

Livelihood Transformation and the Role of Heritage Education in the Core Zone of the Trang An Landscape Complex, Ninh Binh Province, Vietnam

Le Van Huong

Institute of Earth Sciences, Vietnam Academy of Science and Technology, Hanoi, Vietnam
Faculty of Earth Sciences, Graduate University of Science and Technology, Hanoi, Vietnam

Email: [lvhuong\[at\]ies.vast.vn](mailto:lvhuong[at]ies.vast.vn)
<https://orcid.org/0009-0001-7602-3474>

Abstract: *This study examines livelihood transformation and the role of heritage education in the Trang An Landscape Complex under rapid tourism development. Using a mixed-methods approach combining secondary data and a survey of 70 households, the study identifies a significant transition from agriculture-based livelihoods to tourism-oriented activities, with 87.1% of households engaged in tourism. While tourism increases income, it introduces seasonality and market dependency. The results reveal a mismatch between rapid economic adaptation and slower cognitive change, as most residents possess only basic awareness of heritage values. Heritage education improves awareness and conservation attitudes but has limited influence on behavior and livelihood decisions due to weak integration with local practices. The study highlights heritage education as a mediating mechanism linking perception and livelihood strategies and proposes an integrated approach to strengthen sustainable community-based heritage management.*

Keywords: Livelihood transformation; Heritage education; Heritage tourism; Community participation; Sustainable development

1. Introduction

Heritage tourism is widely seen as a key driver of local economic development and livelihood transformation [9]. The Trang An Landscape Complex (Ninh Binh Province), a UNESCO-listed Mixed World Heritage Site, is notable for its outstanding natural and cultural value. It is also a living space for a large resident community located in both core and buffer zones. Over the past twenty years, tourism has expanded rapidly, leading to a major shift in local livelihoods. Many have moved from subsistence agriculture to tourism-related services such as boat rowing, accommodation, and small tourism businesses. This transformation aligns with the Sustainable Livelihoods Framework, which focuses on how livelihoods change based on assets, strategies, and outcomes [3].

Livelihood transformation in Trang An has followed two main pathways: diversification through the combination of agriculture and tourism, and full transition to tourism-based services. While these changes have generated substantial economic benefits, they have also introduced new challenges, including increasing dependence on tourism markets, the erosion of indigenous knowledge, and the commodification of heritage values. A key issue is the mismatch between economic transition and cognitive change, whereby local communities actively participate in tourism activities without fully understanding or internalizing the significance of heritage values.

In this context, heritage education plays a critical role in enhancing awareness, strengthening community agency, and guiding livelihood strategies toward more sustainable pathways. However, the relationship between livelihood

transformation and the effectiveness of heritage education in Trang An remains underexplored in empirical studies, particularly from an interdisciplinary perspective that integrates tourism geography and cultural studies.

Against this backdrop, this paper aims to analyze in the context of tourism development in Vietnam [12], the study pursues three main objectives: (i) to assess the current patterns of livelihood transformation and their socio-economic impacts; (ii) to analyze changes in community awareness and cultural values; and (iii) to propose solutions for enhancing the effectiveness of heritage education in order to balance livelihood development and heritage conservation. In doing so, the study contributes to the growing body of literature on community-based heritage governance in the context of tourism development in Vietnam.

2. Data and Methods

2.1. Study Area

Location and spatial scope. The Trang An Landscape Complex is located in Ninh Binh Province, on the southwestern margin of the Red River Delta, approximately 90 km south of Hanoi. The study focuses on the core zone of the heritage site, which covers an area of 6,226 hectares and is surrounded by a buffer zone of 6,026 hectares [6;11]. Administratively, the area falls within Hoa Lu City and includes several wards, namely Hoa Lu, Tay Hoa Lu, and Nam Hoa Lu, where more than 90% of the resident population within the heritage site is concentrated.

