

Research on Thoughts on the Application of Digital Technology in Landscape Design and Talent Cultivation

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Abstract: With novel artistic expressions and real interactive experience characteristics, digital technology is quietly changing the landscape designer's design thinking expression, enriching the functions and interaction forms of landscape architecture, and proposing new ideas and requirements for the landscape design industry. The article analyzes the impact and change of digital technology on the landscape design industry, and then puts forward personal views and opinions from the two aspects of the goal orientation of college personnel training and the adjustment of curriculum content.

1. Introduction

At present, the rapid development of information technology, computer technology and network technology has provided a new design language and way of thinking for landscape design, bringing new features of landscape and people communication, and the development of landscape design discipline is facing the former challenges and opportunities. Digital technology promotes the diversification of landscape design with new time and space performance means and interactive aesthetic experience mode, and promotes all-round thinking of talent training and teaching research in colleges and universities.

2. Overview of Digital Technology

As a modern and new medium, digital technology emphasizes the multi-dimensional sensory experience. It combines text, image and sound organically to establish logical relationships and human-computer interaction, so that abstract information becomes perceptible. At present, digital technology has been widely used in various fields of society. In particular, Virtual Reality (VR) technology, as an emerging and comprehensive information technology, integrates computer graphics, computer simulation, artificial intelligence, network technology, parallel processing technology and multi-sensor technology. It uses computer equipment to simulate and generate a three-dimensional virtual space, which integrates the functions of human visual, auditory, tactile and other perceptual systems into the environment, and provides a new "human-machine" interface mode to create a body [1]. As a comprehensive manifestation of digital technology in practical applications, VR technology began in the military and aerospace fields. In recent years, architectural design, urban planning, landscape design, museum display, industrial simulation, monument restoration, education and training, Cultural entertainment, real estate, tourism and other fields have become a commonly used means of "display" and "experience". With the continuous enrichment of computer 3D software, the virtual landscape supplemented by VR technology has attracted more and more attention from designers, and its application scope in landscape design has been expanding and playing an increasingly important role. For example, in the design and implementation of landscape projects such as urban green space system planning, old city reconstruction, and ancient building protection, the project design effect is dynamically displayed, and the construction process is simulated; the landscape ecology in the protection forest system, forest resource protection, forest phase transformation, etc. As an emerging technology, VR technology is changing our lives with its strong advantages and development potential.

With the continuous improvement and perfection of computer hardware performance and software functions, Building Information Modeling (BIM), as a comprehensive digital technology, has outstanding performance in the design process and mode. It is based on 3D digital technology, re-integrating the process of architectural design, integrating engineering data models of various related information of engineering projects, involving the entire building life cycle management (BLM), designers at any stage of design, any time. The design can be easily adjusted, and landscape planning and design as an important part of architectural design is also an essential part of the complete building information model. With BIM technology, the current situation analysis of landscape planning and design projects involving large-scale space can quickly and effectively solve various problems encountered in terrain design. BIM technology can form a related organic whole of the project construction drawing, project budget and other links, effectively reducing the time consumption of designers in drawing and drawing. At the same time, the computer calibration program has good observability and modification [2].

3. The Impact of Digital Technology on Landscape Design

The rapid development of digital technology has broadened the creative thinking and performance means of modern landscape design to a certain extent, making the design elements that make up the landscape more vivid, and the way of communication between landscape and people is more interactive and experiential. Landscape digital technology has become the core content of the landscape from the previous site analysis, project conception, design expression, scene simulation, technology optimization, construction and operation, operation management and so on [3].

Traditional design expressions include text descriptions, hand-drawn drafts, computer-aided models, etc. A beautiful and complete set of design drawings is a tool for landscape designers to demonstrate design creativity and communication. However, the traditional drawing and modification of various landscape engineering design drawings mainly relies on manual completion, which consumes manpower and material resources, has a long time period, and the design drawings are limited to communication between professionals. It is inconvenient to communicate with non-professionals such as owners and construction workers. Meet the customer's demand for performance display. The emergence of digital technology, with its novel digital art form, real and interactive experience characteristics, quietly changed the expression means of designer design thinking. For example, designers can use VR technology to transform 2D landscape effects into a virtual scene close to the real experience through 3D model technology, digital simulation technology and multimedia interactive technology, so that customers no longer watch 2D static drawings on the screen. Touch, experience and interact with the 3D dynamic digital effect space to feel the real space size from any angle. Through the simulation of the landscape design plan, the designer's design concept and intention are conveyed more intuitively and comprehensively, and the effect of the overall landscape planning, the shape and relationship of the landscape elements in the complex space, the planting form and the season of the plant landscape are dynamically displayed. Changes, humanistic conception, etc., solve the problem of the connection between abstract thinking and the entities it produces, make up for the limitations of traditional landscape design expressions and thinking, and break through the limitations of traditional spatial dimensions. The communication barrier between the designer and the owner, the construction workers, and other non-professionals is eliminated to the greatest extent, and the interaction and timeliness of information communication are ensured, which also makes the design work more rigorous and efficient [4].

