

Reform Practice of Immersive Cultural and Tourism Digital Landscape Design Training Course Based on Interactive Narrative in Wuhan Donghu University

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Received: 8 September 2024; **Accepted:** 22 September 2024; **Published:** 14 October 2024

Abstract:

Nowadays, the traditional environmental design profession derives new disciplines and professional directions from the wave of the digital era. Under the background of China's national efforts to promote Chinese traditional culture, the booming development of cultural tourism has injected new vitality into the landscape design industry, and cultural tourism digital landscape design has become a new direction for the innovative development of the landscape design industry. Unfortunately, the existing practical training courses for environmental design majors lack some educational "foresight" in cultivating digital landscape design talents with innovative ability and practical experience. In order to meet this challenge, this study is based on the concept of interactive narrative and immersive experience, and through the comprehensive reform of a series of practical training courses in environmental design [9], we construct a new curriculum system that delivers applied technical talents for the digital landscape industry of culture and tourism. By adjusting the objectives of practical training courses, innovating teaching contents and methods, integrating and optimising course resources, and carefully designing practical teaching links, we attempt to build a set of practical training course system that adapts to the development needs of the industry and pays attention to the cultivation of students' comprehensive ability. It tries to improve students' innovation and practical and interdisciplinary integration ability through the teaching reform practice of practical training courses, laying a solid foundation for their future career development in culture, tourism, and landscape. At the same time, it is also expected to provide new ideas and methods for future practical training courses on the reform of environmental design majors and promote education and teaching reform in the cultural and tourism digital landscape design field.

Keywords:

Interactive Narratives, Immersive Experiences, Cultural Tourism, Travelling Digital Landscape Design, Curriculum Reform

1. Introduction

China's National 14th Five-Year Plan for the Development of Cultural Industries encourages combining immersive experiences with urban complexes, public spaces, and tourist attractions. As an essential part of contemporary landscape design, the cultural tourism landscape is also experiencing a profound change driven by digital technology. With the advancement of science and technology and the wide application of virtual reality (VR), augmented reality (AR) and digital interactive technology, the cultural tourism experience has gradually shifted from traditional sightseeing tours to a more personalised, interactive and immersive experience mode. This shift has raised the requirements of landscape design to construct a spatial, cultural field, improve the audience's sense of experience, and upgrade the way of landscape realisation. In the employment-oriented landscape design practical training courses, the corresponding cultural tourism landscape design and public space design also change direction with the design demand. [1]

The main feature of the current cultural and tourism landscape design is reflected in the deep integration and innovative application of digital technology. Interactive narrative as an emerging narrative mode, through the use of digital interactive media, stimulates the user's active participation in the behaviour to provide a set of information conveyance, aesthetic experience and emotional resonance in one of the deep immersive experience, interactive narrative as an innovative narrative is gradually becoming an essential means to enhance the sense of immersion of tourists. Through interactive narrative, tourists are no longer passive receivers of information but become part of the story and can personally participate in the development of the storyline, [8] thus obtaining a more prosperous and profound experience. At the same time, the interactive narrative also breaks the traditional narrative's time and space limitations so that visitors can freely explore and experience a broader range.

With the intervention of digital technology in environmental design, culture and tourism, digital landscape design has become a new direction of innovation and development in the landscape design industry. However, the existing practical training courses for environmental design majors are not "forward-looking" in cultivating digital landscape design talents with innovative ability and practical experience. In order to meet this challenge, this study is based on the concepts of interactive narrative and immersive experience, and through the comprehensive curriculum reform of some practical training courses in environmental design, we construct a new curriculum system to deliver applied technical talents for the digital landscape industry of culture and tourism. By adjusting the objectives of practical training courses, innovating teaching contents and methods, integrating and optimising curriculum resources, and carefully designing practical teaching links, this study attempts to build a set of practical training course system that adapts to the development needs of the industry and pays attention to the cultivation of students' comprehensive ability. The results of teaching practice show that the reformed practical training course significantly improves students' innovation ability, practical ability and interdisciplinary integration ability and lays a solid foundation for their future career development in cultural tourism and landscape. At the same time, this study also provides new ideas and methods for reforming practical training courses in environmental design majors, which is of great significance for promoting educational and teaching reform in the cultural and tourism digital landscape design.

