

Article

An Exploration of Industry-Education Integration in Hainan Li Ethnic Group Homestay Design from the Perspective of Intangible Cultural Heritage IP Activation

Gaofeng Ju ^{1,*}¹ Hainan Vocational University of Science and Technology, Haikou, China

* Correspondence: Gaofeng Ju, Hainan Vocational University of Science and Technology, Haikou, China

Abstract: During the rapid development of the Hainan Free Trade Port and the deepening integration of regional cultural tourism, the Li ethnic homestay industry currently faces critical challenges in quality enhancement, primarily driven by severe market homogenization. Simultaneously, the living preservation and sustainable transmission of Li intangible cultural heritage encounter significant practical obstacles. Under contemporary policies promoting industry-education integration, the structural mismatch between traditional homestay design education and the practical needs of the hospitality industry has become increasingly apparent. Furthermore, current educational paradigms often fail to address the nuanced requirements of cultural preservation. To bridge this critical gap, this paper systematically examines the intrinsic connections between Li ethnic homestay design and industry-education integration. Consequently, it proposes an innovative teaching framework specifically tailored to align with both contemporary industry demands and cultural preservation imperatives. The proposed framework comprises three interconnected modules: updated teaching content, progressive instructional models, and collaborative practical platforms. The feasibility, adaptability, and overall effectiveness of this pedagogical model are rigorously validated through detailed real-world case studies. Ultimately, this integrated approach successfully achieves three core developmental objectives: the dynamic preservation and activation of intangible cultural heritage intellectual properties, the substantial quality enhancement of the regional Li homestay industry, and the fundamental reform of higher design education. The findings provide highly actionable insights and a replicable model for similar regions seeking to revitalize local cultural heritage while advancing industry-education integration within applied design disciplines.

Keywords: cultural heritage; homestay design; design education; cultural tourism; pedagogical reform

Received: 04 October 2025

Revised: 15 November 2025

Accepted: 27 November 2025

Published: 30 November 2025



Copyright: © 2025 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

The advancement of the Hainan Free Trade Port has positioned the homestay industry as a crucial driver for rural revitalization and the integration of cultural and tourism sectors. Within Li ethnic communities, this industry has experienced significant growth; however, many existing homestays lack distinctive cultural elements and are plagued by homogenization. Central to Hainan's regional identity is the Li intangible cultural heritage, which includes Li brocade, traditional boat-shaped house construction techniques, and ethnic totems. Despite its cultural significance, this heritage faces numerous challenges, such as a generational gap among its inheritors, limited channels for dissemination, and inadequate commercialization efforts. These issues result in a disconnect between the industry's need for quality improvement and the imperative to preserve dynamic cultural heritage. Although policies promoting industry-education integration are being implemented, the current homestay design curricula often fail to align with practical industry needs. These programs frequently lack hands-on

components and rely on outdated content, underscoring the urgent need for reform. The primary challenge lies in effectively utilizing the integration model to simultaneously achieve the living preservation of Li intangible cultural heritage intellectual properties and the modernization of homestay design education. Addressing these issues requires a comprehensive approach that balances cultural preservation with innovative educational practices [1, 2].

2. Core Concepts and Collaborative Logic

2.1. Definition of Core Concepts

To revitalize the intangible cultural heritage (ICH) of the Li ethnic group, it is essential to first identify its core elements, such as Li brocade patterns, boat-shaped house structures, Li totems, and folk rituals. These elements must be systematically excavated, refined, and innovatively transformed to ensure their relevance in contemporary contexts. By leveraging digital technologies and aligning with market-driven development needs, these cultural components can be imbued with modern value and tailored for specific applications. This approach not only promotes the dynamic inheritance of ICH but also ensures its sustainable development. Central to this initiative is the digital transformation and scenario-based application of ICH, which involves two primary aspects: the digital extraction and parametric design of ICH elements, and the immersive presentation of ICH culture in environments such as homestays and cultural tourism venues. For instance, the design of Li-themed homestays should emphasize Hainan's regional Li culture while meeting the functional requirements of accommodation, operational efficiency, and tourist expectations. These spaces must seamlessly integrate cultural authenticity with modern functionality, preserving the essence of Li architecture and decoration while catering to the comfort and personalization demands of contemporary travelers. The uniqueness of these homestays lies in their deep integration and precise expression of Li cultural elements, distinguishing them from conventional accommodations. Furthermore, implementing industry-education collaboration is crucial for bridging the gap between academic institutions and enterprises. This can be achieved by establishing a closed-loop teaching model that fosters partnerships between schools and businesses, facilitates project implementation, and enables technology transfer. Such a model incorporates real-world industry needs, corporate resources, and ICH preservation assets into the teaching process [3]. By aligning curricula with industry standards, synchronizing instruction with practical applications, and ensuring educational outcomes meet market demands, this approach cultivates versatile, practice-oriented professionals who are well-equipped to address the evolving needs of industrial development [4].

