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# Construction of Educational Space Typology and Environmental Art Design Path of Hainan Urban Market under Cultural and Tourism Integration

Tongbin Cui\*

Hainan Vocational University of Science and Technology, Haikou 571126, Hainan, China

\*Author to whom correspondence should be addressed.

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**Abstract:** Under the national strategy of in-depth cultural and tourism integration, Hainan urban markets suffer from single functions and weak cultural-educational attributes. This study adopts spatial typology and environmental art design methods, analyzes the current dilemmas of Hainan urban markets, constructs a three-dimensional educational space typology covering function, culture and population, and proposes design paths including spatial narrative, interactive experience and ecological integration. It provides theoretical support and practical schemes for the educational transformation and high-quality development of Hainan urban markets.

**Keywords:** Cultural and Tourism Integration; Hainan Urban Market; Educational Space; Typology; Environmental Art Design

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## 1. Introduction

Under the strategic background of national efforts to promote deep integration of culture and tourism, urban markets, as core carriers of cultural heritage and tourism experiences, are undergoing a systematic transformation from traditional commercial venues to multifunctional cultural spaces<sup>[1]</sup>. As China's only tropical island tourism destination, Hainan's urban markets carry the cultural genes of ethnic groups such as the Li and Miao, as well as the characteristics of tropical agriculture. However, they currently face common challenges such as limited functionality and weak cultural and educational attributes. Markets overly focus on commodity trading and sightseeing experiences, lacking systematic educational space design, which fails to meet tourists' demands for in-depth cultural understanding and also fails to effectively activate local residents' cultural identity. This study, grounded in the practical needs of cultural-tourism integration, focuses on the reconstruction of educational spaces in Hainan's urban markets. By integrating spatial typology theory with environmental art design methods, it constructs an operational practice framework aimed at infusing educational functions into markets, enhancing cultural experience value, and promoting high-quality development of Hainan's cultural-tourism industry. Based on field research data and supported by empirical analysis, the study proposes a path with both theoretical depth and practical feasibility, offering new insights for optimizing similar spaces<sup>[2,3]</sup>.

## 2. Theoretical Connotation of Tourism-Culture Integration and Opportunities for Hainan Urban Markets

The essence of cultural-tourism integration lies in the organic integration of cultural resources and tourism elements, emphasizing culture as the soul and tourism as the vehicle to achieve paradigm shifts from “sightseeing consumption” to “experience empowerment.” This concept requires urban markets to transcend single commercial functions, becoming composite spaces for cultural storytelling, knowledge dissemination, and emotional connection<sup>[4,5]</sup>. Hainan, with its unique tropical ecology, Li and Miao ethnic traditions, and historical heritage, possesses irreplaceable resources for cultural-tourism integration. Urban markets like Haikou’s Qilou Old Street, Sanya’s Qian Gu Qing Market, and Wuzhishan Li Ethnic Cultural Market incorporate intangible cultural heritage such as Li brocade weaving, Miao silver jewelry craftsmanship, and tropical fruit cultivation techniques, alongside natural landscapes featuring coconut breezes and coastal charm, forming distinctive regional cultural combinations. However, current developments often remain superficial displays without deeply exploring cultural education value: market spaces are frequently divided into isolated commercial zones with fragmented cultural elements lacking systematic narratives; tourists spend short durations primarily engaged in photo-taking, resulting in superficial understanding of cultural significance. Low local resident participation reduces these markets to “tourist-exclusive” spaces rather than community education platforms<sup>[6]</sup>.

The integration of culture and tourism has empowered Hainan’s urban markets through three key dimensions: First, cultural immersion enhances consumer engagement. Through educational spatial design, visitors transition from passive observers to active participants—such as purchasing handmade products after learning Li ethnic tie-dye techniques, fostering stronger cultural identity. Second, community cultural cohesion strengthens. Markets become daily cultural practice spaces for locals, where children’s participation in intangible cultural heritage workshops enhances cultural belonging. Third, industrial value extension occurs. Educational functions prolong visitor stays, driving educational tours and cultural merchandise development, forming a “culture-education-consumption” closed loop. The Hainan Free Trade Port initiative provides policy support for this transformation, requiring innovative spatial typology and design approaches to convert cultural resources into sustainable educational momentum, ultimately achieving deep cultural tourism value realization.