With the continuous innovation of digital technology, the transformation and upgrading of the cultural and tourism industry has become an inevitable trend. In this process, the importance of cultural tourism digital landscape design, as an emerging field that combines the essence of traditional culture and modern technological means, has become increasingly prominent. It provides tourists with a richer and more diversified tour experience and injects new vitality into cultural inheritance and innovation. There are still many deficiencies in the current environmental design professional practical training courses, especially in cultivating students' innovative, practical, and interdisciplinary integration abilities. Traditional practical training courses often focus on training a single skill while neglecting the cultivation of students' comprehensive quality, which leads to students' difficulties in facing complex practical projects [3].

The primary goal of this study is to deepen the reform of the cultural and tourism digital landscape design practical training course for environmental design majors. We aim to achieve this by introducing the concepts of interactive narrative and immersive experience. Our objective is to help students master the cutting-edge technology of digital landscape design and enhance their innovative awareness and practical ability, thereby cultivating more high-quality talents that meet the development needs of the industry.

This study will focus on several key aspects. Firstly, we will conduct an in-depth analysis of the current status of the environmental design professional training courses and their problems. Secondly, we will explore how to integrate the concept of interactive narrative and immersive experience into the digital landscape design training courses of cultural tourism and put forward a practical reform plan. Finally, we will verify the effectiveness and feasibility of the proposed reform plan through experiments. We expect this study to provide a valuable reference for teaching reform in digital landscape design for cultural tourism and contribute to the sustainable and healthy development of the cultural tourism industry. [5] We also hope that through this reform practice, we can inspire more scholars and practitioners to pay attention to and be enthusiastic about digital landscape design for cultural tourism and jointly promote this field's continuous innovation and development.

2. Curriculum Reform Practice Foundation

Wuhan East Lake College, an environmental design major, was opened in 2005, passed the professional assessment of the Hubei Provincial Department of Education in 2011, obtained the right to grant the bachelor's degree of art in the same year, and was named the school pole characteristic major of Wuhan East Lake College in 2012. 2020 environmental design major was approved as a first-class professional at the provincial level. This major is the director unit of the Hubei Art and Design Association and the central examination unit of the Hubei Province of BIM1+X Examination Centre of Langfang Zhongke Construction Industrialization Research Centre. The major has been enrolling full-time undergraduates since 2005, and there are now nearly six hundred students in the Department of Environmental Design. In 2019, Wuhan Eastlake College's environmental design major passed the professional assessment by the Professional Teaching Steering Committee of the Hubei Provincial Department of Education.

The team members are the backbone of the core teaching team of the environmental design major and the backbone teachers of the environmental design digital

expression course cluster; there are three associate professors, one lecturer, and one assistant professor, and all teachers have a master's degree, and three of them are "dual-teacher teachers". They have completed much related teaching research and digital environment design teaching practice. The textbook "AUOCAD Architectural Performance" has been published by Mechanical Industry Press, and the two textbooks' "Display Design and its Digital Performance" and "Digital Practical Training of Landscape Design" are currently under compilation, which are expected to be released at the beginning of 2021.

Since 2016, the environmental design major has taken "digital environmental design" as the characteristic direction of development, reflected in the revision of the professional training programme and curriculum teaching reform. 2014, the major built the "Wuhan East Lake College Interior Virtual Simulation Experimental Centre". Over the years, it has been actively researching the teaching methodology of the expression of thinking and computer-aided interior design and landscape design by three-dimensional modelling and simulation technology. It has opened virtual simulation training courses in interior design, which has achieved better teaching results. This major also has the MARS Shining City Virtual Reality Laboratory under construction. In a unique collaboration, the major has joined forces with the digital media major of our college to build the Media and Art Design Digital Design Platform, taking the Art Design Incubation Centre as the base to create the "East Lake Design" design brand that highlights the characteristics of the major.

