

Factors influencing rural cultural literacy in rural tourism: The mediating roles of epistemic curiosity and self-regulated learning in China's top three tourism villages

Xu Li and Zeng Yizhou*

Rattanakosin International College of Creative Entrepreneurship, Rajamangala University of Technology Rattanakosin, Salaya, Nakhon Pathom, 73170, Thailand.

Accepted 27 July, 2026

ABSTRACT

This study examined the factors influencing Rural Cultural Literacy (RCL) among adult informal learners participating in rural tourism in China's top three tourism villages: Zha'ganna Village in Diebu County, Gansu Province, and He Mu Village and Baihaba Village in the Altai Region of Xinjiang. The study investigated the effects of Situated Learning Experience (SLE), Collaborative Learning Opportunities (CLO), Critical Reflection Opportunities (CRO), and Inquiry-Based Learning Opportunities (IBLO) on RCL, as well as the mediating roles of Epistemic Curiosity (ECY) and Self-Regulated Learning (SRL). A quantitative, cross-sectional research design was adopted. Data were collected through a structured questionnaire containing 35 measurement items. Of the 700 questionnaires distributed, 667 were returned, and 658 valid responses were retained for analysis. The data were analyzed using reliability analysis, confirmatory factor analysis, structural equation modelling, and bootstrap mediation analysis. The results showed that SLE, CLO, CRO, and IBLO had significant positive effects on ECY, SRL, and RCL. IBLO demonstrated the strongest influence on ECY, whereas CLO and CRO showed the strongest effects on SRL. Both ECY and SRL significantly enhanced RCL, with SRL producing the stronger effect. The mediation analysis further confirmed that ECY and SRL partially mediated the relationships between the four educational factors and RCL. These findings demonstrate that rural tourism can function as a meaningful form of adult informal education when visitors are provided with authentic, collaborative, reflective, and inquiry-based learning opportunities. The study contributes to rural tourism education and cultural literacy research by repositioning tourists as active learners and offers practical guidance for developing educational activities that strengthen cultural knowledge, interpretation, heritage awareness, and responsible cultural communication.

Keywords: Rural cultural literacy; rural tourism education; situated learning experience; collaborative learning opportunities; epistemic curiosity; self-regulated learning; adult informal learning.

*Corresponding author. E-mail: zeng.yizhou@rmutr.ac.th.

INTRODUCTION

Rural tourism has developed beyond its conventional role as a leisure-oriented activity. It has increasingly become an important platform for visitors to encounter local history, traditional knowledge, agricultural practices, cultural landscapes, and community lifestyles. Unlike standardized forms of mass tourism, rural tourism places visitors within

living cultural environments where knowledge is embedded in architecture, customs, production activities, oral traditions, ecological practices, and everyday community interactions. Batista et al. (2023) noted that rural tourism enables visitors to engage with local traditions, agricultural activities, natural environments, and

community members, thereby providing opportunities for cultural immersion and a deeper understanding of rural life. At the same time, rural tourism can contribute to the revitalization of traditional villages, although its development may also create sociocultural disruption when tourism growth is separated from community values and cultural preservation (Li et al., 2024). Therefore, rural destinations should not only be regarded as tourism products but also as informal educational environments in which visitors can learn to understand, interpret, respect, and communicate rural culture.

The educational function of rural tourism is particularly important because the sustainability of rural heritage depends partly on whether visitors develop meaningful cultural understanding rather than merely consume visually attractive or commercially packaged experiences. Cultural tourism can strengthen awareness of rural heritage, but rapid tourism development may also change local demographics, cultural practices, community relationships, and the meanings attached to heritage places. Gocer et al. (2024) emphasized that rural heritage communities must respond to tourism-driven transformations without losing their cultural identity and sociocultural assets. This challenge indicates that visitors require more than factual exposure to rural traditions. They need rural cultural literacy, defined in this study as the capacity to acquire rural cultural knowledge, interpret the meanings of local customs and heritage, respect rural communities and cultural diversity, critically evaluate cultural change, and communicate rural cultural knowledge responsibly. Developing such literacy may help transform tourists from passive spectators into adult informal learners who appreciate both the visible expressions and the deeper social meanings of rural culture.