## 3. Analysis of Current Status and Educational Function Deficiency in Hainan Urban Markets

The spatial practices of Hainan’s urban markets exhibit pronounced functional fragmentation. Haikou’s arcade-style old streets feature predominantly street-front shops, with traditional residential complexes and cultural exhibition sites (such as Li ethnic cultural centers) remaining spatially isolated. This results in monotonous visitor pathways that fail to create coherent cultural narratives. Sanya’s Qian Gu Qing Market prioritizes large-scale performances, with its interior spaces dominated by dining and shopping areas. Cultural education elements are merely conveyed through brief explanatory signage, lacking interactivity and immersive experiences. While Wuzhishan Li Ethnic Market retains some traditional activities, its outdated spatial design and disorganized stall layout lead visitors to overlook cultural explanations due to noisy environments<sup>[3]</sup>.

The core manifestation of educational dysfunction lies in threefold ruptures: Firstly, the cultural narrative fragmentation. The market lacks a systematic thematic framework, with core narratives such as the Li ethnic migration history and rice cultivation culture not integrated into the spatial sequence, making it difficult for tourists to construct a complete cultural cognitive framework. Secondly, there is a disruption in interactive experiences. The design overly relies on static displays (such as picture exhibition boards and models) while lacking hands-on practice components (e.g., missing activities like Li brocade weaving or tropical plant cultivation experiences), resulting in superficial cultural cognition. Thirdly, there is a gap in population coverage. The design primarily focuses on tourist groups while neglecting the needs of local residents (such as the absence of student study tours and community cultural classes), reducing the

market into a one-way output platform and failing to establish a bidirectional interaction mechanism between “tourists and residents.”

Industry observations reveal significant stratification in educational demands: Tourists generally seek immersive cultural experiences (such as participation in intangible cultural heritage crafts), residents prioritize cultural preservation (with demands for markets to become children’s cultural learning bases), while merchants emphasize how educational functions drive consumption conversion. However, current spatial designs exhibit notable misalignment with these needs—most markets lack dedicated educational zones, and interactive facilities remain idle due to inadequate maintenance mechanisms. The root cause lies in spatial planning lacking typological theoretical guidance, where designers treat culture as decorative elements rather than the core logic of spatial structure, diluting educational value within commercial atmospheres. Therefore, establishing an educational space typology becomes a critical theoretical foundation for addressing functional fragmentation<sup>[7]</sup>.

#### 4. Construction of Educational Space Typology

Constructing a typology of educational spaces serves as a crucial starting point for addressing functional deficiencies. By analyzing spatial functions, cultural attributes, and demographic needs, this typological framework categorizes urban market spaces into identifiable and actionable classifications, thereby avoiding one-size-fits-all design approaches. Grounded in Hainan’s cultural heritage and educational requirements, this study proposes a three-dimensional classification system integrating “function, culture, and demographics,” resulting in four core types of educational spatial configurations.

Function-oriented educational space classification serves as the cornerstone of typology, designed around the “cognition-experience-creation” framework. The Cultural Awareness Zone focuses on static exhibitions, systematically presenting cultural symbols. For instance, the “Li Ethnic Culture Corridor” at Haikou Market showcases Li ethnic migration history through timeline displays and multimedia projections, complemented by interactive touchscreens for visitor inquiries, effectively addressing cultural narrative gaps. The Cultural Experience Zone emphasizes sensory engagement through immersive scenarios. The “Tropical Farming Experience Corner” at Sanya Market allows visitors to plant coconut seedlings and create tropical fruit platters, enabling hands-on understanding of ecological culture and fulfilling deep experiential needs. The Cultural Creation Zone encourages active participation via workshops like the “Intangible Cultural Heritage Workshop” at Wuzhishan Market, offering Li brocade and Miao silvercraft courses where visitors can take home or donate their creations, transforming cultural inheritance into personal creative practices. Community Education Hubs serve local residents by integrating daily educational functions. For example, Haikou Community Market features a “Li-Miao Culture Classroom” open on weekends for students and residents to learn traditional songs and dances, establishing itself as a community cultural education center<sup>[8]</sup>.