Since 2012, this major has regularly participated in the National Information Technology Application Level Competition under the auspices of the Ministry of Industry and Information Technology of the People's Republic of China, won many awards, and has participated in the National 3D Digital Innovation Design Competition every year since 2013, and won the Grand Prize of the Digital Architecture and Intelligent Home Design Competition and the First Prize of Hubei Province in the National 3D Digital Innovation Design Competition in 2016. They are leading students to participate in information technology innovation and practice activities in higher education since 2016.

Relying on the established virtual simulation training centre, the team has set up a student design competition team and a student digital science and technology club. With the help of Bright City, the team will promote the use of MARS tools for virtual reality design among students and provide a learning platform for students to master 3D modelling and virtual simulation technology through the trinity of "Curriculum-Competition-Society". (Figure 1, Figure 2)



Figure 1. Dual-teacher professor classroom in the virtual simulation laboratory of environmental design programme. (Authors' photographs).



Figure 2. Digital Innovation Centre for Environmental Design, Wuhan Donghu University (Authors' photographs).

3. Materials and Methods

3.1. Adjustment of the objectives of practical training courses

In adjusting the objectives of practical training courses, we will focus on the following aspects of reform.

In order to cultivate students' creative ability, we will increase the course contents and practical activities related to creative thinking. Through the introduction of teaching methods such as design thinking and creative stimulation, we will inspire students to explore new design concepts and technical means in the course of practical training. This approach will not only enhance their creative ability but also inspire them to think outside the box. In addition, we will regularly participate in the University Innovation and Entrepreneurship Competition to provide a platform for students to display their innovative achievements and stimulate their enthusiasm for innovation.

To cultivate practical ability, we will strengthen the cooperation with industrial enterprises and establish practical teaching bases. Through the school-enterprise cooperation projects, students can personally participate in authentic cultural and tourism digital landscape design projects to improve their professional skills and teamwork ability in practice. Meanwhile, we will invite industry experts with rich practical experience to serve as tutors for the practical training programme, providing students with valuable practical guidance and career development advice. In order to cultivate students' interdisciplinary integration ability, we will break the boundaries of traditional disciplines and introduce multi-disciplinary, cross-cutting teaching content. For example, we will incorporate knowledge from related disciplines, such as computer science, art, and psychology, into the practical training programmes to help students build a comprehensive and in-depth knowledge system. In addition, we will encourage students to take interdisciplinary courses and participate in activities such as interdisciplinary seminars to promote exchanges and collisions between different disciplines.

Our students played a pivotal role in the scenic upgrading of the Three Gorges Waterfall Scenic Spot in Yichang, Hubei. They approached the project from the unique perspective of the regional culture of Jingchu, using digital landscape to narrate the story of the "Goddess of Wushan" in the Three Gorges. Their use of interactive sketches allowed people to immerse themselves in the story, addressing the issues in intelligent cultural tourism.

Cultural tourism uses public art construction as an entry point. [3] It introduced landscape interactive devices based on the local value of cultural tourism of Peach