Rural tourism offers several educational conditions that may facilitate this transformation. First, a situated learning experience allows visitors to learn in authentic environments where knowledge is connected to actual rural landscapes, community practices, traditional architecture, agricultural production, and local ways of life. Situated learning can make abstract cultural information more concrete because learners observe how knowledge is applied within its original social and environmental context. Second, collaborative learning opportunities enable visitors to exchange perspectives with local residents, cultural practitioners, guides, family members, and other tourists. Such interaction allows cultural knowledge to be socially constructed rather than individually received. Zhao et al. (2025) found that integrating situated and collaborative learning improved both academic understanding and social abilities, demonstrating the educational potential of combining realistic contexts with shared learning activities. In rural tourism, these two learning conditions may enable visitors to connect cultural information with lived experience and negotiate its meaning through dialogue and participation.

Third, critical reflection opportunities may encourage visitors to reconsider their previous assumptions about rural communities, traditional lifestyles, cultural commercialization, environmental protection, and rural development. Critical reflection is particularly relevant to adult learning because it enables individuals to examine how their existing beliefs and frames of reference influence their interpretation of new experiences. Holdo (2023) argued that critical reflection is shaped by contextual conditions, social relationships, available knowledge, and exposure to alternative ways of understanding an issue. Accordingly, rural tourism activities that invite visitors to reflect on cultural preservation, modernization, community interests, and the consequences of tourism may produce deeper learning than activities that simply present cultural information. Fourth, inquiry-based learning opportunities may encourage visitors to observe cultural phenomena, raise questions, collect information, compare perspectives, and develop evidence-based interpretations. A second-order meta-analysis conducted by Öztürk et al. (2022) demonstrated that inquiry-based learning has a positive effect on learning outcomes, supporting its application beyond formal classrooms and within authentic informal learning environments.

However, the presence of educational opportunities does not automatically ensure the development of rural cultural literacy. Learners must also possess the psychological motivation to explore knowledge and the capacity to regulate their own learning. Epistemic curiosity refers to the desire to obtain new knowledge and resolve perceived gaps in understanding. Authentic rural environments may expose visitors to unfamiliar customs, cultural symbols, production methods, and relationships between people and place, thereby creating questions that stimulate further exploration. Schmidt and Rotgans (2021) showed that epistemic curiosity emerges when learners encounter problems or knowledge gaps and decreases after satisfactory explanations are obtained. Thus, situated experiences, collaborative discussion, critical reflection, and inquiry activities may stimulate visitors' epistemic curiosity by making them aware of what they do not yet understand about rural culture.

Epistemic curiosity may subsequently promote self-regulated learning, which involves learners actively planning, monitoring, adjusting, and reflecting on their own learning processes. In rural tourism, self-regulated learners may identify what they want to learn, concentrate on meaningful cultural information, ask questions, compare explanations, connect new knowledge with prior experience, and continue searching for information after the visit. Akgün et al. (2022) found meaningful associations between epistemic curiosity and self-regulated learning, indicating that the desire to acquire knowledge is connected with learners' capacity to direct and manage their learning activities. Nevertheless, curiosity and self-regulation have rarely been examined as a sequential educational mechanism in rural tourism.

Visitors may initially become curious when they encounter unfamiliar cultural phenomena and then transform that curiosity into sustained, strategic, and reflective learning behavior. This sequence may ultimately determine whether a temporary tourism experience produces lasting rural cultural literacy.

Although previous rural tourism research has examined authentic experiences, cultural heritage, destination development, community resilience, and tourists' behavioral responses, comparatively limited attention has been given to tourists as adult informal learners. Existing studies have demonstrated that rural tourism can facilitate cultural contact and heritage appreciation, yet they have not sufficiently explained how specific educational experiences activate internal learning processes and develop rural cultural literacy. Taken together, the recent literature suggests a need to integrate rural tourism research with situated learning, collaborative learning, transformative learning, inquiry-based learning, epistemic curiosity, and self-regulated learning.

