Vol.5 Iss.4 2024 Communication & Education Review
https://doi.org/10.37420/j.cer.2024.044

Research on the construction path of green campus under the background of digital intelligence—Take the construction of intelligent ecological picture book platform as an example

Keqi Zhou, Yaqi Chen, Danli Tong
School of Network Communication, Zhejiang Yuexiu University, Shaoxing Zhejiang
Corresponding Author, Email: 1577231957@qq.com

Abstract:
With the evolution of urbanization and the rapid development of Internet technology, ecological environment construction is no longer limited to traditional ways such as offline planting of green trees and campus labor education. The emerging concept of "ecological aesthetic education" has aroused widespread concern in society, which not only highlights people's attention to green environment, but also provides an opportunity to integrate digital intelligence technology into ecological education. In the era of mobile communication, in order to effectively promote the construction of green campus and promote the development of ecological education with the help of intelligent media technology. The author chose wechat mini program as the platform to create an intelligent ecological picture book platform integrating digital picture book reading, ecological cultural creation and production, green volunteer activities, and other functions to open up a new path for green campus construction.

Keywords:
Digital intellectualization;Ecology of Education ;Green campus; Ecological aesthetic education; Ecological picture books;

1.Introduction

At the National Conference on Ecological Environmental Protection held in July 2023, President Xi Jinping emphasized the necessity of prioritizing the construction of a beautiful new China as a key component of building a strong nation and achieving national rejuvenation. With the close implementation of national top-level planning, research on ecological education has rapidly gained momentum across various sectors. The critical question of how to promote the steady development of ecological construction has become a significant issue of our time.

American educational researcher Lawrence Arthur Cremin pioneered the introduction of the "ecosystem" concept from environmental studies into the field of education. He proposed the idea of "educational ecology" from a systemic perspective. According to educational ecology, the education system is an open system

© 2024 by the author(s); licensee Mason Publish Group, this work for open access publication is under the Creative Commons Attribution International License (CC BY 4.0). (http://creativecommons.org/licenses/by/4.0/)

that interacts and co-evolves with surrounding organizations, environments, cultures, and other social factors. Noted Chinese educational ecologist Wu Dingfu identified four elements of the educational ecosystem: ecological environment, input, transformation process, and output.

This paper analyzes how the intelligent ecological picture book platform can expand the input forms of green ecological knowledge within campuses (diversifying knowledge dissemination forms), enhance the efficiency of converting green ecological concepts within campuses (optimizing student knowledge absorption), and enrich the output forms of green ecological concepts within campuses (making knowledge dissemination more multidimensional). This analysis is based on literature review and experimental methods in the context of the flourishing era of mobile media, aiming to explore feasible paths for optimizing green campus construction ecology.

2. Opportunities Brought by Digital Intelligence for Green Campus Ecological Construction

In the era of digital intelligence, various digital technologies offer extensive platforms and new opportunities for ecological construction. People can effectively integrate green campus environmental protection concepts with digital resources to achieve interactive effects.

2.1 Digital Intelligence Technology and Policy Support for Ecological Campuses

In the era of digital intelligence, particularly with the rapid development of social media and mobile internet, various forms of education are moving towards online and virtual platforms. In November 2021, the Central Committee of the Communist Party of China and the State Council officially issued the "Guiding Opinions on Promoting the Development of 'Internet+ Education,'" which elevated "Internet+ Education" to a national strategic level, making comprehensive arrangements for its development. "Internet+ Education" leverages new-generation information technology to update educational concepts, transform educational models, and foster new forms of educational innovation and development. This shift from unidirectional to multidirectional dissemination broadens and accelerates the spread of information. The construction of ecological campuses can also utilize the "Internet+" model to enhance the dissemination of green ecological concepts.

2.2 Diversified Campus Dissemination of Green Ecological Knowledge through Digital Intelligence Technology

With the backdrop of digital intelligence, WeChat mini-programs have rapidly gained popularity, offering users a seamless online experience without the need for installation. Leveraging WeChat's extensive user base and its continual updates, the operational speed of mini-programs has significantly improved. The potential for disseminating ecological environmental protection concepts through mini-program technology has therefore increased.

