramic products, it is also possible to turn the local characteristics of plants and animals, etc. as paintings fired on ceramic products, thus turning them into characteristic souvenirs. Ceramic products can play their own practicality as well as their artistic characteristics in appearance, thus assisting the overall ecological landscape design of rural areas.

(2) Ecological design based on soil and water conservation

Soil and water conservation are one of the important issues that rural areas must face, not only in the ecological landscape design, but also in the daily life of rural areas [19]. Soil and water conservation is a key part of the sustainable development strategy in rural areas, which will face problems such as soil erosion, soil pollution, etc. To avoid such problems in the ecological landscape construction, it is necessary to consider the local topography, plants, organisms, etc., and to use the local plants that already exist without damaging the local ecosystem. The soil and water are maintained, resulting in a minimum of erosion [20]. On the other hand, most areas with severe soil erosion produce fewer root-fixing plants, which cannot hold back the rate of erosion. The backwardness of the drainage system causes a large amount of water to flow freely on the soil surface, which lacks plants and can only flow

with the soil, eventually causing erosion. Therefore, the focus on soil and water problems means that in the ecological landscape design, the drainage system needs to be planned to assist the local water flow directionally, and to try to reduce soil erosion while maintaining soil and water.

The picture shows a corner of a streamside hotel design in Sichuan. First, the Sichuan area is located at the junction of the first and second steps in China, so the terrain is very variable and there are many rivers. As shown in Figure 2.



Figure 2. Sichuan Streamside Hotel.
(photo credit: guide design network).

Before the design transformation, the local situation can be seen, first, there is less vegetation and more rivers on the way. Considering this kind of terrain fall, therefore the soil erosion situation deserves the designer's attention. First, combining with the villagers' demand for the transformation of this site and the actual local situation, the landscape design should consider ensuring that the local vegetation can be preserved, and the scope of vegetation can be expanded to maintain the stability of soil and water. As shown in Figure 3.



Figure 3. Sichuan streamside hotel before renovation.
(photo source: guide design network).

As designers, when transforming similar areas, we should not only implement designs based on our own vision but also respect the needs and preferences of local communities. Design interventions should be guided by the functions that the area is intended to serve, ensuring that the resulting spaces possess vitality. Such designs can be both embraced and maintained by residents, reflect the distinctive local character, and attract a wider range of visitors. This way, the design will not only be accepted and maintained by the local community but also show the local style and attract more visitors, thus stimulating the vitality of an area.

(3) Localized rural landscape design

Since the topography of rural areas is different from one place to another, it is necessary to consider the local topography and design based on it. The topography of a region will have a great impact on the plants that can grow there and the animal species that are suitable for living there. Therefore, in the ecological landscape design of rural areas, it is necessary to consider the location of the local mountains and plains, the ratio, and the presence and direction of rivers.

Therefore, it is necessary to consider the local animal and plant species and their respective characteristics, and to design according to the habits of different animals and the growth characteristics of different plants.

In the same area, there are still different characteristics, so the ecological landscape design should be carried out according to the specific situation.

For example, when buildings and decorations are erected, the local topographic features should still be considered, such as the place where wood is mostly used as the main material for buildings, attention should be paid to the construction materials used for conversion near lakes and rivers, etc.

For designers to consider the local comprehensive construction level, they decided to use local materials for local materials, mainly adopt the

convenient processing of precast concrete, brick, wood, etc., not only convenient to use local materials, and in the local, already has a relatively mature processing technology, can make the final show effect close to design. As shown in Figure 4.



Figure 4. Construction of ping shin village, bas ham town, Chongqing.

(photo source: geode design).

Results and analysis

Application of ceramic art elements in the display and protection of rural biodiversity

The hotel is located inside a nature park in Spain, and the part of the hotel that has been renovated is an abandoned agricultural building. When designing the landscape, the designers fully considered the existing local ecological environment, and protected the existing ecological circle, local architectural characteristics, and the living habits and customs of the nearby villages to the greatest extent. The picture shows what the site looked like before the renovation. The site was a small courtyard, but due to the uneven ground, the site was abandoned and had no other function before it was designed as a landscape. As shown in Figure 5.



