The Impact of Digital Technology on Landscape Design

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Abstract: With the rapid development of computer information technology, residents' requirements for landscape design are increasing. Moreover, under the influence of digital technology, the designer's aesthetics, landscape space pursuit and thinking association are more abundant and flexible. However, the current landscape design is still mainly in the traditional way, the design can not meet the needs of residents. To this end, based on the analysis of the principles and current situation of landscape design, this paper analyzes the impact of digital technology on landscape design from four aspects. Furthermore, it points out the application path of digital technology in landscape design, including establishing data information base, designing independent digital garden art works, constructing three-dimensional models, and rendering garden landscapes in three dimensions.

1. Research background

1.1 Literature review

At present, the academic community studies the relationship between digital technology and landscape design. Fang Meiqing and Sun Wei started from the background of the digital age, analyzed the problems existing in traditional garden landscape design, discussed the digitalization method of landscape design, and then explained the influence and significance of digital technology on landscape design (2011). Fang Haojun and others analyzed the problems in current landscape design in China and explored the importance of applying digital technology in landscape design (Fang et al, 2015). Wu Yuxin and others based on the background of the digital age, from the aspects of commercial propaganda, public information release and display, unique visual landscape or experience, analyze the impact of digital technology on landscape design (Wu et al, 2018). Zhu Yongjie mainly analyzes the relationship between current landscape design and digital technology, and then explains the reasons and background of digital technology in garden landscape design. Finally, it explores the application of digital technology in landscape design (Zhu, 2018). Based on the connotation of digital technology, Peng Jun combines the principles of landscape design and the drawbacks of traditional landscape design to explain the significance and method of digital technology applied to landscape design (Peng, 2014). Starting from the background of the digital age, Cai Huiying introduced the connotation of digital technology, explored the relationship between digital technology and landscape, and expounded the digital technology in the garden from the aspects of commercial propaganda, public information disclosure and display, unique visual landscape or experience. The value of landscape design. The discovery of digital technology applied to landscape design is an ineviTable trend in today's social progress and growth (Cai et al, 2014).

1.2 Purposes of research

Digital technology is a technology that can convert sound, pictures, words and other information into a language that can be recognized by computers, and perform calculation and propagation. For example, simulation technology, virtual reality technology, multimedia technology, and computer network technology. Modern digital technology has brought the new media era to the fore, and in this context, the consumption patterns of residents are constantly changing. Reflected in the landscape design, consumers' demand for garden landscape design continues to increase. In order to meet the consumer experience and professional technology development, the designer combines

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landscape design with digital technology to promote the development of contemporary landscape design (Li, 2015). Digital technology can realize the combination of technology and emotion, integrate people with landscape, virtual and reality, fully meet the needs of human nature, make the landscape design more humanized, and play the role of pleasure and body. However, at this stage, the application of digital technology in landscape design is still in its infancy, and specific tests and experiments are needed. And the research on the impact of digital technology on landscape design is generally insufficient. To this end, based on the research basis of previous studies, this paper further explores the impact of digital technology on landscape design, and supplements the research foundation of related fields.

2. The basic situation of landscape design

Garden landscape is an important part of urban construction and plays an important role in urban ecology and landscape. The symbols of landscape design are more diverse, mainly including water bodies, plants, buildings, essays, pavements, etc. Designers according to different venues and different needs, according to certain design principles, as shown in Table 1, different compositions Elemental re-planning and combination (Huang, 2015).

Table 1. Basic Principles of Landscape Design

Principle	Reason	Design method
Biodiversity conservation	The diversity of species in landscapes plays an important role in the garden ecological environment, and urban ecological construction should be inclusive.	The landscape ecosystem is scientifically and rationally designed on the basis of not destroying the original vegetation, organisms and species of the garden as much as possible.
Harmonize with the environment	The layout and design of the landscape should be coordinated with the surrounding urban facilities and environment to form a harmonious and unified ecological landscape.	Based on the construction needs of the landscape, combined with the unified planning of urban construction, the specific landscape design, planning and layout will be carried out.
Ecological utility	The construction of landscape architecture is an important component of urban economic development. Therefore, the practical value of garden ecology to urban residents should be considered in the design.	In design, we must consider the dual factors of ecological balance and urban economic development, taking into account the ecological benefits of the landscape and the economic practicability of the garden.

Landscape design is inseparable from the support of large-scale information materials and data, such as urban areas, population, infrastructure, development priorities and other planning materials, climate, vegetation and other environmental data, historical and cultural, folk customs, social security and other basic materials. However, at this stage, there are incomplete data and data in the traditional landscape design process. In general, the collection of traditional landscape design data mostly stays in language or design sketches. The information collected is less overall, not only in insufficient quantity, but also the integrity, comprehensiveness and accuracy of the data. This is not conducive to the efficient development of post-design work, but also leaves a risk for the actual construction of the landscape.