As WeChat interfaces continue to open up, the functionality of WeChat official accounts has also expanded. Using the WeChat ecosystem, mini-programs serve as effective mediums for promoting environmental

© 2024 by the author(s); licensee Mason Publish Group, this work for open access publication is under the Creative Commons Attribution International License (CC BY 4.0). (http://creativecommons.org/licenses/by/4.0/)

protection concepts. Beyond WeChat, other campus public media platforms such as Weibo and Bilibili can timely release information on related campus activities. Their audience extends beyond students and teachers, reaching public welfare enthusiasts and parents who can join environmental activities through various consultation platforms. Digital intelligence technology and corresponding media platforms create a mimetic environment where various public welfare environmental protection activities and campus ecological documentaries continuously attract attention, significantly boosting the effectiveness of green campus construction.

2.3 Enhancing Students' Acceptance of Green Ecological Knowledge through Intelligent Ecological Picture Books

While various schools have implemented different forms of ecological civilization education, there remain issues of insufficient educational atmosphere and overly simplistic educational methods. Students often find it challenging to integrate theoretical education on green campus ecology with practical education. Ecological picture books, as an emerging medium, offer a joyful reading approach to internalize ecological environmental protection concepts within students.

Although the overall picture book market is relatively active, issues such as piracy and inconsistent content quality persist. Furthermore, there are relatively few ecological picture books in China, and those targeting children are even scarcer. The market promotion effect of ecological picture books is also not significant. Considering that promotion success is a key criterion for the success of picture book publication, improving the promotion and publicity capabilities of creators and establishing an ecological chain for picture books becomes a primary task. WeChat mini-programs, under digital intelligence technology, can provide a platform for ecological picture books, allowing students to access green ecological knowledge anytime, anywhere. The children's picture book industry can actively integrate digital resources to create original and comprehensive picture book ecological chains, facilitating students' deep understanding of green ecological knowledge through various forms.

3.Development Status of WeChat Mini Programs in the Context of Digital Intelligence

In the current era of digital intelligence, the development of WeChat mini programs has become increasingly mature, offering users a new level of convenience and experience. The following points highlight the key aspects of their development status:

3.1 Convenient Usage

The convenience of using WeChat mini programs is one of the primary reasons for their popularity. Unlike traditional apps, users can access mini programs quickly without the need to download or install them, saving time and phone storage space. For developers, mini programs involve lower investment costs and higher returns, benefiting from WeChat's vast user base of 800 million monthly active users. Individual users appreciate the ability to enjoy a streamlined and convenient service that encompasses most functions of native apps while freeing up phone memory. This novel usage method has attracted a large user base, particularly young university students who value fashion and convenience in their lifestyle.

© 2024 by the author(s); licensee Mason Publish Group, this work for open access publication is under the Creative Commons Attribution International License (CC BY 4.0). (http://creativecommons.org/licenses/by/4.0/)

3.2 Diversification of Service Functions

The service functions of WeChat mini programs are increasingly diversified, covering not only aspects of daily life such as shopping and social entertainment but also education, culture, and the arts. Utilizing internet technology and Location-Based Services (LBS), mini programs connect various fields through multi-scenario entry points. The development of mini programs for ecological aesthetic education integrates a wide range of resources into a single platform, providing university students with access to learning courses, art exhibitions, and ecological protection activities, meeting their diverse needs. Advanced recommendation algorithms analyze user information and transaction records to suggest relevant picture book exhibitions and environmental activities, and recommend nearby environmental organization events based on user location data.

3.3 Extensive Coverage

WeChat mini programs have achieved widespread coverage, not only in first and second-tier cities but also in third and fourth-tier cities and rural areas. This extensive reach provides a vast market for the development of ecological aesthetic education mini programs, better serving university students across various regions and promoting the widespread adoption and growth of ecological aesthetic education.

From the above analysis, it is clear that the development status of WeChat mini programs in the context of digital intelligence offers a promising opportunity and favorable conditions for the development of ecological aesthetic education mini programs. The goal of developing "Ecological Aesthetic Education Mini Programs" is to leverage digital intelligence technology to create a smarter and more convenient learning platform. This platform aims to provide university students with richer and higher-quality ecological aesthetic education resources, fostering the prosperity and advancement of ecological aesthetic education.