Figure 5. Scene of the main entrance road of talk dominical hotel before reconstruction.

(photo source: moue design network).

This corner is designed as the entrance of the hotel, while preserving the topography and plants of the site. At the same time, many other plants from the nature park were introduced here. They are indigenous plants, preserving the characteristics of local plants while also protecting the biodiversity of the area as much as possible. In addition, most of the transplanted plants are cultivated with ceramic products. While giving full play to the practicality of the ceramic products, the color and pattern of the ceramic products are integrated with the local style, which is perfectly integrated and not out of place. As shown in Figure 6.



Figure 6. The scene after the reconstruction of the main entrance road of talk dominical hotel.

(photo source: moue design network).

In addition, not only does the entrance use many ceramic products in the same color as the overall architectural style, but the design also incorporates these ceramic products throughout the hotel. While fully integrating into the local natural landscape, the combination of ceramic products and plants should not be too monotonous. The combination of ceramic products and plants should avoid monotony and include artistic expression. Near the swimming pool of the hotel, this method is still used to plant plants inside the ceramic products, which can not only provide an environment for plants to grow, but also serve as an ornament through the shape of the ceramic.

At the same time, ceramic is not only used as a growing vessel for plants, but also local roads and outdoor steps are made of ceramic materials. This design not only allows ceramics to be further integrated into the landscape design of the site but also considers the local expertise in ceramic smelting. As shown in Figure 7.



Figure 7. The scene after the reconstruction of the swimming pool of the hotel Trinidad and minicamp.

(photo source: moue design network).

The landscape design of the rural ecological environment takes full account of the local plant species. All the plants are native species existing in the local nature park, as well as plants that most villagers are familiar with and would grow near their houses and buildings. In addition to paying attention to the local ecological environment, for places where plants cannot be planted, ceramic products are used as containers to plant plants without exposed soil, fully utilizing the combination of ceramics and plants in each design part, which increases the sense of design and art. Ceramic products can also be used as decoration to enhance the artistic temperament of the natural hotel.

Application of ceramic artistic elements in soil and water conservation

This part of the introduction will focus on the rural ecological landscape upgrading design located in Hebei Fengfeng mining area. Fengfeng mining area has a very important historical position in China's ceramic art history. It is a famous porcelain kiln in China and the birthplace of Cizhou kiln. Therefore, there are many porcelain manufacturing areas in this area, and the ceramic art in this area also plays an important role in the rural ecological landscape reconstruction design.

The development of Fengfeng mining area in recent years mostly depends on its own resources, so it also faces many problems that resource-exhausted cities need to face after the resources are gradually exhausted. Due to many local collections of resources, there are many mining subsidence areas, which are the focus of ecological landscape design.

Mining and mining subsidence areas will be accompanied by the emergence of soil erosion problems; therefore, in the design of the local landscape, it is necessary to consider the problems of soil erosion, focusing on maintaining the basic terrain and soil conservation above. As shown in Figure 8.



Figure 8. Corner of Zhangjiakou.

(photo source: moue design network).

The photo was taken in Zhangjiakou, China, where ceramic water tanks can be seen on the banks of the river. Based on the idea of soil and water conservation, the most important thing is to control the flow of rivers and gradually restore vegetation and life, to restore groundwater and keep the topsoil not easy to be taken away. In the design of this place, most of the design is not completed by the designer behind closed doors, but through communication with the local villagers, after understanding the living conditions and habits of local villagers, the local people need to keep the way of life and improve on this basis. Therefore, after paying attention to the local basic water and soil conditions, combined with the development of local ceramic technology, most of the artistic design is decorated with ceramic products. As shown in Figure 9.



Figure 9. Unique design of Zhangjiakou district

(photo source: moue design network).