Blossom Island of the Three Gorges Waterfalls in Yichang, which combined interactivity with landscape design and introduced a landscape interactive device in the landscape design of the Three Gorges Waterfalls in Yichang. Interactivity and landscape design, in addition to reflecting the ornamental value of art, more interactivity into the facilities, and designed a variety of forms of technological interaction, visually, several projection technologies, the water flow elements and technological interaction, in the overall water theme, the water flow elements throughout the entire design, so that people in the visual interaction to experience the light and shadow exhibitions, and waterfalls and other elements are echoed. The design extracts the waterfall and the feeling of water for people; the waterfall, in its vision, sound, touch, and other aspects, will give people an experience of nature. In the light and shadow, in addition to simulating the visual of the waterfall, also designed to simulate the sound of the water flow, the facility was set up in the water flow between the original natural environment of the sound of the water flow, extracted the natural ambient sound, in the indoor with the media released. In the sense of touch, the simulation of the waterfall rushing down to splash the effect of water mist, with humidification devices to simulate the effect of the waterfall water mist, and finally, from the vision of light and shadow, water heating, water mist tactile, so that people can experience the interactive public art facilities. (Figure 3)



Figure 3. Students involved in a digital landscape transformation project at the Three Gorges Waterfall Scenic Spot in Yichang, Hubei (Drawing by Liu Yuhong)

When setting the new objective system of practical training courses, we will fully consider the industry's development trend and market demand. Through regular research and analysis of industry dynamics, we will make timely adjustments to the course objectives to ensure that they are closely related to the development of the industry. [7] At the same time, we will also pay attention to the prospects of the application of emerging technologies and design concepts in the field of cultural and tourism digital landscape design in order to incorporate them into the content of the practical training courses promptly so that students can keep pace with the times and master cutting-edge skills.

By implementing the above reform measures, we are confident that the new target system of practical training courses will better align with the industry's development needs and provide a solid foundation for our students' overall development. In our future teaching process, we will continue to monitor students' learning dynamics and feedback and consistently enhance and refine the target system of practical training courses. We aim to cultivate outstanding talents with innovative ability, practical skills, and interdisciplinary integration. [4]

3.2. Innovation in Teaching Content and Methods

In the innovation of teaching content, we will focus on introducing the concepts of interactive narrative and immersive experience. With its unique user participation and diversified story development, the interactive narrative has injected new vitality into digital landscape design for cultural tourism. Students can intuitively understand how to use interactive narrative techniques to design engaging and in-depth cultural and tourism digital landscapes through in-depth analyses of typical cases. At the same time, we will explore the realisation of immersive experiences in landscape design and teach students how to use advanced digital technologies, such as virtual reality (VR) and augmented reality (AR), to create an immersive landscape environment.

For example, we led students to participate in the Wuhan Garden Expo Park 'Yangtze River Circumnavigation Science Pavilion Design' students tried for the first time to break the professional barriers into the interactive display design, the use of spatial display and digital interactive technology more efficient and exciting to the audience to convey scientific knowledge.

In terms of teaching methodology, we are redefining the role of students in the learning process. We will break the traditional one-way indoctrination teaching mode and shift to a teaching method that places more emphasis on students' subjectivity and practicality. Interactive teaching will be the norm, encouraging students to ask questions, share their thoughts, and engage in discussions. This active participation will deepen their understanding of knowledge and foster a culture of curiosity. Project-based learning will further empower students, as they will be guided to form teams and work together to solve practical problems in cultural and tourism digital landscape design. This approach not only allows students to apply their professional skills in practice but also enhances their communication, coordination, and innovative spirit in teamwork. (Figure 4)



Figure 4. 2022 Graduation Design Attendance at Dazhi Road Pioneer Community Old Town Renovation Meeting and Site Visit.

We will also focus on cultivating students' independent learning ability. Participating in teachers' open research projects allows students to find information, analyse problems and propose solutions independently. This teaching method aims to cultivate students' independent thinking ability and lifelong learning habits so they can adapt quickly and progress continuously when facing challenges in their future careers. [10]

Through comprehensive innovation in teaching content and methodology, we expect to build a vibrant, practice-oriented, innovation-cultivating digital landscape design practical training programme for cultural tourism. [12] Such a programme will better meet industry development needs and cultivate more applied talents with high quality and skills.