To address this gap, the present study investigates the factors influencing rural cultural literacy among adult informal learners in China's top three tourism villages: Zha'ganna Village in Diebu County, Gansu Province, and He Mu Village and Baihaba Village in the Altai Region of Xinjiang. Specifically, the study examines the effects of situated learning experience, collaborative learning opportunities, critical reflection opportunities, and inquiry-based learning opportunities on rural cultural literacy. It further investigates the serial mediating roles of epistemic curiosity and self-regulated learning. By establishing the pathway from educational conditions to curiosity, self-regulated learning, and cultural literacy, this study aims to reposition rural tourism as a meaningful form of adult informal education. The findings are expected to contribute to tourism education, cultural literacy education, and adult learning research while providing practical guidance for designing rural tourism activities that promote cultural understanding, critical awareness, community respect, and responsible cultural communication.

LITERATURE REVIEW

Research theory

This study develops an integrated theoretical framework based on situated learning theory, social constructivist learning theory, transformative learning theory, inquiry-based learning theory, and self-regulated learning theory. These perspectives jointly explain how the educational characteristics of rural tourism may stimulate epistemic curiosity, encourage self-regulated learning, and ultimately develop rural cultural literacy among adult informal learners. Rather than treating tourists as passive recipients of cultural information, the framework regards them as active learners who construct knowledge through

authentic participation, social interaction, inquiry, reflection, and individual learning regulation.

Situated learning theory provides the principal foundation for explaining the influence of situated learning experiences. The theory maintains that learning is inseparable from the physical, social, and cultural contexts in which knowledge is produced and applied. Authenticity, social interaction, collaboration, and participation in communities of practice are therefore important elements of situated learning. Li et al. (2022) demonstrated that situated learning is characterized by authentic contexts, social collaboration, apprenticeship-oriented participation, and learning behaviors connected with actual practices. In rural tourism, traditional architecture, agricultural activities, local customs, ecological landscapes, and community lifestyles constitute authentic learning resources. Visitors may develop a more contextualized understanding of rural culture when they observe and participate in these practices within their original environments rather than receive cultural knowledge through decontextualized descriptions.

Social constructivist learning theory supports the role of collaborative learning opportunities. From this perspective, knowledge is constructed through communication, negotiation, shared participation, and exposure to different interpretations. Collaborative learning enables learners to exchange experiences, clarify ideas, question existing assumptions, and jointly develop meaning. Yang (2023) explained that collaborative learning emphasizes shared intellectual effort and relatively flexible interaction among learners who work together to understand a subject or address a problem. In rural tourism, communication with local residents, cultural practitioners, guides, and fellow visitors may expose learners to multiple interpretations of rural traditions. Such interaction can transform individual observations into socially constructed cultural understanding.

Transformative learning theory explains the importance of critical reflection opportunities. Adult learners often interpret new experiences through previously established beliefs and assumptions. Transformative learning occurs when learners critically examine these frames of reference and develop more inclusive and informed perspectives. Holdo (2023) emphasized that critical reflection is influenced by practical engagement, social circumstances, available knowledge, and encounters with alternative viewpoints. Rural tourism can create such reflective conditions by encouraging visitors to reconsider stereotypes about rural communities and examine issues such as cultural commercialization, heritage preservation, environmental change, and the distribution of tourism benefits. Critical reflection may therefore deepen cultural understanding and strengthen learners' ability to evaluate rural development responsibly.

Inquiry-based learning theory supports inquiry-based learning opportunities and their expected influence on epistemic curiosity. Inquiry-based learning positions

learners as active investigators who formulate questions, collect information, examine evidence, compare explanations, and construct conclusions. Öztürk et al. (2022) found through a second-order meta-analysis that inquiry-based learning had a positive, medium-level overall effect on learning outcomes. In rural tourism, inquiry may arise when visitors investigate the origins of local customs, relationships between ecological environments and agricultural practices, or tensions between modernization and cultural preservation. These knowledge gaps can stimulate epistemic curiosity and encourage visitors to seek deeper explanations rather than accept cultural information passively.

Finally, self-regulated learning theory explains how curiosity is converted into sustained learning behavior. Self-regulated learners establish goals, select strategies, monitor comprehension, seek assistance, integrate information, and reflect on what they have learned. Akgün et al. (2022) identified meaningful relationships between epistemic curiosity and self-regulated learning, indicating that the desire to acquire knowledge is associated with learners' management of their learning processes. Accordingly, this study proposes that situated, collaborative, reflective, and inquiry-based learning conditions first stimulate epistemic curiosity. Curiosity then encourages visitors to regulate their learning actively, enabling temporary tourism experiences to develop into rural cultural knowledge, interpretive competence, cultural respect, and responsible cultural communication.

