



Exploration of the Application Effect of Digital Technology in Environmental Art Design

Siyu Yan

Beijing Jingbei Vocational College, Beijing, China

email:lulu198907170616@163.com

Abstract. With the rapid advancement of science and technology, various industries in society have achieved effective interaction, leading to increased communication and efficiency. The integration of digital technology into environmental art design exemplifies this domain interaction. This article discusses the fundamental conditions for applying digital technology in environmental art design. It further explores the digital manifestations, specific practical aspects, and functional value of digital technology in environmental art design. Ultimately, it proposes practical applications of digital technology in society.

Keywords: digital technology; Environmental; Art Design.

1 Introduction

Currently, traditional environmental art design models and concepts are no longer able to meet the development needs of real society, nor can they meet the practical needs of users from multiple aspects and perspectives. In this context, modern information technology, big data technology, new media technology, and multimedia technology have laid a solid foundation for the innovative development of digital technology, providing reliable technical support. On this basis, they have penetrated into environmental art design work, injecting new vitality into it, thereby making the forms and methods of environmental art more diverse and diverse. Compared to the past, modern environmental art and design have undergone tremendous changes. Under the background of digital technology, environmental art and design work has gradually penetrated into fields such as indoor, outdoor, and construction industries, and has received widespread attention and recognition from the public[1]. By utilizing digital technology, designers' overall pressure can be reduced to a certain extent, reducing some repetitive and lengthy design labor. At the same time, designers' inspiration and creativity can be quickly transformed into concrete content, and certain design software can be used to improve work efficiency and level.

The profound integration of digital technology has significantly transformed traditional and outdated art and design models, as evidenced by the expected positive outcomes. By employing virtual design technology to create realistic artistic effects, it has bridged the gap between designers and users, facilitating effective communication and

interaction. As a result, the main focus of future environmental art design should be on the flexible utilization of digital technology and achieving coordinated development among information technology, artistic life, social development, and economic innovation. This represents the predominant direction for future development[2].

2 The Basic Conditions for Applying Digital Technology to Environmental Art Design

2.1 Hardware conditions

In contemporary society, environmental art design no longer solely depends on paper and pen to execute entire design blueprints and renderings. An increasing number of designers are utilizing computer technology in a flexible manner to enhance work efficiency[3]. It can be observed that scientific, efficient, advanced, and diverse computer hardware equipment and facilities serve as the foundation and prerequisite for all design work. Additionally, the following aspects should also be taken into consideration: firstly, a sound card can effectively collect and process sound; secondly, a graphics card can efficiently process relevant video files; thirdly, a decompression card can achieve file compression and decompression; fourthly, an optical drive, serving as a main channel for information input, can quickly read CD files.

2.2 Software Conditions

Software equipment and facilities serve as essential mediums for design and drawing. To ensure that our ideas and inspiration are fully realized and that the hardware operates seamlessly, we must use appropriate driver programs to regulate all computer hardware devices in a scientific and rational manner. Additionally, selecting a scientifically sound operating system is crucial to ensuring compatibility among all software and maximizing its full potential.

3 Digital Expression Forms and Specific Practical Links of Environmental Art Design

3.1 Virtual Implementation Technology

Digital technology has brought about significant convenience in people's daily lives, work, and learning. This has highlighted its immense value and role in society. According to relevant research and practical investigations, most digital technology applications in China currently involve simulating actual images and scenery[4]. This involves reconstructing real-world scenes into a virtual world to achieve scene restoration. With the rapid development of modern science and technology, an increasing number of advanced software systems are emerging. Users can select systems and methods based on their practical needs and directly utilize relevant program software to restore real-world scenes. Importantly, artistic expression should be a vital component in this process.

3.2 Flexible application of digital technology to construct a reasonable logical framework for environmental art design

Currently, there is a continuous influx of rural labor force into urban areas in China, leading to a significant growth in the urban population. This trend has imposed higher requirements and standards on the living environment to some extent. To effectively address the practical needs of the population, environmental art design must be based on the demands of social development and take into full consideration the actual needs of urban residents[5]. The aim is to transform and optimize the existing living environment and conditions, ultimately enhancing residents' happiness and satisfaction. In the specific design process, designers should first adopt a comprehensive global perspective to systematically control the overall structure. They should then conduct a thorough analysis of potential problems and deficiencies in the design implementation process, drawing on past experience. Furthermore, it is essential to strengthen scientific planning that aligns with practical needs, thus creating a logical thinking framework that caters to the requirements of urban environmental development. Simultaneously, actively leveraging modern information technology and digital technology becomes crucial for swiftly and efficiently collecting essential parameters and important information. This further emphasizes the scientific and rational design framework, enabling designers to fully dedicate themselves to creative work.

