

Innovative Exploration of Landscape Design under the Environmental Requirements of the New Era

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Abstract: With the increasingly prominent problems such as climate change and ecological environment deterioration, people gradually realize the importance of environmental protection. As an important part of urban planning and construction, landscape design plays an important role in improving urban environmental quality, shaping urban image and inheriting history and culture. However, the traditional landscape design concepts and methods can no longer meet the requirements of the new era environment, and innovative exploration and practice are needed. Therefore, the purpose of this study is to explore the innovation of landscape design under the environmental requirements of the new era, so as to adapt to the changing environmental needs and promote sustainable development. This paper analyzes the challenges and opportunities, and discusses the paths and methods of innovation. By using the methods of case analysis, field investigation and induction and deduction, some innovative strategies and suggestions are obtained to promote the innovative development of landscape design in the new era environment. Through in-depth research on the innovation of landscape design under the environmental requirements of the new era, this paper can enrich and improve the theoretical system of landscape design and provide useful reference for the research and practice in related fields.

1. Introduction

With the global climate change, ecological environment deterioration and other issues becoming increasingly prominent, people gradually realize the importance of environmental protection [1]. As an important part of urban planning and construction, landscape design plays an important role in improving urban environmental quality, shaping urban image and inheriting history and culture [2]. However, the traditional landscape design concepts and methods can no longer meet the requirements of the new era environment, and innovative exploration and practice are needed [3-4].

In the new era, landscape design faces many challenges and opportunities [5]. On the one hand, ecological protection, climate change, cultural heritage and other issues put forward higher requirements for landscape design; On the other hand, the continuous emergence of new technologies and new ideas provides more possibilities for landscape design [6]. Therefore, the purpose of this study is to explore the innovation of landscape design under the environmental requirements of the new era, so as to adapt to the changing environmental requirements and promote the sustainable development of landscape design.

2. Landscape design concept under the requirements of the new era environment

2.1. The transformation and innovation of landscape design concept in the new era

In the new era, with people's increasing concern about environmental quality, ecological balance and sustainable development, environmental requirements have also undergone profound changes [7]. These requirements mainly include the following aspects: ecological protection and restoration, response to climate change, harmonious coexistence between man and nature, and cultural inheritance and innovation. At the same time, under the environmental requirements of the new era, the landscape design concept has also undergone the following changes and innovations: from

"beautifying the environment" to "ecological priority"; From "static design" to "dynamic adaptation"; From "people-oriented" to "harmonious coexistence between man and nature"; From "single function" to "multi-function integration"

2.2. The relationship between environmental requirements and landscape design in the new era

There is a close relationship between environmental requirements and landscape design in the new era. First of all, environmental requirements are the guidance of landscape design: the environmental requirements of the new era provide the direction and goal for landscape design, and designers need to create according to these requirements. Secondly, landscape design is the way to realize environmental requirements: through reasonable design techniques and innovative ideas, landscape designers can transform the environmental requirements of the new era into specific landscape works [8]. Generally speaking, the environmental requirements of the new era promote the progress of landscape design concepts and technologies, and excellent landscape design works can enhance people's awareness of the environment and protection, and further promote the improvement of environmental requirements.

3. Innovative landscape design practice and case analysis

3.1. Practice of innovative landscape design at home and abroad

At home and abroad, innovative landscape design has been widely practiced. For example, in the "Maasvlakte 2" artificial island project in the Netherlands, the designer combined the industrial artificial island with the natural environment through innovative landscape techniques, achieving a win-win situation for ecology and economy. Singapore's garden city planning is also a model of innovative landscape design, which has created a world-famous green city through innovative technologies such as vertical greening and rainwater collection. In China, the designers of Shanghai Expo Park used the concept of sponge city to innovatively solve the problem of urban storm water management and create rich public spaces [9]. Xixi Wetland Park in Hangzhou is also a representative of innovative landscape design. Through the innovative methods of wetland protection and restoration, the harmonious symbiosis between the city and nature has been realized.