The landscape was created by surveying the site and stitching together objects that are widely available in the area but rarely seen elsewhere. As there is a long history of ceramic smelting in the local area, there are many kiln tools used for firing porcelain as shown in the picture. Most of these kiln tools can only be used once or twice, so there are a lot of abandoned products. The designer makes use of this special and large amount of local abandoned products to create this wall for display. It not only takes advantage of the local special products to show the local style, but also fully finds a balance between man and nature.

In the design of rural ecological landscape, the use of new industrial products should be reduced as far as possible, but the artistic elements of ceramics should be skillfully integrated into the existing local objects, which can not only maximize the use of local resources, but also minimize the consumption of resources for firing new ceramic products and reduce the impact on the environment.

Application of ceramic art and rural ecological landscape design in accordance with local conditions

This part will take Sanbao Village in Jingdezhen as the main case to analyze how to make use of the advantage of ceramics and integrate the artistic element of ceramics into the landscape design of local villages. Sanbao Village is also known as Sanbao International Ceramic Village. Therefore, ceramic art occupies a very important position in the local area. Li Jianshen, the international ceramic master, started a series of rural ecological environment transformations in the local area, taking “pottery” as the theme of this transformation, mainly aimed at the transformation of old houses. After years of transformation, Sanbao Village has gradually become the present Sanbao International Ceramic Village.

The local ceramics and various artistic elements are fully combined to show the unique artistic charm of the local area. Ceramic works of art are combined with murals in this place. Murals are used as the

main art subject while preserving the local blue brick houses. The display of ceramic works also highlights the local characteristics. As shown in Figure 10 and 11.



Figure 10. Murals and ceramic art exhibition of Sanbao village.

(photo source: landscape China).



Figure 11. Murals and ceramic art exhibition of Sanbao village.

(photo source: landscape China).

And the local also use in the ceramic art above the advantage, fully attract visitors from all over to appreciate and learn ceramic art. Although the Sanbao village is located in the remote, it still attracts many visitors, for rural ecological landscape construction, this is one of the landscape constructions to achieve the purpose of, which attracts more and more people come to appreciate, and transmission to the spread of culture, and according to the local characteristics, and for the Sanbao village, this characteristic is local ceramic art.

In Sanbao village, there are not only many kiln sites and mine sites, which have been listed as national

or provincial cultural protection units, but also porcelain and mine caves everywhere. In landscape design in the area, and with that in mind, therefore, for the Sanbao village within the country's major cultural relics protection, can display the Sanbao village intact the original ceramic culture art style, making it more than seven hundred years of ceramic culture can get complete inheritance, via the sites to give vitality to the ceramic culture.

The development of cultural tourism in this area demonstrates that retaining local ceramic art elements and redesigning historic buildings is both feasible and practically significant. Such interventions can attract a substantial number of tourists, thereby promote cultural exchange and generating economic benefits.

Application Analysis

From the above theoretical analysis, the application of ceramic art in rural landscape design is divided into three major parts: the display and protection of diversity, soil and water conservation, and local adaptation.

This subsection primarily examines the frequency of ceramic element applications in rural landscape design, compares the use of different types of ceramics, and evaluates residents' satisfaction with the increased incorporation of ceramic art. The number of applications of ceramic art elements in rural landscape design increased year by year, 250 in 2010, 310 in 2012, and 450 by 2022, which shows that the increase in the application of ceramic art has made an important contribution to rural landscape design, and the popularity of ceramic art elements is high. This upward trend not only reflects the growing recognition of ceramic art as a sustainable design element but also indicates that its integration enhances the cultural and aesthetic identity of rural spaces. Furthermore, the gradual accumulation of cases provides valuable references for future design practices, helping designers better balance functionality and artistic expression. As shown in Figure 12 below.