3.3. Integration and Optimisation of Curriculum Resources

In the process of promoting the reform of the immersive cultural and tourism digital landscape design practical training course based on interactive narrative, the integration and optimisation of curriculum resources is particularly important. [11] This study will be based on the characteristics of environmental design majors, with the core of enhancing students' comprehensive design ability, and carry out in-depth integration and fine optimisation of existing curriculum resources. [13]

We will focus on the construction of a resource-sharing mechanism. We encourage open resources and mutual exchange between courses by building a resource-sharing platform for on-campus practical training courses. For example, excellent cases in landscape design practical training courses, creative ideas in public art courses, award-winning works in design competition courses and craftsmanship skills in architectural carpentry courses can be displayed and exchanged on the platform. This will help enrich the teaching content and stimulate students' interest in learning and creative inspiration.

Mutual selection of courses will become an essential means to optimize curriculum resources. We will break down the boundaries between traditional courses and allow students to freely choose courses of interest within a specific range of study. This flexible mechanism of mutual selection of courses will help broaden students' knowledge horizons and promote exchanges and integration between different courses. For example, students interested in digital landscape design for culture and tourism can choose to participate deeply in the public art programme's relevant projects to improve their artistic quality and design ability.

In integrating and optimizing curriculum resources, we will also closely integrate the reform objectives of practical training courses and the actual needs of students. Through regular research and feedback collection, we will keep abreast of students' learning progress and curriculum needs and dynamically adjust and optimize the course content. For example, to address students' weaknesses in interactive narratives and immersive experiences, we will increase the proportion of related theoretical and practical courses to provide more systematic learning and practice opportunities. [2]

We will also entirely use off-campus resources and co-develop practical training courses in collaboration with enterprises and industries. Introducing real project cases and industry standards will enable students better to understand the industry development trend and market demand and enhance their professionalism and comprehensive ability. This mode of school-enterprise cooperation can provide more prosperous and practical teaching resources for practical training courses and build a broader platform for students' employment and entrepreneurship.

Through the effective integration and optimization of resource sharing, mutual course selection, school-enterprise cooperation, and other methods, we will build a more open, flexible, and practical cultural and tourism digital landscape design practical training course system. This will help enhance students' innovation, practical, and interdisciplinary integration abilities and lay a solid foundation for future career development.

3.4. Practical teaching link design

Practical teaching links occupy a pivotal position in the reform of practical training courses. This study understands the importance of practical teaching for enhancing students' abilities, so it is committed to constructing a project-based, all-around practical teaching link system. The system will take actual projects as the carrier so

that students can continuously sharpen their comprehensive design skills and improve their ability to solve real-world problems through hands-on participation.

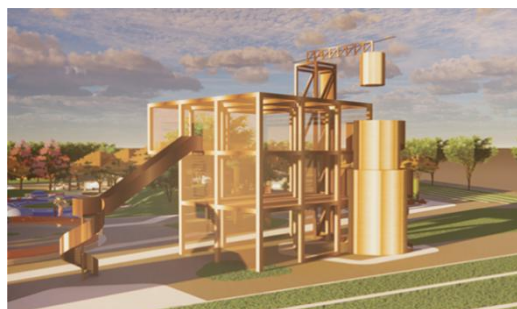


Figure 5. Students involved in Wuhan Steel Factory Old Town Renovation Project, Wuhan, Hubei (Drawing by Liu Yipei).

This study will implement a range of strategies to establish a practical teaching link system. Primarily, through school-enterprise cooperation, we will bring real projects from the industry into the school, providing students with exposure to cutting-edge practical opportunities. The involvement of enterprise mentors will equip students with valuable industry experience and practical skills, facilitating the transformation of theoretical knowledge into practical ability.

The study will also actively explore the school-local cooperation model and establish close partnerships with local governments and cultural institutions. By participating in the planning and design of local cultural and tourism projects, students will have the opportunity to gain an in-depth understanding of regional cultural characteristics and to explore and pass on local cultural values. This mode of cooperation will not only help to enhance students' cultural literacy and innovation ability but also inject new vitality into the development of the local cultural tourism industry.

