

Exploration on Environmental Education Through Construction of Global Parks in Zibo City

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Abstract: In this paper, the development status of environmental education in representative urban parks in Zibo City is investigated, studied, analyzed, and summarized. Besides, the role of natural resource commentary systems, waste sorting center visitations, and specialty gardens are expounded. In order to provide a reference for the integration of environmental education in the construction and renovation of parks in Zibo City, the problems in several practices like specialty gardens and WeChat public account is discussed.

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1. State of urban construction of a world park in Zibo City

As a typical megalopolis, Zibo City consists of urban and rural areas, with mountains in the south and rivers in the north, a stretched layout and a long history. It has the natural endowment and social foundation to build a global park city. It has been planned for Zibo to be turned into a global park city in the next 5-15 years, with green mountains and rivers, beautiful people and fertile fields, strong city and rich industry, clear layout, harmonious integration of the city and gardens, and become a pioneer in the construction of national park cities.

2. Urban park landscape as an important carrier of environmental education

Environmental education is the process of integrating environmental ideas, concepts, principles, and methods into modern universal education in order to achieve sustainable development and create a civilized society^[1].

As the main green space in the city, urban parks contain information such as environmental knowledge, environmental ethics, and environmental balance, which are ideal for environmental education. The design vocabulary conveys the importance of nature. At the same time, it also provides a window for more people to understand nature^[2,3].

3. Development status of environmental education through parks in Zibo City

There are currently four forms of environmental education through parks in Zibo City: natural resources commentaries, waste sorting center visitations, gardens, and WeChat public accounts (reading corners), as shown in **Table 1**.

Table 1. Forms of environmental education in representative urban parks in Zibo City

Park name	Environmental resources	Form of education
Zibo People's Park	Lakes, plants, animals	Natural resource commentary system, waste sorting center visitations
Qisheng Lake Park	Lake district landscape, plant landscape, animal landscape	Natural resources commentary system, waste sorting center visitations, and science popularization activities
Lianchi Park	Lake district landscape, plant landscape	Natural resource commentary system, botanical garden (rose garden)
Zibo Botanical Garden	Plant landscape, lake landscape	Reading room of Zibo Botanical Garden (picture book borrowing, natural science popularization, paintings, landscape drawing, and aesthetic education), specialty gardens, natural resource commentary system
Jiudingshan Forest Park	Geological landscape (slope, mountain, mine pit), plant landscape	Natural resource commentary system
Huashan Ecological Wetland Park	Spring water, lake landscape, plant landscape	Natural resource commentary system, specialty garden

3.1. Natural resource commentary system

There are usually lakes and plants in the urban parks in Zibo City. Environmental education is then done through listing the type of plants in the park, displaying basic information such as plant families, genus, Latin names, and natural habitats, so that the public can have some understanding of the plants in the garden. However, the content that can be presented through these methods are limited, and it is difficult provide further explanation or education. Besides, there are still problems such as incorrect names of the plants or inappropriate location and size of the displays. In addition, although bulletin boards or signs are set up at the corner of the event venue or at the roadside, but the content and form are relatively simple.

3.2. Waste sorting center visitation

In the process of park renovation and upgrading the global parks, the Zibo City Waste Sorting Center was built in the People's Park, creating a public space that integrates green life design, experience, display and sharing. This waste sorting center allows the general public to gain knowledge about garbage classification and participate in urban management. Similar practices include the waste sorting publicization and science popularization activities in Qisheng Lake Park.

3.3. Botanical gardens

A specialty garden is a garden where the same type of ornamental plants is planted within a certain range for sightseeing, science popularization, or scientific research. This design is commonly used in botanical gardens and sometimes in urban parks. For example, there is a rose garden in Lianchi Park. In recent years, more than 10 types of groundcover, miniature, modeling, old, and climbing roses have been introduced into the park. In order to improve the landscape quality, urban parks such as Huashan Wetland Park and Torch Park also have different types of specialty gardens such as cherry gardens and peony gardens. Specialty gardens allow the public to appreciate the variety and beauty of a certain plant. However, due to the lack of more in-depth science education in the park, viewers cannot deeply understand the relationship and differences between the varieties and other in-depth knowledge.

3.4. WeChat public account

Zibo Botanical Garden has launched a WeChat public account for the reading room, which provides services such as picture book borrowing, natural science popularization, outdoor sketching, and aesthetic education.

In short, the environmental education in urban parks in Zibo City is still in its infancy, and there are many problems. There is no mandatory regulation of relevant policies for the natural resource system, thus the explanations are not done well; the explanation system is outdated, and the equipment is too simple with limited functions; explanations related to environmental values are insufficient, and there is a lack of publicity and education on knowledge related to geological landforms, animal resources, and water resources, and a mature science education system has not yet been formed.