2.2. Analysis of the Synergistic Mechanism among the Three Factors

The three initiatives—activation of Li ethnic intangible cultural heritage IPs, Li-style homestay design, and industry-education integration in teaching—demonstrate significant interconnections, forming a cohesive and synergistic operational framework [3, 5]. The activation of intangible cultural heritage IPs serves as a rich repository of cultural materials and creative inspiration, which directly enhances the uniqueness and appeal of homestay designs. By incorporating these revitalized cultural elements, homestays can effectively address the issue of homogenization, establishing distinct cultural identities and competitive advantages in the market. Furthermore, the digital transformation of these heritage IPs aligns seamlessly with modern homestay design standards and visitor expectations, achieving a dual benefit of cultural preservation and economic viability. Industry-education integration acts as the pivotal mechanism that bridges the activation of heritage IPs with homestay design innovation. Universities play a critical role by contributing expertise in talent cultivation and scientific research, offering technical support and human resources essential for heritage IP development and homestay design projects. Enterprises, as practical implementers, provide real-world scenarios and market-driven insights, ensuring that teaching programs remain relevant and impactful. Additionally, the involvement of intangible cultural heritage inheritors guarantees the

authenticity and integrity of cultural elements throughout the activation process. This tripartite collaboration fosters a dynamic cycle of cultural revitalization and industrial growth, promoting the dissemination of heritage while driving innovation. It also delivers high-quality design solutions and skilled talent to elevate the homestay industry's standards, ensuring it meets evolving market demands and contributes to sustainable cultural and economic development.

3. Innovative Pathways for Industry-Education Integration in Li Ethnic Homestay Design from the Perspective of Intangible Cultural Heritage IP Activation

3.1. Innovation in Teaching Content

This paper addresses practical needs in both intangible cultural heritage (ICH) IP revitalization and Li ethnic homestay design, offering a solution to the limitations of traditional teaching content by introducing a modular instructional framework. This framework integrates ICH digitization with homestay design, aligning educational objectives with industry requirements while supporting the preservation of ICH. The system is structured into three interconnected modules that collectively form a comprehensive teaching approach [5, 6]. The first module emphasizes the digital exploration and transformation of Li ethnic ICH IP. It includes practical exercises such as extracting digital patterns from Li brocade, applying parametric design to boat-shaped dwellings, and creatively adapting Li ethnic totems [7, 8]. These activities enable students to gain a systematic understanding of Li cultural heritage, develop proficiency in digital design tools, and effectively transform ICH elements into innovative designs. The second module focuses on integrating these digitally transformed ICH elements into core homestay environments, such as guest rooms, public spaces, and operational areas. Students are guided to create spaces that harmonize cultural significance, functionality, and visitor engagement, ensuring that the designs are both meaningful and practical. The third module addresses real-world challenges faced by homestay operators, including implementation processes, construction coordination, cost management, and operational adaptability. This module aims to cultivate students' project execution skills and industry-oriented thinking, ensuring that academic learning translates seamlessly into practical applications. By combining these three modules, the framework not only enhances students' understanding of ICH but also equips them with the skills needed to meet industry demands, bridging the gap between academic content and real-world applications. This approach ensures a balanced integration of cultural preservation, innovative design, and practical functionality, fostering a deeper connection between education and industry.

3.2. Innovation in Teaching Models

To address the challenges inherent in traditional teaching models, this study introduces a collaborative school-enterprise educational framework that incorporates project-based closed-loop methodologies. This approach ensures the seamless integration of theoretical knowledge with practical application, thereby enhancing both instructional relevance and innovation. During the model development phase, a tripartite teaching structure was implemented, involving intangible cultural heritage inheritors, corporate designers, and academic faculty. These mentors played distinct yet complementary roles throughout all stages of the teaching process. Heritage inheritors provided in-depth explanations of the cultural essence and core elements of Li ethnic intangible heritage, ensuring the authenticity and integrity of intellectual property revitalization efforts. Corporate designers contributed industry-specific insights, including practical requirements for homestay management and design standards, to align educational outcomes with real-world industry demands. Faculty members coordinated curriculum content and guided students through design practices, effectively bridging theoretical concepts with practical execution.