3.2. Case analysis of innovative landscape design and its impact

This section takes Xixi Wetland Park in Hangzhou as an example, and the designers have adopted a number of innovative design techniques in this project. Among them, ecological restoration: through the restoration of wetland vegetation and the regulation of water system, the ecological function of wetland has been successfully restored. Public participation: Through the cooperation and participation with local residents, the designers have better integrated the park into regional culture and community life. Multi-functional integration: Designers have integrated ecological protection, leisure and recreation, popular science education and other functions in the park to meet the needs of different groups of people.

In this project, the restoration of wetlands has improved the ecological environment quality of the city and provided habitats for birds and other creatures. The construction of parks has improved the quality of life of residents and enhanced the attractiveness of the city. At the same time, the construction of the park has promoted the economic development of the surrounding areas and increased employment opportunities.

3.3. Experience and lessons of innovative landscape design

From the above cases, the following experiences and lessons can be summarized:

Experience: innovative landscape design needs to comprehensively consider ecological, social, economic and other factors, and pay attention to the integration of multiple functions; It is necessary to communicate and cooperate fully with local residents and stakeholders to ensure the feasibility and implementation effect of the project; It is necessary to use advanced technology and ideas to improve the scientific and forward-looking design.

Lessons: In innovative landscape design, it is necessary to avoid over-design and over-development and ensure the protection and respect for the ecological environment; It is necessary to pay attention to the sustainability and long-term benefits of the project and avoid short-term behavior and image engineering; It is necessary to fully consider and deal with all kinds of uncertainties and risks in the design process to ensure the robustness and adaptability of the project.

4. Innovative exploration of landscape design under the requirements of the new era environment

4.1. Innovative paths and methods of landscape design under the requirements of the new era environment

For example, Table 1 and Table 2 briefly summarize the challenges and opportunities faced by landscape design under the environmental requirements of the new era, and cite some examples to illustrate the concrete embodiment of these challenges and opportunities in practice.

Table 1 Challenges of landscape design under the environmental requirements of the new era

Challenge	Describe	Example
Ecological protection	Balance the relationship between ecological protection and economic development in the design to avoid damaging the ecological environment.	How to protect the wetland ecosystem in the design of urban parks and meet the leisure needs of tourists.
Climate change	Consider the impact of climate change in the design to ensure the adaptability and toughness of the landscape.	How to use sustainable drainage system and green infrastructure to deal with urban waterlogging and extreme weather events.
Cultural heritage	Incorporate regional culture and historical elements into the design, and show the characteristics of the times.	How to integrate local historical culture and traditional elements into the design of city squares, and at the same time reflect modern aesthetic and functional needs.

Table 2 Opportunities of landscape design under the environmental requirements of the new era

Opportunity	Describe	Example
Innovative technology	Make use of advanced technology and ideas to improve the scientific and forward-looking landscape design.	Using ecological engineering technology and intelligent management system, the urban green space with strong adaptability and high energy efficiency is designed.
Multi-cooperation	Through interdisciplinary and interdisciplinary cooperation, more professional knowledge and experience are introduced to enrich the connotation and extension of landscape design.	Cooperate with ecologists, urban planners and artists to design landscape projects with ecological, social and cultural values.
Social cognition	By strengthening the public's cognition and participation in landscape design, the social benefits and influence of landscape can be improved.	Enhance the public's sense of identity and belonging to landscape design through public participatory design and social education activities.

Under the environmental requirements of the new era, the innovative paths of landscape design include: ecological priority, dynamic adaptation, harmonious coexistence between man and nature, cultural inheritance and innovation. The specific design methods include: using innovative technologies such as rainwater collection and solar energy utilization; Using natural materials, native plants and other regional elements; Design multifunctional and changeable public spaces, etc.