In the planning and design stage, the designer only needs to use the corresponding professional software and material library to integrate various design elements. By establishing a 3D model, the 3D performance of the solution can be viewed in real time, and the dynamic effects of the scene can be fully and realistically displayed. Display the relevant data of the design, including the relationship between lighting and surrounding environment, for example, using the convenient cloud volume, weather and time performance of Lumion software to simulate the visual effects of objects in different time and different climatic conditions, and then design using VR technology.

The teacher is in a realistic virtual space environment, which can intuitively and visually study the size ratio in the design space from various angles, understand the situation of the site, and refine and modify the design plan to modify the design. During the modification of the construction drawing, the designer can realize remote browsing of the landscape design model with each construction unit, and communicate more intuitively and fully, so as to avoid the possibility that the designer may not be expected to leak in the later construction. The rigor and enforceability of the designer reduces the repetitive work of the designer and improves work efficiency. It can be said that digital technology will promote architecture and landscape design into an era of visualized and liberalized media. Digital technology is changing the traditional display mode and optimizing the communication environment of design solutions.

Digital technology brings a new concept to modern landscape design and creation. It mainly shows two trends: one is that landscape elements are dynamically presented from traditional static to digital; the other is digital media (such as graphics, images, text, sound, Video, etc.) as a virtual element of landscape construction combined with physical landscape elements, processed to form a digital model that reflects the characteristics of natural landscapes, and supported by computer software and display equipment to display virtual reality like real landscape. With the wide application of digital technology, various types of digital virtual landscapes are emerging, which makes people's visits break through geographical restrictions. They can still participate in the experience without visiting the site. For example, in many large-scale landscape designs, computers are often used. The control makes the digital three-dimensional virtual scene and the real scene dock, the virtual landscape integrates into the surrounding environment, realizes the perfect combination of landscape space dynamic and static, true and false, and the interaction of digital media and the spatial and temporal mobility in the landscape theme creativity. Fully embodied, creating a new visual art experience and time-space transformation experience. In addition, digital technology has practical significance for the protection of historical and cultural heritage, relics, and the protection and restoration of cultural relics. For those cultural relics and precious cultural relics that are not open or semi-open, they are displayed by virtual reality technology for people to visit and appreciate. For example: the digital animated version of the Qingming Shanghe Map at the 2010 Shanghai World Expo; the documentary "Yuanmingyuan" uses digital animation technology to realistically reproduce the panoramic view of the undestroyed Yuanmingyuan Ancient Building.

Therefore, the introduction of digital technology to digitalize the landscape environment structure and spatial composition, intuitive, detailed and rigorous transfer of all the information of the object, the feasibility study before the implementation of various types of projects, to help the design of the program modification, deepening, for decision-making Provide evidence. For example, in the large-scale landscape planning project, through the dynamic three-dimensional simulation demonstration of the entire construction process of the scenic spot, the details of each process in the construction process of the building and its external space environment are accurately depicted in the three-dimensional environment, and the final preview is previewed. The construction effect, the aesthetic characteristics of the overall landscape and the environmental atmosphere, analyze the various practical technical problems that the creative realization may encounter, then adjust and modify the design plan, determine the most reasonable project management and construction technical plan, and improve the construction quality of the landscape project. And efficiency, to prevent the increase in manpower and financial costs that may result from repeated design and construction [5].

Second, digital technology is also reflected in the budget of the project. For the cost of the project, it is possible to use digital technology to analyze and count the types, quantities and unit prices of materials used in a construction plan, and to compare the economics of different materials and process choices in different construction plans. For example, for some large or complex engineering projects, designers can use VR technology to virtually configure the engineering structure and surrounding environment, such as visiting the site as if they were in the field, so as to better understand the structure of the overall project and modify it at any time. For example, the "Bird's Nest", the main venue of the Beijing Olympic Games, was solved in the early stage of the

project due to the complicated structure of the truss and the incomplete design of the architectural details, which was constructed by using the virtual three-dimensional scene to construct the structural model and finally by developing new technologies. In the large-scale landscape engineering design, BIM technology and big data can also be fully utilized. Technical guidance can be given to the project through model performance and various project data, improve the engineering design level and management level, improve the project life cycle, and make the construction plan complete. Reflecting the design concept, more accurate budget project cost.