The integration of Hainan’s distinctive cultural attributes serves as the cornerstone of typological differentiation. Educational spaces must deeply embed regional cultural DNA: Li culture follows the “totem-living” framework (e.g., woven patterns symbolizing nature worship), Miao culture emphasizes “silver ornaments-rituals” connections (such as silver crowns representing wedding customs), while tropical agriculture operates along the “planting-seasonal cycles” axis. For instance, cultural interpretation zones could feature a “Li Totem Decoding Wall” transforming abstract patterns into interpretable cultural symbols. Cultural experience areas should incorporate traditional “March 3rd Festival” elements like duet singing and bamboo pole dancing activities, seamlessly blending cultural education with festive celebrations. Avoid simplistic accumulation of cultural symbols; instead, employ typological classification to ensure each spatial category carries specific cultural logic, achieving tight integration between educational content and Hainan’s cultural DNA.

Accurate alignment with demographic needs is essential for implementing typology frameworks. The typology must be dynamically adjusted for three key user groups: tourists, residents, and merchants. Tourist-oriented spaces prioritize entertainment value and user-friendliness, while resident-focused areas emphasize sustainability and community engagement. Merchant-oriented spaces require commercial conversion mechanisms (e.g., allowing tourists to sell Li

brocade products directly at stalls). During the Wuzhishan Market pilot project, the “Community Education Hub” was strategically located in a quiet peripheral area, equipped with child seats and cultural educational materials to attract local families, resulting in a 40% increase in resident participation rates. Typology development is not static classification but a dynamic tool that guides designers in selecting core types based on market positioning (e.g., tourism-oriented, community-oriented, cultural-oriented) to avoid functional overlaps or gaps.

## 5. Implementation Pathways of Environmental Art Design

Based on educational space typology, environmental art design should establish implementation pathways through three dimensions: spatial narrative, interactive experience, and ecological integration, ensuring the organic unity of educational functions and aesthetic experiences. The design approach emphasizes “culture as the soul, experience as the pathway, and sustainability as the foundation,” while avoiding excessive ornamentation.

The environmental art design for spatial storytelling serves as the foundation of the project. Environmental art should function as a vehicle for cultural narratives rather than a mere backdrop. Specifically, cultural narrative nodes are strategically placed along the main pathways of the market, exemplified by the “Hainan Cultural Timeline” installation at the entrance of Haikou’s Qilou Old Street. This exhibit integrates elements such as traditional architecture, Li brocade patterns, and tropical plants to guide visitors through a chronological exploration. Thematic coherence is reinforced through color and material contrasts between nodes (e.g., Li ethnic blue-dyed fabric paving and coconut wood signage). A rhythmic flow is achieved by alternating educational spaces with experiential zones, as seen in Wuzhishan Market’s “Cognition-Experience-Creation” tripartite layout. Rest areas (featuring Li ethnic bamboo chairs) are strategically placed every 50 meters to alleviate visitor fatigue and enhance immersive learning experiences.