4. Strategies for Building an Intelligent Eco Picture Book Platform Based on WeChat Mini Programs

4.1 Technical Framework Design: The Technological Foundation for Green Campus Digitalization

The development of the intelligent eco picture book platform relies on the structural framework of the WeChat platform. This includes open interfaces, application program interfaces (APIs), and page rendering functionalities. The platform allows for the writing and invocation of pages, business logic, and view drivers within the program, as depicted in Figure 1. In this structure, the Native layer encapsulates various logic and UI components and facilitates data communication and logic functions. The view layer can modify data information in the structure and transmit data to the logic layer using the framework structure, while the logic layer also influences the view layer to some extent. Additionally, the platform requires image processing software for picture resizing and an icon generator for icon planning.

© 2024 by the author(s); licensee Mason Publish Group, this work for open access publication is under the Creative Commons Attribution International License (CC BY 4.0). (http://creativecommons.org/licenses/by/4.0/)

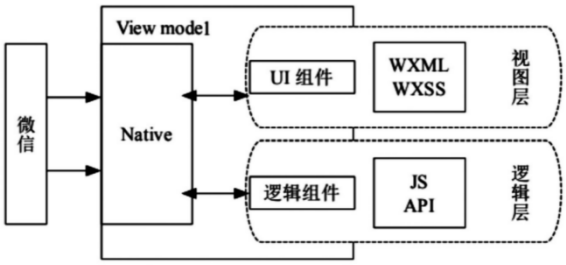


Figure 1. Technical Framework

4.2 Service Function Design: A Diversified Mechanism for Transforming Green Campus Concepts

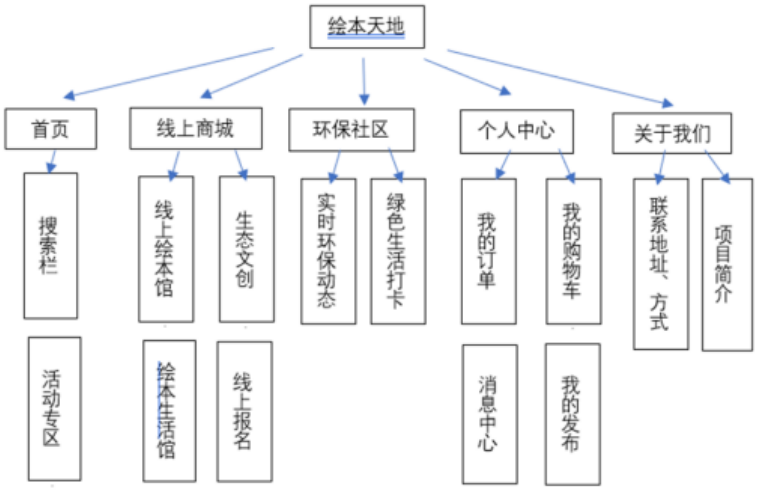


Figure 2. Platform Function Framework

The primary function of the intelligent picture book living hall is to present a virtual scene comparable to a real-life book exhibition hall using 3D modeling. Users can navigate through the hall as a 3D avatar, selecting desired picture books from shelves or walls for reading. Each week, a "Recommended Picture Book of the Week" will be featured in the central display area of the hall with a discount. Each book has a "music note button" in the lower right corner of the cover, allowing for audio reading when clicked. During reading, this button appears in the upper right corner of the screen for easy access. After reading, the last page displays the reading duration and earned points. Books in the hall are categorized as "free" or "paid," with paid books accessible through purchase, time exchange, or points exchange. Reading and purchasing books earn points and discount coupons. All platform functions revolve around the eco picture book theme, promoting green living and environmental activities through automatic searches and real-time updates from the environmental community.

4.3 Product Interface Design: Multi-dimensional Eco Knowledge Input Interfaces

Through initial exploration and trials, the project team innovatively designed interface modules and refined them through practice, ultimately developing three independent modules: "Home Interface," "Online Store,"

© 2024 by the author(s); licensee Mason Publish Group, this work for open access publication is under the Creative Commons Attribution International License (CC BY 4.0). (http://creativecommons.org/licenses/by/4.0/)

and "Personal Center."