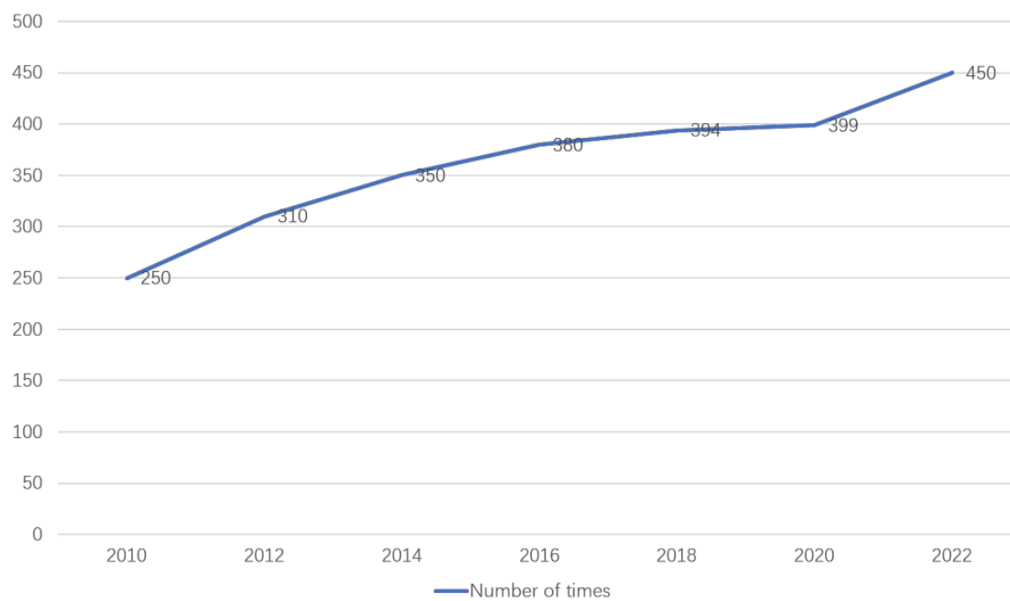


Figure 12. Number of applications of ceramic art in rural landscape design from 2010 to 2022.

The application rate of different ceramic types in rural landscape design is also much higher.

The application rate of Jun kiln is 0.43 in 2010 and 0.54 in 2022, the application rate of Ke kiln is 0.25 in 2010 and 0.44 in 2022, the application rate of Guan kiln is 0.35 in 2010, 0.61 in 2022, the

application rate of Ru kiln is 0.45 in 2010 and 0.54 in 2022, the application rate of Ding kiln 2010 was 0.61, 2022 0.75, thus showing the increased application rate of ceramic elements in rural landscape design.

As shown in Figure 13.