In the implementation phase, the framework was applied to a real-world homestay renovation project in a Li ethnic village in Hainan. This case study established a

comprehensive teaching cycle encompassing research, design, execution, and post-project evaluation. Students conducted field research in the village, identifying intangible cultural heritage intellectual property elements under expert guidance. They completed digital transformation tasks, developed customized design solutions tailored to homestay operations, and actively participated in project implementation. Post-project reviews, which incorporated operational feedback and teaching outcomes, were conducted to refine both design proposals and instructional processes. This iterative approach enabled students to enhance their design capabilities while deepening their understanding of intangible cultural heritage through immersive, hands-on project engagement.

A key innovation of this model lies in the integration of digital twin technology. This advanced digital tool simulates the design outcomes of homestays and visually presents intangible cultural heritage intellectual property elements. By leveraging this technology, students can assess the feasibility and rationality of their design proposals in advance, refine intricate design details, and mitigate potential risks during implementation. Furthermore, this approach enhances students' digital design competencies, aligning their skills with the industry's increasing emphasis on digitalization and technological innovation.

3.3. Innovation in Practical Platforms

Universities play a pivotal role in fostering collaboration between industries and custodians of intangible cultural heritage (ICH). To bridge communication gaps and enhance practical learning, the establishment of ICH-themed homestay design workshops serves as a core platform for integrating industry and education. These workshops provide students with a comprehensive environment that encompasses ICH learning, design practice, and project implementation. The platform is a collaborative effort involving universities, homestay enterprises, and Li ethnic ICH preservation bases, and it is structured into three distinct functional zones. The ICH exhibition area showcases Li ethnic heritage artifacts and demonstrates the entire inheritance process, offering immersive and experiential learning opportunities. A digital design zone, equipped with advanced software and hardware, enables students to digitize ICH intellectual properties and engage in practical homestay design projects. Additionally, a model-making area is reserved for students to create physical prototypes, which visually represent their design concepts and facilitate future implementation. Daily operations are organized through a student-team collaboration model. Universities assign students to teams that directly undertake real-world projects, such as Li ethnic homestay renovations and ICH-themed design initiatives. These projects are guided by mentors from universities, enterprises, and preservation bases, ensuring seamless execution from conceptualization to completion. This integrated approach not only enhances students' practical skills but also contributes to the preservation and innovative application of ICH in modern contexts.

4. Practical Case Verification

4.1. Case-Based Information

This project selected a Li ethnic village in Hainan as its implementation site due to its well-preserved Li architectural features and rich intangible cultural heritage resources. The village currently accommodates several homestays, many of which lack sufficient cultural depth and exhibit design uniformity, limiting their appeal and market competitiveness. With strong foundational conditions for renovation, the site is highly suitable for practical implementation. The collaboration involves three key entities: an environmental design program at a university, a homestay operation company, and intangible cultural heritage inheritors. These parties have formalized their partnership through an industry-education integration agreement, which clearly delineates their respective roles. The university contributes teaching resources and student teams, the company provides renovation projects, financial support, and operational expertise, while the heritage inheritors offer cultural insights and assist in developing intellectual property (IP) based on traditional practices. The primary goal is to renovate multiple Li-themed

homestays, integrating Li cultural elements with modern functionality to create accommodations that are both culturally distinctive and commercially viable. This initiative not only seeks to implement industry-education integration but also aims to enhance students' design skills, deepen their understanding of cultural heritage, and establish a replicable model for educational-industrial collaboration. The selected intangible cultural heritage IPs focus on traditional Li brocade patterns and boat-shaped house construction techniques. The brocade patterns, which reflect the life wisdom and cultural beliefs of the Li people, are highly recognizable and hold significant commercial potential [2, 9]. The boat-shaped house construction techniques emphasize key craftsmanship, such as roof structures and wall-building methods, enabling the seamless integration of traditional techniques with modern architectural designs for homestays. This approach ensures the preservation of cultural heritage while meeting contemporary market demands.

4.2. Teaching Implementation Process

The teaching implementation process begins with the research and IP mining stage, where students specializing in environmental design form collaborative teams to conduct field visits to rural villages. Guided by inheritors of intangible cultural heritage, these teams delve into the core aspects of Li ethnic culture and the unique regional characteristics of the villages. They gather primary materials, including traditional Li brocade patterns, and acquire foundational knowledge of boat-shaped house construction techniques. Concurrently, the teams work closely with homestay operators to evaluate the current operational conditions, identify renovation requirements, and analyze tourist demographics. Upon completing these investigative tasks, the students digitally transform the intangible cultural heritage IP elements using advanced digital tools. This process involves parametric processing of Li brocade patterns and the creation of digital models for boat-shaped house structures [10]. The outcome is a comprehensive digital repository of intangible cultural heritage IP materials, which serves as a critical resource for subsequent design activities.