4.3.1 Home Interface

The home interface primarily consists of a search bar and activity area. The search bar allows interface navigation, enabling users to access information about eco picture books and related activities or enter the environmental community for daily check-ins to earn points. Users can choose to retain search history, which will display personalized recommendations upon re-login. The activity area features green check-in activities like "Old Books Exchange" and "Fun Dubbing," promoting offline events through online publicity and summarizing offline activities for further online promotion, achieving dual online-offline interaction.

4.3.2 Online Store Interface

The online store comprises four modules: "Online Picture Book Hall," "Picture Book Living Hall," "Eco Cultural Creativity," and "Online Registration." The "Online Picture Book Hall" collects original works from collaborating authors, enriching both the free and paid reading sections. The "Picture Book Living Hall" showcases offline picture book activities online, providing updates on campus activities. "Eco Cultural Creativity" is the main part of the online store, allowing users to purchase related cultural products based on their reading experience and aesthetic preferences. In "Online Registration," users can upload their original picture book works for competition, with winners receiving rewards. This interactive design not only increases user engagement but also enhances the platform's visibility through user sharing and voting.

4.3.3 Personal Center

The personal center includes "My Orders," "My Cart," "My Posts," and "Message Center," allowing users to track order status, shipping information, and new product updates. Users can share eco landscapes, environmental actions, and eco-friendly tips in "My Posts," with interactive zones for likes and comments. Highly liked posts are featured in the "Popular" section, and users earn points for their contributions. Posts can be region-specific or not, helping users selectively browse content.

4.4 Operation and Promotion Design: A Three-dimensional Eco Knowledge Dissemination Model

With the foundational functions of the mini program in place, a "offline + online" dual promotion strategy is essential for gathering user feedback and preferences, enhancing mini program functionality, optimizing user experience, and attracting new users. This strategy also helps reduce operational costs and increase revenue.

4.4.1 Offline Promotion Strategy

Collaborate with universities and communities to post posters in high-traffic student areas, introducing the story of eco picture books and encouraging initial mini program use through QR code registration for free eco-themed picture book merchandise. Additionally, organize and promote regular eco lectures with nearby environmental and picture book companies to increase acceptance and support for the mini program.

© 2024 by the author(s); licensee Mason Publish Group, this work for open access publication is under the Creative Commons Attribution International License (CC BY 4.0). (http://creativecommons.org/licenses/by/4.0/)

Further, strengthen cooperation with local shops and supermarkets to set up a membership points system. Users can earn points through mini program activities, redeemable for discounts, while the mini program provides an online shopping function for merchants.

4.4.2 Online Promotion Strategy

Set keywords in the mini program search interface to facilitate user searches. Establish official accounts on major public platforms, regularly pushing lottery events, green public welfare activities, and campus knowledge posts to increase visibility. Create H5 interactive posters emphasizing the importance of eco-protection and vibrant picture book stories. Leverage existing popular public accounts and campus accounts for associated promotions, embedding mini program cards in articles for direct access, simplifying user engagement.

This strategic approach integrates both offline and online efforts, enhancing the spread of eco-knowledge and fostering the sustainable development of the intelligent eco picture book platform.

5.Experimental Operational Results of the Intelligent Eco Picture Book Platform

To understand the acceptance level of the intelligent eco picture book platform among students and to test its effectiveness in promoting green campus construction, researchers employed convenience sampling. They selected 98 students from grades 1 to 6 at a nearby primary school. With the assistance of the teachers, these students freely used the intelligent eco picture book platform for a month. Afterward, the researchers analyzed the platform's effectiveness through a survey.

The survey results showed that the use of the intelligent eco picture book platform significantly enhanced the students' understanding and awareness of green ecological concepts. The analysis compared the usage of the platform, the improvement in students' understanding of green ecological concepts, and the ratings of traditional ecological education methods versus the intelligent eco picture book platform. The results indicated that the platform effectively increased the dissemination and comprehension of green ecological concepts among the students.

Regarding usage frequency, the majority of students used the platform 7 to 16 times per week, with very few using it 0-6 times or more than 16 times weekly. This indicates that most students accessed the platform at least once daily, suggesting a high level of interest and engagement among the students, which bodes well for the platform's future development.