3.3 Specific practical steps of digital technology in environmental design

When conducting artistic design for urban environments, designers should first conduct market research to explore the real needs of residents. They should propose design plans that meet the needs of multiple parties and invite industry experts, scholars, and resident representatives to participate in the discussion, refining the plan and ensuring its rationality and suitability. Designers should also utilize modern information technology and digital technology to create design models, analyze potential defects, and optimize the plan based on feedback. Digital technology can reduce the burden on designers, display the design comprehensively and intuitively, and allow for scientific modification and deletion of materials. It also facilitates global perspective analysis and efficient storage[6]. The use of digital technology improves the quality and effectiveness of work, making the design process more flexible and efficient. Designers should leverage their experience to control the overall structure, explore spatial requirements, and formulate a scientific and reasonable design plan. They should also measure the design space and create a harmonious atmosphere by coordinating different elements. This ensures the design meets diverse living requirements.

4 The main functions of digital technology in environmental art design

According to the previous text, we can see that an excellent environmental art designer should conduct market research based on practical needs when undertaking corresponding design projects. The relevant information and data obtained from the research should be effectively collected, integrated, summarized, and based on this, a reasonable market positioning should be carried out, and a preliminary design plan should be proposed from a global perspective based on the actual needs of users. During the construction process, continuously improve the details and optimize the plan based on the actual situation. In a certain sense, designers cannot fully consider all the details in their design. Therefore, only by strengthening observation and analysis during construction, and constantly correcting and improving, can they increase construction costs and fail to complete on time[7]. In this context, digital technology can effectively solve the above-mentioned problems and difficulties, directly utilizing diverse methods such as mathematical modeling and analysis to streamline workflow, comprehensively and scientifically analyze and process the parameter data involved in the entire solution, achieving systematic scanning, and more intuitively reflecting the practicality and scientificity of environmental art design, bringing designers and users a more intuitive experience and experience.

4.1 Continuously adjusting and optimizing artistic design based on digital technology

The rapid development of modern science and technology, the increasingly rapid and efficient transmission of information, and the increasing diversity of channels and channels for people to access information resources have put forward higher requirements and standards for environmental design to a certain extent. This requires environmental designers to improve their professional ability and comprehensive quality. In the context of the development of digital technology, relevant designers must fully consider the actual experience of users, enabling them to be in an intelligent environment and adjust corresponding technical parameters according to their own differentiated needs, in order to experience differentiated scenarios. This is also the key to environmental art design in the context of digital technology. In order to achieve this effect, designers must accumulate rich practical work experience, possess a solid professional foundation and excellent practical skills, flexibly use digital technology to effectively save economic costs, use the least resources to create more benefits, achieve maximum resource utilization efficiency, and provide convenience for design work. At the same time, in the context of digitalization, relevant designers can flexibly use diverse tools such as project evaluation to help them quickly and efficiently seek the most suitable parameters, explore potential problems, and nip problems in the bud, making the entire design plan more orderly and scientific.

4.2 Comprehensive and intuitive display of design results based on digital technology

According to relevant practical investigations and research, in the traditional process of environmental art design in the past, the design scheme was usually presented to the public through manual painting after the work was finalized. This method has certain flaws and shortcomings, which cannot fully reflect the design ideas and concepts, and is a static form of expression. With the active introduction and flexible application of digital technology, it can dynamically reflect the overall effect of individuality, bringing people a more intuitive feeling through this way, thereby improving the publicity effect and quality. Users can clearly recognize the shortcomings and deficiencies in the design scheme while viewing it, and point out problems based on their own understanding and cognition. Corresponding designers can also continuously adjust, optimize, modify, and improve on this basis. This highlights the scientific and rational nature of the work. The digital representation is shown in Figure 1, and relevant designers can use 3D modeling methods to fabricate the entire project effect. Use virtual models to inspire designers. By integrating multiple factors and ultimately optimizing the model, the entire process can also express the value and significance of the project design plan in more detail.

4.3 Reasonably and efficiently detect and design construction plans based on digital technology

In the specific implementation process of the design scheme, designers may stimulate new inspiration and creativity due to certain practical situations and needs, but due to time and cost constraints, most of them will give up such ideas. However, digital technology can simulate the corresponding design environment and place specific design models in specific environments for practical operation during the design process, thus deeply exploring the feasibility and operability of designers' new ideas. The application of the design model in the scene is shown in Figure 2. It is worth noting that the modification and improvement of design drawings should be promptly communicated with the project leader and interacted with professional engineering and technical experts, in order to ensure the scientificity and feasibility of scheme design modifications. At the same time, in the specific construction process, it is necessary to adjust the content based on the actual situation, especially for the inspection parts involved in the project, which must be given sufficient attention. Digital technology should be used to comprehensively and systematically verify and analyze the plan, create virtual scenarios, further clarify the construction conditions, and effectively select construction materials. During this process, a large amount of data information will be generated. Comparing and analyzing it with actual construction data can further verify the operability of the modification plan.