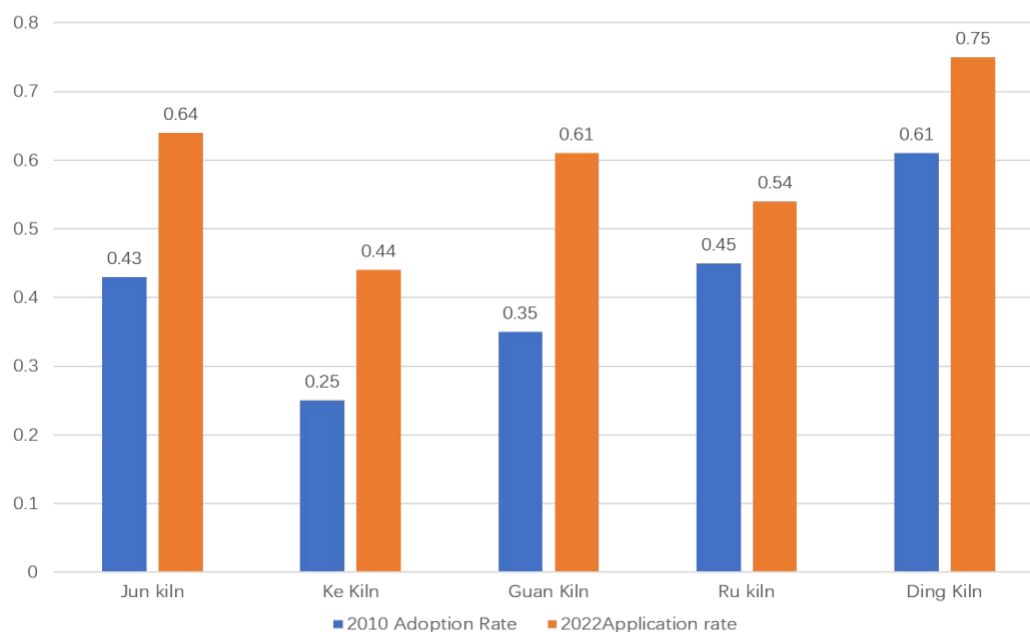


Figure 13. Application rate of different ceramic types in rural landscape design.

The study investigated the satisfaction rate of rural residents with and without ceramic art inclusion in different years: the satisfaction rate of residents without ceramic art elements was 0.45 in 2010, 0.56 in 2022, 0.68 in 2022, and 0.85 in 2022, which

shows that the satisfaction rate of residents with rural design. The satisfaction rate for designs with ceramic art elements is higher than that for designs without ceramic elements every year.

This is shown in Figure 14 below.

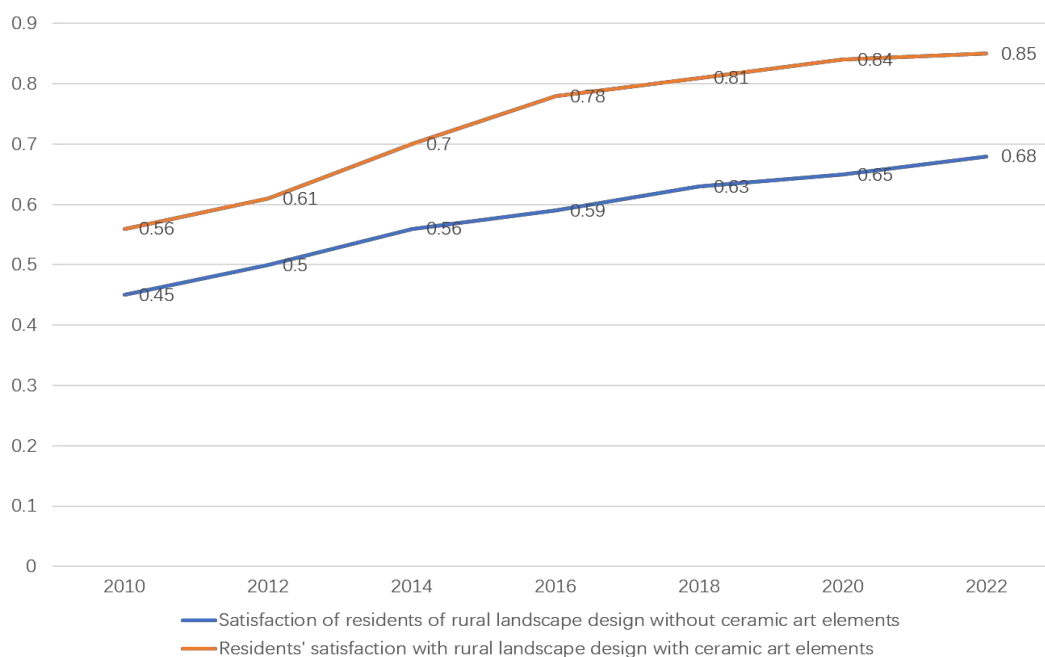


Figure 14. Comparison of residents' satisfaction with designs with or without ceramic art elements from 2010 to 2022.

The application of ceramic art in rural landscape design is divided into three major parts: display and protection of diversity, soil and water conservation and local adaptation, of which biodiversity accounts for 23.6%, soil and water conservation accounts for 26.8%, and local adaptation accounts for 23.6%,for

49.6%, which shows that the application of ceramic art in rural landscape design is mostly based on local adaptation, with biodiversity and soil and water conservation occupying a quarter of the weight and share. As shown in Figure 15 below.