The second phase focuses on scheme design and optimization, where student teams utilize the research findings and digital materials from the first phase as the foundation for their creative work. They advance the homestay design process by concentrating on essential spaces such as guest rooms, living rooms, and courtyards. The integration of intangible cultural heritage elements, including Li brocade patterns and boat-shaped house structures, is meticulously aligned with the functional layout of the homestay and the experiential needs of tourists. The design proposals encompass detailed floor plans, decorative elements, and functional planning. Once all design schemes are completed, a review panel consisting of corporate designers, intangible cultural heritage inheritors, and university faculty evaluates each proposal. The evaluation criteria emphasize the authenticity of intangible cultural heritage IP revitalization, the feasibility of the designs, and their functional suitability. Based on the panel's feedback, student teams refine their proposals to ensure the homestay renovation plans meet all specified requirements.

The third phase involves the practical implementation of the designs and instructional guidance. Student teams are actively engaged at the homestay renovation sites, where they participate in construction coordination tasks and assist the construction team in addressing challenges that arise during the implementation process. These challenges may include the application of construction techniques for Li brocade pattern decorations and the modern adaptation of boat-shaped roof structures. Throughout this phase, three mentors provide on-site guidance: corporate designers oversee construction techniques and cost management, intangible cultural heritage inheritors ensure the accurate representation of heritage elements, and university faculty support students in resolving practical issues. This hands-on experience not only enhances the students' technical skills but also deepens their understanding of the complexities involved in integrating cultural heritage into modern design.

The final phase centers on review and optimization. After the homestay renovations are completed and the properties enter the trial operation stage, a comprehensive review meeting is held. This meeting includes the student teams, third-party mentors, and representatives from the homestay enterprises. Feedback from the trial operations and guest evaluations is analyzed to identify the strengths and weaknesses of the design proposals. Particular attention is given to issues such as the integration of digital design with construction processes and the alignment of intangible cultural heritage elements with operational requirements. Using the insights gained from this review, the student teams refine their design proposals to address identified shortcomings. Additionally, they document the key lessons learned from this teaching practice, providing valuable insights for future teaching reform efforts and contributing to the broader academic discourse on the integration of cultural heritage into contemporary design practices.

4.3. Case Reflection and Improvement

During the implementation of this case study, several challenges were identified, prompting the proposal of targeted improvement measures [8, 11]. One significant bottleneck is the lack of seamless integration between the digital design phase and the construction phase [12, 13]. Many students' digital design proposals are overly theoretical and fail to consider practical constraints such as construction techniques, material costs, and site-specific limitations [14]. This disconnect often results in design details that are difficult or impossible to implement effectively [15]. The underlying cause of these issues can be attributed to students' limited practical experience and insufficient exposure to hands-on construction processes [7, 9]. To address these shortcomings, future efforts will focus on introducing practical construction courses that emphasize real-world applications [4, 10]. Additionally, inviting construction experts to deliver specialized lectures will provide students with valuable insights into industry practices [13]. Field trips to active construction sites will further enhance students' understanding by allowing them to observe and engage with real-world processes [7]. Moreover, during the design implementation phase, it is essential to involve corporate designers and construction personnel at an early stage [5]. Their guidance can help students refine their design proposals, ensuring that they are both innovative and feasible [7, 10]. These measures aim to bridge the gap between theoretical design and practical execution, fostering a more comprehensive educational experience for students [5, 6].

5. Conclusion

The conclusions of this study underscore several critical insights and implications. Firstly, the interconnectedness of three primary components—activation of Li ethnic intangible cultural heritage IPs, Li ethnic homestay design, and industry-education integration—forms a robust foundation for sustainable development. The activation of intangible cultural heritage IPs serves as a cultural cornerstone, enriching the aesthetic and thematic aspects of homestay design. Concurrently, industry-education integration acts as a pivotal mechanism, ensuring the seamless alignment of cultural heritage revitalization with practical applications in homestay design. This synergy fosters a dynamic feedback loop, wherein educational outcomes not only enhance heritage preservation but also stimulate industrial growth, creating a self-sustaining collaborative framework. Secondly, the modular teaching framework proposed in this study, which emphasizes digitization of intangible cultural heritage and innovative homestay design, alongside the school-enterprise co-construction model featuring closed-loop project cycles, demonstrates significant potential for scalability and replication. The practical workshop platform further exemplifies innovation by providing hands-on opportunities for heritage-themed homestay design, achieving multifaceted benefits in cultural preservation, industry advancement, and educational reform. Thirdly, the validation of this approach through practical case studies highlights its effectiveness in enhancing students' design competencies and deepening their understanding of intangible cultural heritage. This not only facilitates dynamic preservation but also contributes to the

qualitative improvement of the homestay industry. The methodologies and experiences summarized herein offer valuable references for similar initiatives aimed at revitalizing heritage IPs and integrating industry and education within design-related disciplines. Future research could explore broader applications of these frameworks across diverse cultural contexts and industries, further enriching the discourse on heritage preservation and educational innovation.