Natural characteristics and heritage values. The study area is characterized by a typical tropical humid tower karst landscape,

representing the late stage of geomorphological evolution. It features a complex system of limestone towers, enclosed karst valleys, and water-filled caves. In 2014, Trang An was inscribed on the UNESCO World Heritage List as Vietnam's first Mixed World Heritage Site, based on three criteria: cultural (v), reflecting evidence of prehistoric human occupation and adaptation; aesthetic (vii), highlighting its exceptional scenic beauty; and geological (viii), demonstrating a distinctive karst evolutionary history [7].

Socio-economic context. As of 2024, the population residing within the core zone is estimated at approximately 15,000 - 18,000 people, while the buffer zone hosts around 21,000 - 29,000 inhabitants. Traditionally, local livelihoods were based on subsistence agriculture, including wet rice cultivation, small-scale livestock raising (goats, cattle, buffalo), and fishing [11]. In recent years, the rapid development of tourism has led to a marked livelihood transformation, with increasing engagement in tourism-related activities such as boat rowing, service provision, and accommodation. These dynamics make Trang An a representative case for examining the livelihood-perception nexus in the context of heritage tourism.

2.2. Data and Methods

This study employs a mixed-methods approach, combining both secondary and primary data sources to ensure a comprehensive analysis of livelihood transformation and the role of heritage education.

Secondary data were collected from a range of sources, including heritage management reports, local statistical data, planning documents, and previous studies on tourism development and community livelihoods in Trang An and Ninh Binh Province. These data provide context for identifying broader socio-economic trends and situating the case study within existing research.

Primary data were obtained through field surveys and semi-structured interviews with local residents involved in tourism activities. The survey targeted 70 households, which is considered sufficient to capture the main livelihood patterns in the study area, given the relatively homogeneous structure of tourism-based activities and the spatial concentration of local communities within the Trang An heritage site. A purposive sampling strategy was applied to ensure representation of key livelihood groups, including households primarily engaged in tourism-related occupations such as boat rowers and service providers, those combining tourism and agriculture, and those mainly dependent on agriculture. Efforts were also made to include respondents of different genders and age groups to enhance the representativeness of the sample. In addition, selected local management officials were interviewed to provide institutional perspectives. The survey instrument covered key aspects, including livelihood transition processes, levels of participation in tourism, awareness of heritage values, and access to heritage education activities.

Data were processed using a structured procedure of classification, aggregation, and qualitative analysis, complemented by basic descriptive statistics to illustrate key trends. An interdisciplinary approach, integrating perspectives from tourism geography and cultural studies, was employed to examine the interactions between livelihood transformation, changes in perception, and the role of heritage education.

3. Results

3.1. Livelihood Transformation of the Local Community in Trang An

The rapid development of tourism in Trang An, particularly following its inscription as a UNESCO World Heritage Site in 2014, has driven a significant transformation in the livelihoods of the local community. Whereas livelihoods were previously dominated by agriculture (e.g., rice cultivation and small-scale livestock production), tourism-related services have now become the primary source of income for many households. Survey results indicate a clear transition from "purely agricultural livelihoods" to either "tourism-based livelihoods" or "mixed agriculture-tourism livelihoods," reflecting a broader process of livelihood restructuring associated with the utilization of heritage resources. (1) Household livelihood structure: Data from the survey of 70 households reveal clear differentiation in livelihood structure (Figure 1).

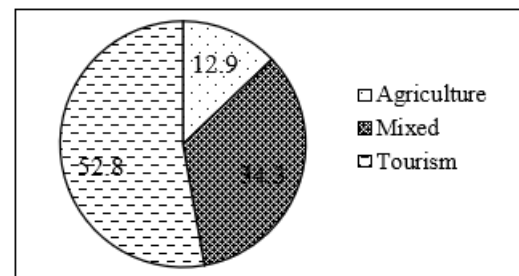


Figure 1. Livelihood structure of households in Trang An (%). (Source: Author's survey)

Tourism-based livelihoods (either fully or in combination with agriculture) account for 87.1% of households, with those fully transitioning to tourism services representing the largest share (52.8%). This pattern indicates a substantial shift away from agricultural production toward tourism services, and underscores the increasingly dominant role of tourism in shaping local livelihood structures. These findings are consistent with previous studies suggesting that tourism creates new livelihood opportunities for local communities, while simultaneously increasing their dependence on market dynamics [1].