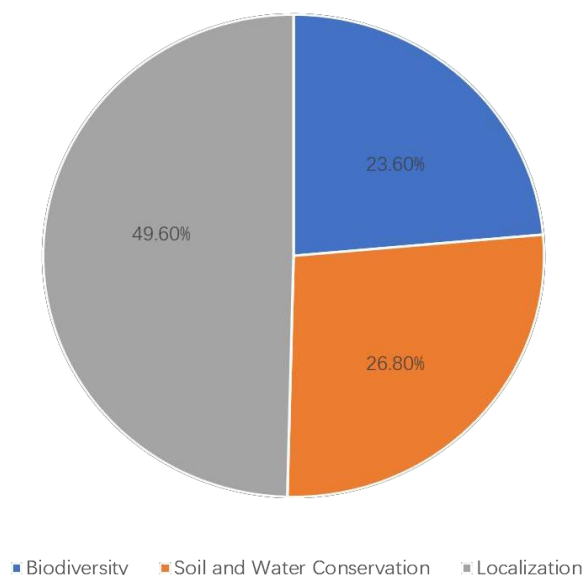


Figure 15. Comparison of the application of ceramic art in rural landscape design.

Conclusion

In the current ecological landscape design of most rural areas in China, many important ideas have

been guided and put into practice. Ceramic art has a long history in China. Integrating the elements of ceramic art into rural ecological landscape design is not only the inheritance and continuation of Chinese

traditional art culture, but also an essential requirement of rural ecological landscape construction in the new era. Ceramic art products not only bear the functional requirements of practicality but also fully meet the aesthetic requirements of artistry. They are of great significance in many works of art and appropriately fit the specific requirements of ecological landscape construction in rural areas of China. Numerous practical examples of rural ecological landscape construction have already begun to use the element of ceramic art and have achieved obvious positive results.

Ceramic culture, of course, is not only unique to our country's culture, in the application of ceramic products to rural areas of landscape design, can fully absorb foreign culture, the various regions and properly national learning and transformation for the use of ceramic art, take the essence to the dregs, and applied to our country countryside ecological landscape construction.

At present, ceramic art and rural ecological construction still have a long way to go due to the lack of attention and aesthetic ability development in rural ecological landscape construction in China. But art will develop together with society, I believe that with the incorporation of more artistic elements into landscape design, rural ecological landscape construction will achieve greater success.

Funding

This work was supported by Philosophy and Social Science planning project of Anhui Province : Research on productive protection of Ningguo Long Yao Cerami Under the vision of intangible Cultural Heritage (project number: AHSKY2021D121).

Acknowledgements

The authors would like to show sincere thanks to those techniques who have contributed to this research.

Conflicts of Interest

The authors declare no conflict of interest.

References

- [1] Povolny, S. J., Seidel, G. D., Tallon, C. (2022) Numerical investigation of thermomechanical response of multiscale porous Ultra-High Temperature Ceramics. *Ceramics International*, 48(8), 11502-11517.
- [2] Yildiz, A. B., Yixuan, H., Babu, R. P., Hansen, T. C., Eriksson, M., Reddy, K. M., Hedström, P. (2022) Design, synthesis, structure, and stability of novel multi-principal element (Ti, Zr, Hf, W) C ceramic with a miscibility gap. *Journal of the European Ceramic Society*, 42(11), 4429-4435.
- [3] Baux, A., Nouvian, L., Arnaud, K., Jacques, S., Piquero, T., Rochais, D., Chollon, G. (2019) Synthesis and properties of multiscale porosity TiC-SiC ceramics. *Journal of the European Ceramic Society*, 39(8), 2601-2616.
- [4] Lopolito, A., Sica, E. (2022) Designing Policy Mixes to Address the World's Worst Devastation of a Rural Landscape Caused by Xylella Epidemic. *Land*, 11(5), 763-764.
- [5] Li, Z., Wang, B. L., Wang, K. F., Zheng, L. (2019) A multi-scale model for predicting the thermal shock resistance of porous ceramics with temperature-dependent material properties. *Journal of the European Ceramic Society*, 39(8), 2720-2730.
- [6] Zhou, W., Cao, M., Wang, H., Hao, H., Yao, Z., Liu, H. (2022) Defect structure design of TiO₂ ceramics with colossal permittivity by doping with Ti metal powder. *Ceramics International*, 48(12), 16723-16729.
- [7] Zhang, K., Bai, L., Jin, H., Lin, G., Yao, G., Wen, D. (2022) A comparative study of pool boiling heat transfer in different porous artery structures. *Applied Thermal Engineering*, 202, 117759.
- [8] Li, C., Yuan, Y., Sun, C., Sun, M. (2022) The Perceived Restorative Quality of Viewing Various Types of Urban and Rural Scenes: Based on Psychological and Physiological