4.2. The value of landscape design under the environmental requirements of the new era

Landscape design in the new era emphasizes ecological protection and restoration, and pays attention to the protection of natural resources and the maintenance of ecosystems. By using

innovative technologies such as ecological engineering and green infrastructure, landscape design can reduce the damage to the ecological environment, improve the quality of the urban ecological environment and maintain the ecological balance. At the same time, landscape design pays more attention to the harmonious symbiosis between man and nature in the new era environment, emphasizing the experience and interaction of man in nature. By designing livable and tourable green space, landscape design can improve the quality of life of residents, enhance the attractiveness and competitiveness of the city, and promote the cohesion and identity of the community. Landscape design in the new era emphasizes cultural inheritance and innovation, and pays attention to integrating modern aesthetic and functional requirements into regional culture and historical elements. By excavating and displaying the historical culture and traditional elements of the city, landscape design can enhance the cultural heritage and sense of identity of the city, and inherit and carry forward the traditional culture. In addition, the landscape design in the new era promotes the economic development and industrial upgrading of the city by promoting the development of related industries and increasing employment opportunities. At the same time, high-quality landscape design can improve the land value and real estate value of the city and attract more investment and consumption.

5. Education and promotion of landscape design under the requirements of the new era environment

5.1. The reform and innovation of landscape design education under the requirements of the new era environment

With the promotion of environmental protection awareness and the acceleration of urbanization, the traditional landscape design education model can no longer meet the needs of the new era. Therefore, landscape design education needs to be reformed and innovated to meet the requirements of the new era and environment. As shown in Figure 1.

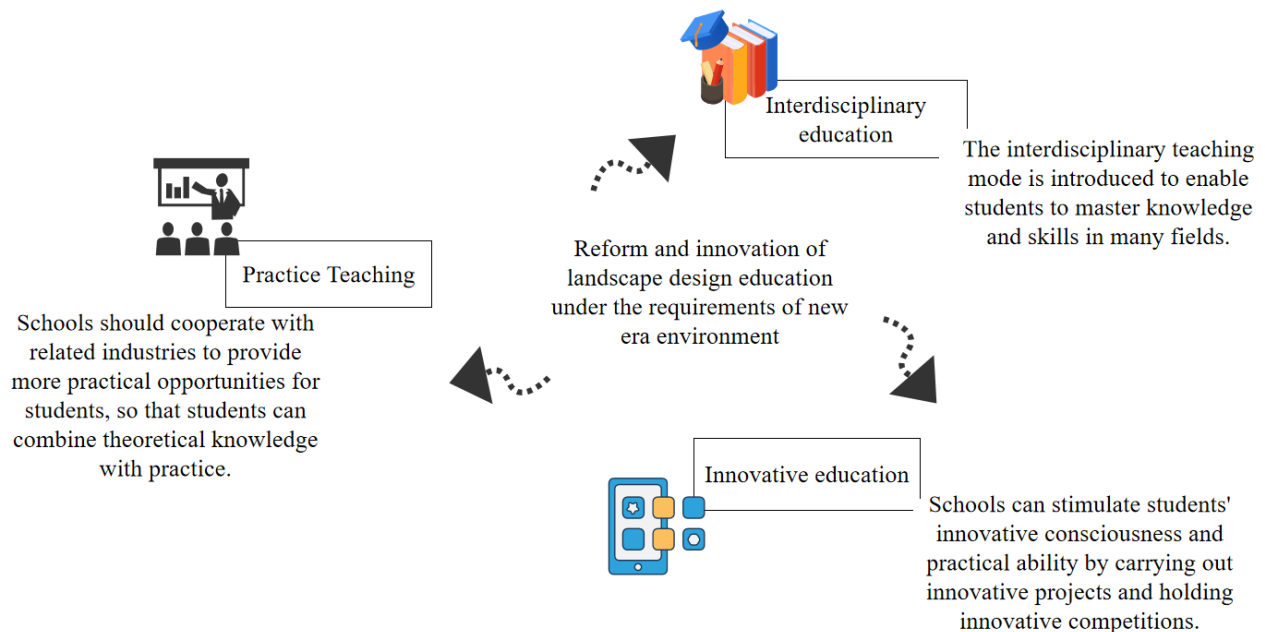


Figure 1 Reform and innovation of landscape design education under the requirements of the new era environment