4. Direction of development and suggestions for environment education in Zibo City

4.1. Optimizing the natural resource commentary system of urban parks

4.1.1. Establishing a comprehensive natural resource commentary system

With the concept of civilization through environmental education and the process being improving environmental literacy of the people, while considering the close relationship between the urban parks of Zibo City and the construction of global parks, the commentary systems should include explanations on the natural environment, resources, the ecosystem of the park, and the symbiotic relationship between man and nature (**Table 2**).

Table 2. Interpretation content system of urban park ecosystem

Natural environment	Natural resources	Ecosystem	Symbiotic relationship between man and nature
(i) The characteristics, types, quantity scale, landscape distribution, and rare species in the park.	(i) Geographical landscape (ii) Waters (iii) Biological landscape	(i) Trees, shrubs, vines, flowers, and other plants (ii) Birds, beasts, insects, and amphibians.	Explaining the symbiotic relationship between man and nature using videos, pictures, case analysis, etc.
(ii) The geographical location, climate, and development history of the park.	(iv) Weather		
(iii) The role of parks in urban economic and social development.			

4.1.2. Building a quality assurance system for the commentaries

A professional commentary team should be created, and the commentaries should be given in a scientific, suitable, and easy-to-understand way so that the content can be accepted and understood easily.

Compared to the guides and explanations displayed in general natural scenic spots, urban parks should present richer environmental knowledge, use more diverse explanation methods to grab the attention of tourists, and enhance the information dissemination of the explanations. A tourist center should be set up at larger parks to display information of the park in a concentrated manner. Visitors can then pay more attention to various types of ecology through specimens, pictures, videos and materials from television programs, seminars and discussions, case analysis, and lectures. These methods can help disseminate information of the park more efficiently. Information of the park can also be disseminated through websites or self-built apps that is equipped with professional environmental commentators. Trees, flowers, insects,

birds, and amphibians in the park can be introduced using explanatory boards with pictures and texts; commentary kiosks can be built in areas such as river streams, wetlands, and plant communities, and relevant knowledge can be popularized with the help of touch screen videos and audio guides ^[4].

4.2. Practicing environmental concepts in the construction of urban parks and landscape improvement

Based on the concepts of “ecological construction first, educational significance second,” “overall coordination and harmonious coexistence,” and the related theories about environmental landscape, educational psychology, landscape aesthetics, etc. are used to construct and upgrade urban parks that are humanized, characteristic, leading, interactive, interesting, and sustainable. For example, the construction of urban parks, advanced ecological design technologies such as artificial wetland treatment systems, rainwater collection systems, intelligent irrigation systems, nature-themed corridor designs, and underground bins are used; the buildings in the park are built with green and environmentally friendly materials; the flora of the park is dominated by a variety of native plants to provide a good habitat for various animals and increase biodiversity. The historical and cultural memory of ancient buildings, old streets, ancient temples, screen walls, ancient trees, and famous trees in the city are preserved in the renovation and upgrading process, so that people can be immersed in the history of the site and the residents will feel a sense of nostalgia ^[3].

4.3. Creating a “garden within a garden” that popularizes science and encourages public participation

Thematic and specialty gardens should be created with the goal of popularizing science and “immersive” experience in the park. A “garden in the garden” can also be created by sectioning new functional areas on the basis of the original urban parks. These parks can somewhat make up for the separation of humans and nature brought about by urban life and enable people to connect with nature. Environmental education can be provided through these urban green spaces in a scientific way, and it allows the participation of the public.

In plant-specific and animal-specific parks, the introduction of animal and plant knowledge can be done through broadcasting, LCD screen displays, 4D science and education halls, QR code scanning, and other ways instead of graphics and texts alone to enhance public. The agricultural industry is an industry that human beings depend on for survival and reproduction. Therefore, farmlands are an important part of the ecosystem. In urban parks, an “agricultural garden” can be added to provide farming experience. Farmland can be simulated by displaying the farming activities, tools, crops, and common creatures in the farmland to popularize agriculture and related knowledge to tourists. Tourists can also be allowed to experience the farming activities and learn more about farming. In this way, urban residents can then grow closer to nature and land ^[4].

The construction of a global park city has brought new development opportunities and challenges to Zibo City. Integrating environmental education into all levels of urban park construction is conducive to civilization and sustainable development, and effectively promoting the natural environment of Zibo City. It will comprehensively enhance the city’s competitiveness and influence and satisfy the people’s yearning for a better life.

Disclosure statement

The authors declare no conflict of interest.

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