4. Reflections on the Education of Landscape Design Talents in Colleges and Universities

Digital design, information management, BIM technology, VR technology, etc. put forward new ideas for the landscape design industry. The future work style and work content of landscape architects will be redefined. At the same time, it puts forward new requirements for the cultivation of college landscape design talents, and promotes the reorientation of professional talents training objectives and the adjustment of curriculum teaching content [6].

Digital technology brings a new design expression and thinking mode for landscape design, which has great advantages and prospects. However, the entire construction industry in China is low in volume and information, and there is a large room for improvement. Therefore, the state requires some major engineering projects to be managed and informatized. In 2011, a policy white paper on promoting BIM was issued to force all centralized procurement public. The departmental building must make BIM technology, in the "2016-2020 Construction Industry Informatization Development Outline" issued by the Ministry of Housing and Urban-Rural Development on August 23, 2016, proposing that China will comprehensively improve the construction industry information during the "13th Five-Year Plan" period. At present, some large enterprises have invested a large amount of money to establish a BIM center, and the shortage of talent demand is huge. However, the talents who specialize in digital landscape design are scarce, and the production cost of virtual reality landscape has always been high. This has created new opportunities for talent training in landscape design related majors (such as environmental design, landscape architecture, urban planning, architectural design, etc.). Colleges and universities should meet the needs of the society according to their actual conditions, timely adjust and improve the talent training objectives, and regard digital landscape design as a training direction for relevant professionals, and differentiate the employment trends of graduates. It not only avoids the homogenization and unity of the training of professional education talents in colleges and universities, but also promotes the scientific development of higher education [7].

With the continuous improvement and enrichment of 3D software technology, digital virtual landscape has become an important means of expression for landscape design. Therefore, in the teaching of college landscape design courses, it is necessary to introduce digital technology, so that students can fully understand the superiority of VR technology and BIM technology, and provide a new concept and method for landscape design teaching. For a long time, the traditional design class of professional design courses has been dependent on books and drawings due to many conditions. Computer-aided design teaching is basically related to application software such as AutoCAD, Sketch Up, 3D Max and Photoshop. It only stays at the level of drawing, pays attention to the drawing of drawings and the processing of each interface. There are few teaching and application about VR technology and BIM technology. In the design of the subject, students lack sufficient understanding and understanding of the spatial scale and overall form of the site under real conditions. The feelings between some data and corresponding scales and volume cannot be established, which inevitably leads to a considerable part of student design and The reality environment is out of touch, resulting in the final completion of the design works from "plane to plane", satisfied with the completion of various types of drawings, the pursuit of the ideal performance of the effect. Due to the lack of understanding of large spaces and large forms, many students often feel that they have no way to start designing some large-scale urban green space landscape planning and design, which will hinder the growth of designers. Therefore, it is necessary to properly integrate digital technology in the teaching of professional courses. On the one hand, in

the creation of professional topics, explore a teaching method that combines computer-aided design with professional curriculum design, and encourage students to use the three-dimensional software and material library to simulate the real environment, realize the digital display of the landscape, and deliver the object in real time in the whole process of design. The information allows students to experience the effects of venue and space in an immersive way, helping students understand, analyze design objects, deduce design works, and use students' initiative and creativity to optimize design. On the other hand, in the classroom teaching, teachers choose some virtual reality landscape design cases with excellent production effects, enhance students' spatial scale understanding ability, spatial shape grasping ability, material and process application ability, and stimulate students' three-dimensional technology. The interest in learning virtual reality technology mobilizes students' autonomy in program design. In the long run, the application of digital technology to landscape design courses will be an inevitable and necessary.

5. Conclusion

The rapid development of digital technology constantly influences the creative thinking mode and performance means of modern landscape design, which makes the landscape and people meet the humanized needs in the space environment in a new interactive way, which not only enriches the function and form of landscape design. The landscape design practitioners and learners have opened up a new environment to realize the design concept, and also put forward new ideas and requirements for the cultivation of landscape design professionals in colleges and universities. In the future, digital technology will play an extremely important role in landscape design, project preview, engineering construction, and subject teaching, laying a foundation for the realization of the “digital city” construction of human society.

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