5 The Practical Application of Digital Technology in Society

5.1 Architectural Design

Firstly, in a certain sense, traditional design patterns directly display the results in front of users through graphical methods. It mainly consists of two-dimensional graphics, lacking a certain three-dimensional and holistic nature. Designers must use good spatial imagination and thinking abilities to gain a deep understanding. At the same time, such graphics cannot systematically and comprehensively display relevant data information. Due to the influence of the above factors, traditional architectural design cannot improve efficiency and the overall effect is not satisfactory. Secondly, the use of digital technology can to some extent solve the shortcomings and difficulties faced by traditional architectural design, and directly use computing and related software tools to simulate realistic building environments and places, comprehensively and meticulously displaying all details, improving design efficiency and quality. Thirdly, the application of digital technology in environmental art design has fundamentally changed the traditional outdated mode and concept, and has had a huge impact on the development of environmental art. Relevant designers strengthen interaction with computers while breaking the influence and limitations of multiple factors in traditional modes, which can maximize their own initiative and enthusiasm, making the entire design results more scientific, reasonable, accurate, and efficient. In the specific application process, it is necessary to reasonably grasp the degree of technology use, not overly rely on computer software and hardware equipment facilities, and maintain one's imagination and innovation awareness.

5.2 Landscape Design

Firstly, in the traditional landscape design process, the design image cannot be comprehensively and systematically displayed, and can only have a preliminary outline and approximate image. At the same time, the spatial layout and design proportion lack a certain degree of rationality and scientificity. In addition, the image is presented in a two-dimensional graphical method, resulting in significant differences between the final result and the pre design. In addition, it covers a large number of professional signage, making it difficult for laypeople to understand the design principles. Secondly, although the application of digital technology in landscape design has achieved certain results and effects, overall, there is still a certain gap with the expected level. This is due to the lack of flexible application of digital technology by relevant designers, which cannot truly achieve seamless connection between technical means and environmental art design. Therefore, in the future, relevant designers should also strengthen in-depth analysis of landscape design, fully leverage the value of digital technology, and effectively improve the overall quality level of landscape design.

6 Conclusion

As digital technology continues to advance, its potential in various fields cannot be ignored. In the realm of environmental art design, digital technology has proven to be an invaluable tool for streamlining workflow, optimizing designs, and creating a more immersive experience for users. Through the use of mathematical modeling and analysis, designers can achieve a more systematic and scientific approach, identifying potential problems and resolving them proactively. The continuous adjustment and optimization of artistic designs based on user needs and feedback further highlights the importance of digital technology in this field. Overall, digital technology has contributed significantly to the efficiency, accuracy, and effectiveness of environmental art design, and its application effect will continue to be explored and refined in the future.

Reference

1. Yu C, Altalbe A, Du N. ENVIRONMENTAL LANDSCAPE ART DESIGN USING DYNAMIC NONLINEAR PARAMETERIZATION[J]. *Fractals: An interdisciplinary journal on the complex geometry of nature*, 2022(2):30.DOI:10.1142/S0218348X22400771.
2. WANG Yi. Application and Prospect Exploration of Industrial Solid Waste in the
3. [3] Olímpio Paixo, Gamboa V. Autonomous Versus Controlled Motivation on Career Indecision: The Mediating Effect of Career Exploration[J]. *Journal of Career Development*, 2021:1.DOI:10.1177/0894845321992544.
4. Bisson R, Sheffield C, Sisk S. Megawatershed Exploration: A State-of-the-Art Technique Integrating Water Resources and Environmental Management Technologies[J]. 2022.
5. Asadzadeh S, Oliveira W J D, Filho C R D S. UAV-based remote sensing for the petroleum industry and environmental monitoring: State-of-the-art and perspectives[J]. *Journal of Petroleum Science & Engineering*, 2022(208-).DOI:10.1016/j.petrol.2021.109633.
6. B B K A, A M T. Exploration of the environmental and socioeconomic implications of HCFC-22 phase-out for Botswana - ScienceDirect[J]. *Advances in Climate Change Research*, 2021.DOI:10.1016/j.accr.2020.12.002.
7. Jang H W, Cho M. Application of the Constraint Negotiation Theory to the Plant-Based Meat Alternatives Food Service Business: An Exploration of Perceived Value and Negotiation–Constraint–Visit Intention Relationships[J]. *Sustainability*, 2022, 14. DOI: 10.3390/su14105812.

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