While expanding the channels and platforms for practice teaching, this study will also focus on the whole process management and quality monitoring of practice teaching. Through the establishment of a perfect practice teaching evaluation system, students' performance in practice sessions will be evaluated objectively and comprehensively. At the same time, timely feedback on the evaluation results will guide students to self-reflection and improvement to ensure that every student can grow and progress in practice teaching.

This study will also examine the interface between practical teaching and theoretical teaching. By optimising the curriculum, theoretical teaching and practical teaching will support and promote each other. In theoretical teaching, emphasis is placed on cultivating students' logical thinking and critical thinking abilities; in practical teaching, emphasis is placed on exercising students' hands-on ability and teamwork spirit. This combination of theoretical and practical teaching modes will help cultivate excellent design talents with a solid theoretical foundation and rich practical experience. By building a project-based practical teaching system, we aim to provide students with practical opportunities closer to the industry and help them improve their comprehensive design and problem-solving ability in hands-on participation. At the same time, the practical teaching channels and platforms are expanded through school-enterprise cooperation, school-local cooperation and other ways to ensure the comprehensiveness and depth of practical teaching. Ultimately, the whole process of management and quality monitoring ensures that the effect of

practical teaching is achieved and lays a solid foundation for cultivating high-quality design talents.



Figure 6. Students' participation in real-life projects earns them awards in design competitions. (Scan by Yuanyuan Guo).

4. Results and Discussion

In this study, the experimental implementation was carried out orderly under the guidance of the practical training course reform programme. At the early stage of implementation, the time nodes and expected goals of each step were planned in detail to ensure that the whole process was orderly. In the experimental process, progressing step by step is strictly in accordance with the plan while paying close attention to every detail of the implementation process.

A rigorous approach was taken to ensure the authenticity and validity of the experimental data. A variety of tracking and recording methods were employed, with each implementation step and encountered problem meticulously recorded and analyzed. This methodical approach allowed students to understand the experimental process accurately, providing a solid foundation for the programme's subsequent optimization.

Throughout the experimental implementation, significant emphasis was placed on communication and feedback with teachers and students. Regular symposiums, individual interviews, and other means were used to gather the views and suggestions of teachers and students on the reform of practical training courses. This valuable feedback not only helped identify problems but also served as a crucial basis for adjusting and optimizing the reform programme. The programme was adjusted several times to better align with actual teaching and student needs. Through the joint efforts of all, the experimental implementation was successfully completed, and the expected results were achieved.

The whole process was comprehensively reviewed and summarised at the end of the experimental implementation. Through this reform experiment, we accumulated rich teaching experience and deeply recognized the importance and necessity of practical training course reform. At the same time, it is also clear that the shortcomings in the reform process will guide the study in continuing to work and improve.

5. Conclusions

This study aims to innovate the teaching mode and practice system of environmental design majors through in-depth exploration of the integration path of

interactive narrative theory and immersive cultural and tourism digital landscape design and to cultivate high-quality cultural and tourism digital landscape designers with innovative thinking, practical ability and international vision. For the first time, the concept of interactive narrative and immersive experience is introduced into the cultural tourism digital landscape design practical training course. Constructing a new teaching mode and evaluation system aims to improve students' comprehensive design ability and better adapt to industry development needs. This innovation fills the research gap in the related field and provides a valuable reference for the reform of practical training courses in environmental design majors.

Conflicts of Interest

The author declares that there is no conflict of interest regarding the publication of this article.

Funding

This work was supported by the Special Research Project 2023 of the Centre for Ideological and Political Work Innovation and Development of Colleges and Universities of the Ministry of Education of China (Wuhan Donghu University): The Practical Path of 'Soul-Casting Project for New Generation of People in Private Colleges and Universities under the Perspective of Public Aesthetic Education', (No.: WHDHSZZX2023117) 2023.12.

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