5.2. Public cognition and popularization of landscape design under the requirements of the new era environment

The public's awareness of landscape design directly affects their support and participation in landscape design. Therefore, it is necessary to improve the public's knowledge and understanding of landscape design through popular science education. The basic concepts, principles and practical

cases of landscape design can be popularized to the public by holding lectures, exhibitions, seminars and other activities. Social media is an important channel for information dissemination in modern society. Landscape designers can publish works, share experiences and participate in discussions through social media platforms to raise public attention and awareness of landscape design. At the same time, we can understand the public's needs and feedback through interaction with the public, and further improve the design works. In addition, in the new era environment, public participation design projects can be carried out to let the public participate in the process of landscape design and improve the public's sense of identity and belonging to landscape design. This can not only enhance public understanding and support of landscape design, but also improve the quality and effectiveness of landscape design.

5.3. The role and responsibility of landscape architects under the requirements of the new era environment

In the new era, the role and responsibility of landscape architects have also changed. They need not only professional knowledge and skills, but also more social responsibilities and missions.

Responsibility of ecological protection: landscape design in the new era needs to pay attention to ecological protection and restoration. Therefore, landscape designers need to take the responsibility of ecological protection to ensure that the design works will not cause damage and impact on the ecological environment. They need to pay attention to the health and stability of the ecosystem and use innovative technologies such as ecological engineering to improve the ecological benefits and sustainability of the design.

Social responsibility: Landscape design in the new era needs to meet the needs and expectations of the public. Therefore, landscape designers need to assume social responsibilities and pay attention to the interests and needs of the public. They need to understand the public's aesthetic preferences, cultural background and lifestyle, and design landscape works that meet public expectations. At the same time, they also need to pay attention to the needs of vulnerable groups to ensure the fairness and inclusiveness of design works.

Responsibility for innovation: Landscape design in the new era needs constant innovation and development. Therefore, landscape designers need to take the responsibility of innovation and constantly explore new design concepts and technical methods. They need to pay attention to the development trends and technical trends of the industry, introduce new technologies and concepts in time, and improve the innovation and foresight of design works. At the same time, they also need to pay attention to the inheritance and innovation of traditional culture, combine traditional cultural elements with modern aesthetic and functional needs, and design landscape works with regional characteristics and cultural connotations.

6. Conclusions

In the new era, as a comprehensive and interdisciplinary field, the education and promotion of landscape design is particularly important. In this study, the education and promotion of landscape design under the requirements of the new era environment were discussed in depth, and the following conclusions were drawn:

Under the environmental requirements of the new era, landscape design education needs to be reformed and innovated to meet the changing environmental needs. By introducing interdisciplinary teaching mode, strengthening practical teaching and innovative education, landscape design talents with comprehensive quality and innovative ability can be cultivated.

The public's cognition and participation in landscape design is of great significance for promoting the development of landscape design. Through popular science education, social media promotion and public participatory design, the public's attention and awareness of landscape design can be improved, and the public's understanding and support for landscape design can be enhanced.

Landscape architects need to undertake more social responsibilities and missions in the new era. They not only need to have professional knowledge and skills, but also need to pay attention to ecological protection, meet public needs and constantly innovate and develop.

In the future, the education and promotion of landscape design will face more challenges and opportunities under the requirements of the new era environment. With the promotion of environmental protection awareness and the acceleration of urbanization, the importance of landscape design will become more and more prominent. Therefore, it is necessary to further strengthen the education and promotion of landscape design, cultivate more high-quality talents and promote the innovative development of landscape design. At the same time, it is necessary to strengthen cooperation and exchanges with related industries to jointly promote the development and progress of landscape design in the new era.

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