(2) Changes in income and living standards: Livelihood transformation has contributed to increased household income, but has also altered the stability of income sources. Survey results indicate substantial differences in income levels across livelihood types (Figure 2).

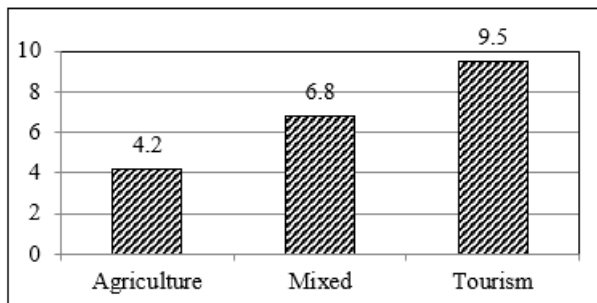


Figure 2: Average income by livelihood type (million VND/month).

(Source: Author’s survey)

Income derived from tourism activities is approximately 2.3 times higher than that from agriculture, making it the primary driver of livelihood transition. However, tourism income is highly seasonal and dependent on external factors such as tourist flows, weather conditions, and broader market fluctuations, resulting in lower income stability compared to traditional agricultural livelihoods

(3) Labor characteristics in tourism-based livelihoods: a key feature of this transformation in Trang An is the shift in labor structure and division of labor. Boat rowing- one of the core activities in Trang An’s tourism system-engages a substantial share of the local workforce, with a particularly high participation rate among middle-aged women.

Table 1: Labor structure in tourism activities

Labor group	Percentage (%)
Middle-aged women (35–55 years)	48.6
Men	27.1
Youth	24.3
Total	100

(Source: Author’s survey)

These findings indicate that women play a central role in tourism activities, especially in boat rowing services. This shift not only generates employment opportunities but also enhances the economic position of women within households, thereby reshaping traditional gender roles and labor arrangements in the community.

(4) Emerging issues from livelihood transformation

Despite its positive impacts on income and employment, livelihood transformation in Trang An also raises several structural concerns.

First, the growing dependence on tourism is evident in the high proportion of households engaged in tourism-based livelihoods. This reduces livelihood diversification and increases vulnerability to external shocks [4];

Second, the contraction of agricultural activities and the transformation of livelihood practices have implications for the erosion of indigenous knowledge and traditional cultural practices. Changes in working time, production space, and social interactions suggest that livelihood transformation

extends beyond economic restructuring, leading to broader reconfigurations of community life.

Overall, the findings demonstrate that livelihood transformation in Trang An is a multidimensional process, involving not only shifts in income sources and labor structures but also bigger socio-cultural changes. These dynamics provide a critical foundation for understanding subsequent changes in community perception and the role of heritage education, as discussed in the following sections.

3.2. Changes in Community Perception and Cultural Values

The transition from agriculture to tourism-based livelihoods in Trang An has not only reshaped the local economic structure but has also led to significant changes in community perception and cultural values. These changes are uneven across different social groups, reflecting the complex relationship between participation in tourism and levels of heritage awareness.

(1) Heritage awareness: Survey results indicate that while most residents demonstrate a certain level of awareness of heritage values, the depth of understanding varies considerably (Table 2).