Good landscape design, with high precision and good coordination, can achieve a high degree of matching with the actual construction. However, most of the traditional garden landscapes in China are designed in two-dimensional space. The designed landscape view looks perfect and exquisite, but it does not reflect the three-dimensional effect of the garden landscape. Without a three-dimensional composition knowledge of the relevant profession, it is difficult for the builder to understand the true design intent of the designer from the two-dimensional plan. Even if you understand the specific effects that the designer wants to design, it will be impossible to build a

garden landscape that fully conforms to the design drawings because of the limitations of the environment and space. This has resulted in a lot of traditional landscape design, which does not meet the actual construction requirements and is out of touch with the actual construction.

Landscape design should enable the interaction and sharing of information and data, but traditional landscape design cannot achieve this function. Specifically, in the content and form of the previous information collection, the preparation work of the traditional garden landscape design is relatively simple. This makes the whole landscape of the landscape from design to use, the main body of each link has the problem that information and data can not be exchanged and shared, which is not conducive to the smooth development of landscape design work. At the same time, the lack of information and data related to garden landscapes also restricts the expansion of subsequent design, construction and use.

3. Analysis of the influence of digital technology on landscape design

3.1 Improve the ecological and coordination of landscape design

When designing landscapes, designers can make full use of their personal imagination and design talents, use digital technology to establish design plans, and carry out subsequent improvements. After the redesigned work is completed, the designer can display the comprehensive and three-dimensional design plan to the construction unit and the urban residents by means of the sand Table and the computer three-dimensional renderings. In the process, if any inadequacies are found, the design can be adjusted and modified in time to ensure the ecological and coordination of the landscape design.

3.2 Increase commercial propaganda and increase economic efficiency

When using digital technology for landscape design, designers can apply multimedia devices to advertising campaigns to increase commercial awareness. At the same time, virtual reality technology can also be used to perfectly combine landscape and business to create a novel landscape space, thereby enhancing the atmosphere of the garden landscape, expanding the publicity effect, and improving the economic benefits of the landscape.

3.3 Provide a personalized visual landscape experience

Digital technology creates a new visual art experience that creates a personalized visual landscape for landscape design. Specifically, the designer can transform images, ambient sounds and virtual spaces through digital technology to create a synchronous, three-dimensional sensory environment, allowing users to feel the immersive feeling in the virtual space. For example, a digital LED display screen is placed in the landscape, and a wooden stage is placed in the lake to create a small island in the garden. When visitors see the landscape designed by digital technology, they can participate in the installation of the video installation through interactive facilities and feel the same garden space as the real environment.

3.4 Enhance landscape interaction and experience new environments

When using digital technology for landscape design, landscape works mostly have many interactive ways. In the virtual landscape works, thanks to the use of interactive assembly, the audience can experience specific actions such as walking, talking, running, swimming, etc., and can also experience the wind, sun, rain, etc. in the digital landscape, and gardens. The landscape environment interacts. Interactive assembly is among the digital technologies. Its interaction process is relatively simple, and it is clear and clear. Users will use it at a glance. Anyone who starts this interactive assembly can easily experience the new life and new environment in the landscape.

4. Innovative application of digital technology in landscape design

4.1 Integrate relevant information and establish a data repository for landscape architecture construction

In the design of the landscape, it is necessary to carry out the survey and data recording of the actual situation. At this point, it is necessary to establish a data repository to record the natural environment of the actual survey site, such as geological conditions, geomorphological features, ecological conditions, vegetation cover, and terrain conditions. At the same time, it is necessary to use the SLR camera to collect and store human historical information on the construction site, such as historical culture, historical sites, population distribution, religion, customs and costumes. Apply digital technology to establish a systemic application database, integrate relevant information data, and store elements during design to lay the foundation for subsequent specific design work.

4.2 Designing unique garden art works using modern digital technology

The use of modern science and technology to engage the masses in the works of art not only closes the distance between the masses and the works, but also allows the masses to penetrate into the works of art and truly feel the charm of art. For example, Jiangsu's compound experiential ecological wetland park includes a waterfront ecological plaza, a water forest, a living and recreation area, a cultural pier, a children's beach, and an ecological flower field. It is a well-known urban compound experiential ecological wetland park (Figure 1, Figure 2). Residents can interact with the landscape and try to interact with the city and feel the unique charm of the city.

Figure 1. Cultural Pier

Figure 2. Children's Beach

4.3 Construct a 3D model and render the landscape environment in three dimensions

Designers use digital technology to upload collected and integrated data to a computer and initially design the landscape. The original digital production staff then used the modern 3D modeling software to make the initial design into a preliminary 3D model. Then, the experts confirmed the rationality of the design scheme, shaped the design in the three-dimensional space, and realized the three-dimensional information. After obtaining the 3D renderings, the designer needs to render the model using digital technology to render the landscape environment in three dimensions. The software recommended here is 3Ds Max, keyshot, etc.

5. Conclusion

In general, in the context of modern Internet information technology, digital technology can be applied to landscape design, which can realize the coordination and ecological shape of garden landscape, improve commercial publicity effect, and provide personalized visual landscape experience. It can be said that the application of digital technology has become an ineviTable trend in the field of landscape design. Therefore, Chinese designers should deepen the application awareness of digital technology, integrate relevant materials, establish a data repository for landscape architecture construction, construct a three-dimensional model, and stereoscopically render garden landscapes; fully integrate with buildings to design digital gardens with independent nature. Art works, and effectively promote the innovative development of the landscape design industry.

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