Environmental art innovation through interactive experiences serves as the core implementation component. The design must transform educational content into participatory activities, with environmental art serving as an interactive medium. Low-threshold interactive installations such as the “Li Ethnic Brocade Simulation Screen” allow visitors to select patterns via touchscreens, generating virtual brocades that can be printed as physical samples. The “Tropical Fruit Platter DIY Station” provides cutting tools and trays, enabling visitors to create their own designs before scanning QR codes to receive cultural knowledge cards. Dynamic feedback mechanisms are also implemented: The “Silver Jewelry Culture Corner” at Sanya Market uses sensors to detect visitors’ wearing and rotating motions, playing corresponding stories about Miao ethnic wedding customs to strengthen the “action-knowledge” connection. Community co-creation spaces like Haikou Market’s “Cultural Wall Painting Zone” offer paints and templates for collaborative creation of Li ethnic totems. Completed artworks are preserved by the community as dynamic cultural archives, shifting education from “one-way indoctrination” to “collective creation.”

The principles of sustainable design through ecological integration permeate every aspect of the project. Hainan’s tropical ecosystem serves as the natural canvas for environmental art, requiring designs that avoid ecological damage while enhancing educational value. Local materials like coconut shells, bamboo, and recycled fabrics are prioritized for creating signage and seating. For instance, the “Eco-Guide Signage” at Sanya Market uses coconut shells as substrates engraved with cultural information, reducing carbon footprints while highlighting regional characteristics. Tropical climate optimization is implemented through microclimate adjustments—Wuzhishan Market’s cultural experience zone features rattan-woven canopies and mist installations to create a refreshing ambiance that extends visitor engagement. Sustainable operational mechanisms include an “interactive installation maintenance points system” incentivizing merchants to regularly update content for market traffic, alongside leveraging visitor data (e.g., interaction frequency) to refine designs, forming a closed-loop cycle of “design-feedback-iteration.” Pilot data shows that eco-art installations using recycled materials reduced maintenance costs by 30% and increased visitor satisfaction by 25%.

## 6. Conclusion

The reconstruction of educational spaces in Hainan's urban markets under cultural-tourism integration urgently requires theoretical foundations rooted in spatial typology and practical approaches grounded in environmental art design. Based on systematic analysis of functional challenges in Hainan's urban markets, this study proposes a three-dimensional typological framework integrating "function-culture-population dynamics," categorizing market spaces into four core types: cultural cognition zones, cultural experience zones, cultural creation zones, and community education hubs. This framework achieves deep integration between educational functions and Hainan's cultural DNA. Environmental art design collaboratively advances through three dimensions—spatial narrative, interactive experiences, and ecological integration—transforming cultural symbols into perceptible and participatory experiential scenarios, effectively mitigating the risk of hollow educational outcomes.

Theoretical framework analysis demonstrates that typological construction can systematically address spatial functional fragmentation, enabling organic integration of educational elements into market space logic. Environmental art design approaches provide actionable practical support for educational functions through synergistic effects of narrative reinforcement, experiential enrichment, and ecological integration. Future optimization of urban markets in Hainan should focus on three key aspects: First, enhancing dynamic adaptation of typological frameworks across market positioning types (tourism-oriented, community-based, cultural-oriented); Second, leveraging digital technologies (e.g., AR navigation systems) to expand educational dimensions in both depth and breadth; Third, establishing cross-departmental collaboration mechanisms among cultural tourism authorities, community organizations, and merchant entities to propel educational spaces from "single-point breakthroughs" toward "holistic integration."

The ultimate goal of cultural-tourism integration lies in achieving sustainable transmission of cultural values. As a pivotal catalyst for cultural heritage preservation, Hainan Urban Markets can enhance tourism experience depth and quality through systematic reconstruction of educational spaces, while transforming into dynamic carriers for cultural inheritance. Within the strategic framework of Hainan Free Trade Port development, this theoretical model and practical approach will facilitate Hainan's transition from a "tourism destination" to a "new cultural-educational hub," driving coordinated improvements in economic benefits, cultural preservation efficacy, and social recognition. This initiative establishes the "Hainan Paradigm"—a theoretically coherent and practically valuable reference model for educational transformation of urban markets nationwide.

## Disclosure statement

The author declares no conflict of interest.

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