Table 2: Levels of heritage awareness among local residents

Level of awareness	Number of respondents	Percentage (%)	Characteristics
Clear understanding (knowledge of OUV and conservation principles)	14	20	Relatively comprehensive knowledge
Basic understanding (recognition of importance and need for protection)	36	51.4	General awareness, limited depth
Limited awareness (perceiving heritage primarily as a tourism resource)	20	28.6	Strongly livelihood-oriented perspective
Total	70	100	

(Source: Author’s survey)

The majority of respondents fall into the “basic understanding” category (51.4%), while only 20.0% demonstrate a clear and in-depth understanding of heritage values. Notably, nearly one-third of respondents (28.6%) primarily perceive heritage through an economic lens, regarding it mainly as a source of livelihood rather than a resource requiring conservation.

(2) The relationship between livelihoods and perception: When compared with the livelihood structure, a clear relationship emerges between participation in tourism and levels of heritage awareness (Figure 3). Households engaged in tourism exhibit a higher proportion of “clear understanding” (24.3%) compared to those relying on agriculture (11.1%), suggesting that involvement in tourism facilitates access to information and enhances awareness. However, even within the tourism group, the proportion of respondents with an in-depth understanding remains limited, with most individuals remaining at the level of basic awareness.

This pattern reflects a mismatch between livelihood transformation and cognitive change. While economic activities have rapidly shifted toward tourism, corresponding changes in heritage awareness have lagged behind. This finding reinforces the notion of “rapid economic adaptation but slow cognitive adaptation,” highlighting a key dimension of the livelihood–perception nexus in heritage tourism contexts

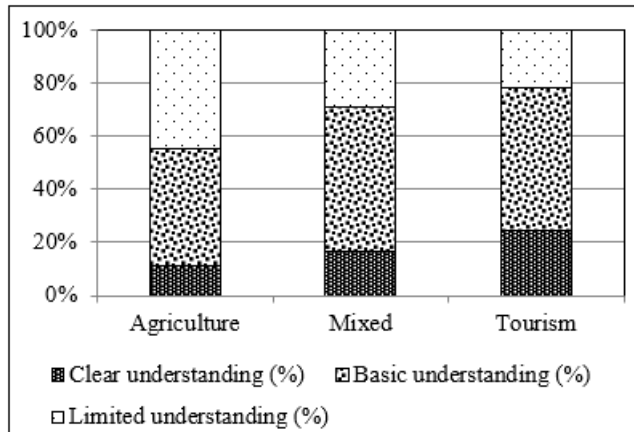


Figure 3: Distribution of heritage awareness levels by livelihood group (%). (Source: Author’s survey)

(3) Changes in cultural values and community behavior: Livelihood transformation has also been accompanied by shifts in cultural values and community behavior. Survey responses indicate that traditional cultural practices are being altered under the influence of tourism development (Table 3).

Table 3: Community perceptions of cultural change

Statement	Percentage of agreement (%)
Decline in traditional agricultural activities	71.4
Changes in lifestyle and daily practices	64.3
Increased social interaction and external contact	78.6
Risk of erosion of indigenous cultural values	52.9

(Source: Author’s survey)

More than 70% of respondents report a decline in traditional agricultural practices, while nearly 80% observe increased social interaction and exposure to external influences. These findings reflect a process of social “opening” associated with tourism development. At the same time, over half of respondents (52.9%) perceive a risk of erosion of indigenous cultural values, indicating growing concern about cultural sustainability.

In addition, changes in working schedules and living spaces have contributed to the reconfiguration of traditional social structures, with community relationships becoming more fluid and less tightly bound than in the past.

(4) Synthesis: Overall, livelihood transformation in Trang An has been accompanied by significant changes in community perception and cultural values. This process presents a dual dynamic: on the one hand, it enhances awareness and expands social interaction; on the other hand, it increases the risks of commodification and the erosion of traditional cultural values.

A key finding is the persistent mismatch between economic transition and cognitive change. This misalignment constitutes a central issue in the context of heritage tourism development and provides an important foundation for analyzing the role of heritage education as a mediating mechanism, as discussed in the following section.