- Responses. *Sustainability*, 14(7), 3799-3800.
- [9] Dai, L., Qiao, W., Feng, T., Li, Y. (2022) Research on Village Type Identification and Development Strategy under the Background of Rural Revitalization: A Case of Gao Chun District in Nanjing, China. *International Journal of Environmental Research and Public Health*, 19(11), 6854-6855.
- [10] Wang, W., Watanabe, M., Ono, K., Zhou, D. (2022) Exploring Visualization Methodology of Landscape Design on Rural Tourism in China. *Buildings*, 12(1), 64-65.
- [11] Liu, Y., Chun, O. U., Yao, X., Yuan, H. (2021) Landscape design of hill ecology and rural human settlement environment based on the analysis of geographic information system. *Arabian Journal of Geosciences*, 14(16), 1-18.
- [12] Ma, T., Cong, J., Chang, Z., Zhang, Q., Akhatov, J. S., Fu, M., Li, X. (2022) Heat transfer and solar absorption analysis of multiscale CeO₂ reduction for rapid H₂ production prediction. *International Journal of Hydrogen Energy*, 47(51), 21681-21689.
- [13] Yuan, Z., Wen, B., He, C., Zhou, J., Zhou, Z., Xu, F. (2022) Application of multi-criteria decision-making analysis to rural spatial sustainability evaluation: a systematic review. *International Journal of Environmental Research and Public Health*, 19(11), 6572.
- [14] Dezio, C., Zhang, C., Zhang, Y., Marino, D. (2021) The Role of Landscape Design in Cultural Rural Areas. A Didactic Exercise to Experiment a Research-by-Design Process Applied to an Italian UNESCO Wine Site. *Architecture*, 1(2), 117-139.
- [15] Nawre, A., Wong, T. W., Boyle-Milroy, L. (2021) Landscape architecture in rural India-lessons for developing countries from Damari village. *Landscape Research*, 46(8), 1089-1105.
- [16] Qi, L., Liu, R., Cui, Y., Zhou, M., Bonenberg, W., Song, Z. (2021) Study of the landscape pattern of Shuiyu village in Beijing, China: A comprehensive analysis of adaptation to local microclimate. *Sustainability*, 14(1), 375.
- [17] Hostetler, M. (2022) Response to commentary on “cues to care: future directions for ecological landscapes”. *Urban Ecosystems*, 25(2), 561-562.
- [18] Liu, Y., Chun, O. U., Yao, X., Yuan, H. (2021) Landscape design of hill ecology and rural human settlement environment based on the analysis of geographic information system. *Arabian Journal of Geosciences*, 14(16), 1-18.
- [19] Sesso, M. L., Slater, S., Thornton, J., Franks, G. V. (2021) Direct ink writing of hierarchical porous ultra-high temperature ceramics (ZrB₂). *Journal of the American Ceramic Society*, 104(10), 4977-4990.
- [20] Kruse, C., Anderson, T., Wilson, C., Zuhlke, C., Alexander, D., Gogos, G., Ndao, S. (2013) Extraordinary shifts of the Leidenfrost temperature from multiscale micro/nanostructured surfaces. *Langmuir*, 29(31), 9798-9806.