Funding: 2024 Hainan Provincial Philosophy and Social Sciences Planning Project: "Research on the Design and Development Strategies of Characteristic Homestays in Hainan's Rural Tourism" (HNSK (JD) 24-24)

References

1. Z. Lian, "Research on the international adaptability of the 'Chinese+ tourism skills' integrated education model."
2. J. Zeng, Y. Sun, H. Pei, and X. Sang, "Research on high-quality development of rural tourism and homestays in the Mufu Mountain area," *Frontiers in Economics and Management*, vol. 6, no. 8, pp. 31-40, 2025.
3. Q. Zhu and A. Sun, "Research on the design of homestay buildings based on Hui-style cultural elements," *Academic Journal of Architecture and Geotechnical Engineering*, vol. 6, no. 1, pp. 42-46, 2024.
4. B. Sumardiyanto and C. D. L. Marsonia, "Evaluation of the architectural meaning of adapting traditional houses to become homestays in cultural heritage areas," *ARTEKS: Jurnal Teknik Arsitektur*, vol. 9, no. 3, pp. 435-444, 2024.
5. L. Li and L. Lin, "Study on the design of rural homestays based on the memory place theory: Take Weipo Village of Luoyang as an example," in *ICCREM 2023*, pp. 938-944, 2023.
6. Y. Sbai and S. El Hassouni, "Homestay tourism research: A systematic literature review," *Revue des Études Multidisciplinaires en Sciences Économiques et Sociales*, vol. 9, no. 2, 2024.
7. R. A. Kadir, M. S. A. Rashid, and S. R. Yusoff, "Homestay as a factor in sustaining the traditional Malay culture in heritage tourism industry," in *Arte-Polis 3 International Conference*, p. 193, 2010.
8. A. A. N. Aritama and I. Diasana Putra, "Tourism activities in the traditional Balinese house: The challenges of designing a homestay in Gianyar Bali," *Journal of Social and Political Sciences*, vol. 4, no. 1, 2021.
9. K. Seubsamarn, "Tourist motivation to use homestays in Thailand and their satisfaction based on the destination's cultural and heritage based attribute," Ph.D. dissertation, University of Missouri--Columbia, 2009.
10. M. E. Takaendengan, R. Avenzora, D. Darusman, and C. Kusmana, "Socio-cultural factors on the establishment and development of communal homestay in eco-rural tourism," *Journal of Tropical Forest Management/Jurnal Manajemen Hutan Tropika*, vol. 28, no. 2, 2022.
11. N. S. Zulkefli, R. Che Aziz, and A. R. Mohd Radzol, "Developing a framework on success performance of community-based homestay tourism programme: Evidence from insider of homestay," *Journal of Tourism, Hospitality and Culinary Arts*, vol. 13, no. 3, pp. 256-270, 2021.
12. Z. Jiang, "Study on the inheritance and development of local culture in the homestay," in **3rd International Conference on Economics and Management, Education, Humanities and Social Sciences (EMEHSS 2019)**, pp. 449-455, June 2019.
13. S. Rawal, "Exploring social dynamics in homestay: A study of Bethanchowk village community homestay," *Patan Prospective Journal*, vol. 3, no. 2, pp. 226-235, 2023.
14. S. Yusof, A. Harun, S. A. W. S. K. Wafa, B. K. Kler, and M. R. Abd Majidab, "The influence of tourist motivation and cultural heritage attributes on tourist satisfaction of homestay programme," *Journal of the Asian Academy of Applied Business (JAAAB)*, vol. 3, 2015.
15. H. Huang and A. M. Singh, "Creating sustainable artistic homestay: Approaches to design Weizhou Island into an ideal tourist attraction homestay," **International Journal of Emerging Issues in Social Science, Arts and Humanities (IJEISSAH)**, vol. 2, no. 3, pp. 77-84, 2024.

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of Publisher and/or the editor(s). Publisher and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.