3.3. The Role of Heritage Education in the Context of Livelihood Transformation

In the context of a rapid shift toward tourism-based livelihoods and the observed mismatch between economic transition and cognitive change, heritage education functions as a mediating mechanism that helps regulate the relationship between livelihood development and heritage conservation. In Trang An, heritage education has been implemented through various forms; however, its effectiveness and level of impact vary across different community groups [2;8].

(1) Access to heritage education: Survey results indicate that while a majority of residents have participated in at least one form of heritage education, the level of access remains uneven (Table 4).

Table 4: Participation in heritage education activities

Form of access	Percentage (%)
Training/workshops organized by the management authority	41.4
Community-based awareness-raising (meetings, communication campaigns)	62.9
Integration into school curricula	28.6
No participation	21.4

(Source: Author’s survey)

Community-based awareness-raising activities represent the most common form of engagement (62.9%), whereas more structured and in-depth forms, such as training workshops, reach only 41.4% of respondents. Notably, over one-fifth of respondents (21.4%) have not participated in any heritage education activities, indicating limitations in the coverage and inclusiveness of current programs.

(2) Impacts of heritage education on perception and behavior: When compared with levels of heritage awareness, heritage education demonstrates a positive but uneven influence (Figure 4).

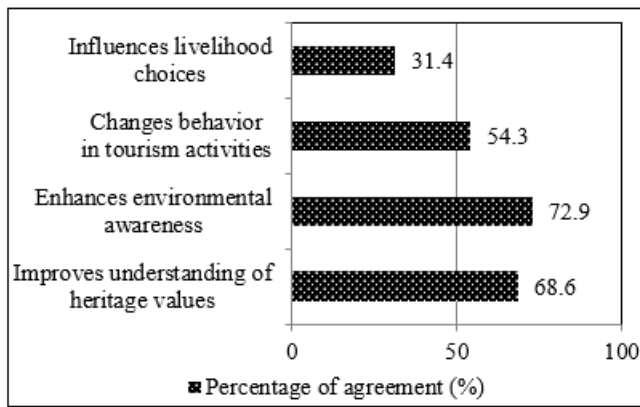


Figure 4: Perceived impacts of heritage education (% of respondents).

(Source: Author's survey).

Heritage education has the strongest impact on awareness of heritage values and environmental consciousness (over 68%), whereas its influence on behavioral change and livelihood decision-making remains limited (31.4%). These findings suggest that current heritage education initiatives are primarily oriented toward information dissemination, rather than effectively shaping economic behavior or influencing livelihood strategies.

(3) Limitations in the implementation of heritage education: Survey and interview results reveal several key limitations in the current implementation of heritage education in Trang An:

Content remains largely general and is not sufficiently linked to specific livelihood practices of local residents.

Delivery methods are predominantly one-way and lack interactive engagement.

Programs are not adequately differentiated by target groups..., a limitation also highlighted in studies on community participation in tourism governance [5];

There is a lack of integration between heritage education and policies supporting sustainable livelihoods.

These limitations help explain why improvements in awareness have not translated into substantial changes in behavior or economic decision-making.

(4) The mediating role of heritage education: toward an integrated approach. The findings indicate that heritage education plays a critical role in bridging the gap between livelihood development and heritage conservation; however, it requires a more integrated approach.

This role can be conceptualized as follows:

Tourism-based livelihoods → (influence) → Changes in perception → (mediated by heritage education) → Behavioral adjustment → Sustainable development

Within this framework, heritage education should not be limited to raising awareness but should also:

Be closely linked to practical skills and behavioral standards in tourism-related activities;

Enhance interactivity and community participation in the learning process.

Be integrated with policies and initiatives that support sustainable livelihoods.

Such an approach would strengthen the function of heritage education as a governance tool within the broader system of community-based heritage management.