In terms of ecological awareness, nearly three-quarters of the students reported a significant improvement in their understanding of green ecological concepts after one month of using the platform. Seven students felt they achieved the highest possible improvement, while only one student reported limited improvement. This demonstrates that a month of free usage of the intelligent eco picture book platform can substantially enhance most students' understanding of green ecological concepts, thereby increasing their awareness of environmental protection.

© 2024 by the author(s); licensee Mason Publish Group, this work for open access publication is under the Creative Commons Attribution International License (CC BY 4.0). (http://creativecommons.org/licenses/by/4.0/)

6.Conclusion

This study first summarized the advantages of digital technology and eco picture books in disseminating ecological knowledge and increasing students' acceptance of green ecological knowledge through literature review and analysis. Secondly, through the design, construction, and promotion of the intelligent eco picture book platform, the study enriched the practical application paths of educational ecology and digital technology.

The findings reveal that the intelligent eco picture book platform, through various online e-books, offline green practice activities, and exquisite eco-cultural products, effectively diversified the forms of ecological knowledge input. The use of multiple interface designs significantly increased students' exposure to ecological knowledge, optimizing the dissemination of green ecological concepts. The combined online and offline promotion model also facilitated a three-dimensional output of green ecological knowledge.

Overall, the intelligent eco picture book platform subtly integrated ecological education into "joyful reading" and "public welfare practices," significantly improving the efficiency of ecological knowledge transfer. This provides a feasible path for optimizing green campus construction.

Funding

This work was supported by the Innovation and Entrepreneurship Training Program of the School of Network Communication at Zhejiang Yuexiu University of Foreign Languages (Project Title: Exploration and Development of an Eco-Aesthetic Education Mini-Program Using Bilingual Picture Books as the Main Medium; Project Number: 202312792030).

References

[1]Chen, P., & Fan, X. D. (2024, May 6). Research on the construction of regional teaching and research ecosystem model from the perspective of educational ecology [J/OL]. Teaching and Management, 1-5. http://kns.cnki.net/kcms/detail/14.1024.G4.20240416.1145.002.html

[2]Chen, F. Y. (2023). Coordinated innovation and development of "three teachings" from the perspective of educational ecology: Value, challenges, and responses [J]. China Vocational and Technical Education, (34), 49-56.

[3]Chen, H. J. (2022). High-quality higher education: An interpretation based on educational ecology [J]. Jiangsu Higher Education, (01), 29-33.

[4]Chen, L., & Tang, X. P. (2023). Analysis of the policy orientation of the national "Internet + Education" strategy [J]. E-Education Research, 44(07), 5-12+36.

[5]The Communiqué of the Fifth Plenary Session of the 19th Central Committee of the Communist Party of China [EB/OL]. (2020, October 29). http://www.gov.cn/xinwen/2020-10/29/content_5555877.htm

[6]Huang, X. R. (2018). Big data, datafication, and the demarcation of science [J]. Journal of Dialectics of Nature, (5), 118-123.

[7]Wei, Y. Y., & Xiao, J. M. (2023). The panoramic shielding of digital survival and educational response:

© 2024 by the author(s); licensee Mason Publish Group, this work for open access publication is under the Creative Commons Attribution International License (CC BY 4.0). (http://creativecommons.org/licenses/by/4.0/)

Reflection on Plato's "allegory of the cave" [J]. Open Education Research, 29(1), 37-45.
[8]Luo, P., Wei, D., & Xu, P. (2021). Thoughts on the development of digital cultural tourism [J]. Data, (Z1), 54-59.
[9]Long, Y. L. (2011). Research on personalized demand acquisition methods based on the Kano model [D]. Central South University.
[10]Qin, S. S., & Wang, X. Y. (2024). Achievements, experiences, and prospects of the construction of China's ecological civilization system in the new era [J]. Journal of Hunan University (Social Sciences), 38(02), 1-8.
[11]Zhang, X. (2023). Research on the design of primary and secondary school campuses based on green goals [J]. Engineering Technology Research, 8(24), 210-212.

© 2024 by the author(s); licensee Mason Publish Group, this work for open access publication is under the Creative Commons Attribution International License (CC BY 4.0). (http://creativecommons.org/licenses/by/4.0/)