(5) Synthesis: Overall, heritage education in Trang An plays a positive role in improving community awareness and promoting conservation attitudes. However, its effectiveness is constrained by limited integration with local livelihood practices. The weak linkage between education and economic behavior constitutes a key factor underlying the persistent mismatch between tourism development and heritage conservation.

In the context of ongoing livelihood transformation, heritage education needs to be repositioned as a core instrument of community governance. Rather than serving merely as a tool for awareness-raising, it should become an integral component of sustainable livelihood systems, contributing to both economic development and the long-term conservation of heritage values.

4. Discussion

The findings of this study indicate that livelihood transformation in Trang An follows a pattern widely documented in heritage tourism contexts, namely the transition from agriculture-based livelihoods to tourism-oriented services associated with the utilization of natural and cultural resources. This pattern is consistent with the Sustainable Livelihoods Framework, which conceptualizes livelihoods as dynamic processes shaped by the interaction between assets, strategies, and external conditions. In this regard, tourism serves as a key driver of livelihood diversification and income enhancement for local communities.

However, a distinctive feature of the Trang An case is the high level of dependence on tourism and the relative decline of traditional livelihoods, which together increase vulnerability to external shocks such as market fluctuations, seasonality, and environmental disturbances. This finding aligns with previous studies emphasizing that while tourism can generate new economic opportunities, it may also introduce structural risks when alternative livelihood options are diminished [1;4].

Beyond economic restructuring, the study highlights that livelihood transformation is not accompanied by a proportional shift in community perception. Although most residents are

actively engaged in tourism and demonstrate basic heritage awareness, the proportion of individuals with an in-depth understanding remains limited. This observation is consistent with research on community-based heritage governance, which points to a gap between economic participation and knowledge ownership. The Trang An case provides empirical evidence of a mismatch between economic transition and cognitive change, conceptualized here as “rapid economic adaptation but slow cognitive adaptation.” This contributes to the literature by reinforcing the importance of incorporating cognitive and cultural dimensions into analyses of livelihood transformation.

Within this context, heritage education emerges as a critical mediating mechanism in the livelihood–perception nexus. The findings suggest that heritage education has made a positive contribution to raising awareness and promoting conservation attitudes. However, its impact on behavior and livelihood decision-making remains limited, as current initiatives are largely oriented toward information dissemination rather than practice-oriented learning. This limitation reflects a broader challenge in heritage governance, particularly in balancing stakeholder collaboration and sustainable development [13].

Building on these findings, the study proposes an integrated approach to heritage education, in which educational activities are closely linked to livelihood practices, skill development, and community participation. Such an approach expands the analytical framework of the livelihood–perception nexus by positioning heritage education not merely as a supportive activity, but as a central governance tool that connects economic development with heritage conservation. In this sense, heritage education can facilitate behavioral adjustment and promote more sustainable livelihood strategies within heritage tourism systems.

Overall, this study makes two primary contributions. First, it provides empirical evidence on the relationship between livelihood transformation and changes in community perception in the context of heritage tourism. Second, it elucidates the mediating role of heritage education as a mechanism for aligning livelihood development with conservation objectives. These findings have broader implications for heritage sites in Vietnam and beyond, where similar tensions exist between tourism development and the preservation of cultural and natural values.

5. Conclusion

This study demonstrates that livelihood transformation in the Trang An Landscape Complex is characterized by a dominant shift from agriculture to tourism-based activities, resulting in increased income alongside heightened economic vulnerability. The findings reveal a clear mismatch between rapid livelihood change and slower development of heritage awareness, highlighting a critical gap in sustainable heritage governance. Heritage education plays a positive yet limited role, primarily influencing awareness rather than behavior or livelihood strategies. The study underscores the need for an integrated model that connects education with practical livelihood

activities and community participation. Such an approach can strengthen the alignment between economic development and heritage conservation, offering both theoretical insight into the livelihood–perception nexus and practical guidance for sustainable heritage management.

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