Research hypotheses

Situated Learning Experience, epistemic curiosity, self-regulated learning, and rural cultural literacy

Situated Learning Experience (SLE) refers to the extent to which learners acquire knowledge through participation, observation, and interaction within authentic physical, social, and cultural environments. Situated learning theory emphasizes that knowledge is not developed independently of its context; instead, learners understand knowledge more meaningfully when it is connected with actual practices, social relationships, and real-life situations. Li et al. (2022) indicated that situated learning environments integrate authentic contexts, social participation, collaborative activity, and practical application, allowing learners to connect theoretical knowledge with meaningful experiences. Similarly, Wen et al. (2023) found that situated educational approaches can help learners understand the practical relevance of knowledge and prepare them to address real-world problems.

In rural tourism, visitors directly encounter traditional architecture, agricultural production, ecological landscapes, local customs, community lifestyles, and cultural heritage practices. These authentic experiences

may reveal gaps between visitors' previous understanding and the cultural realities they observe. According to Schmidt and Rotgans (2021), the recognition of a knowledge gap is an important psychological condition for stimulating epistemic curiosity. When visitors observe unfamiliar rural rituals, production practices, cultural symbols, or community relationships, they may develop a stronger desire to seek explanations and acquire additional knowledge. Situated experiences may also encourage visitors to regulate their learning by selecting relevant information, asking questions, monitoring their understanding, and connecting new cultural knowledge with previous experiences.

Furthermore, authentic cultural participation may contribute directly to Rural Cultural Literacy (RCL). Siri et al. (2024) demonstrated that cultural heritage settings can function as informal learning environments in which participants engage with landscapes, historical resources, and cultural narratives. In China's top three tourism villages, meaningful engagement with local people and cultural practices may help visitors develop rural cultural knowledge, cultural interpretation abilities, respect for local communities, and awareness of heritage preservation. Therefore, the following hypotheses are proposed:

H1a: Situated Learning Experience (SLE) has a positive influence on Epistemic Curiosity (ECY).

H1b: Situated Learning Experience (SLE) has a positive influence on Self-Regulated Learning (SRL).

H1c: Situated Learning Experience (SLE) has a positive influence on Rural Cultural Literacy (RCL).

Collaborative Learning Opportunities, epistemic curiosity, self-regulated learning, and rural cultural literacy

Collaborative Learning Opportunities (CLO) refer to opportunities for learners to communicate, exchange ideas, jointly investigate issues, and construct knowledge with other individuals. In rural tourism, collaboration may occur between visitors and local residents, cultural practitioners, activity facilitators, family members, or other tourists. Yang (2023) explained that collaborative learning is based on shared intellectual effort through which learners discuss information, negotiate different interpretations, and jointly develop an understanding of a subject. Such interaction is particularly important in cultural learning because cultural meanings may not be fully understood through individual observation alone.

Collaborative encounters can stimulate ECY by exposing visitors to knowledge, experiences, and interpretations that differ from their own. Discussions with residents or cultural practitioners may reveal aspects of rural traditions that visitors had not previously considered, encouraging them to ask questions and seek further explanations. Zhao et al. (2025) found that the integration

of situated and collaborative learning contributed to learners' comprehension and social abilities, indicating that collaboration can support both cognitive and interpersonal learning. Collaborative activity may also promote SRL because learners must monitor their understanding, evaluate competing explanations, seek assistance, explain their own ideas, and adjust their learning strategies during interaction. Sharma et al. (2024) demonstrated that collaborative learning environments are closely associated with self-regulation, co-regulation, and socially shared regulation of learning.

CLO may also directly enhance RCL. Rural culture contains diverse memories, practices, values, and interpretations that are often held by community members rather than presented through formal educational materials. Dialogue enables visitors to understand rural culture from multiple perspectives and to avoid relying entirely on stereotypes or superficial impressions. Rapanta et al. (2021) showed that dialogic and argumentative educational practices can contribute to the development of cultural literacy by enabling learners to engage with cultural differences, negotiate meaning, and construct informed cultural perspectives. Accordingly, the following hypotheses are proposed:

H2a: Collaborative Learning Opportunities (CLO) have a positive influence on Epistemic Curiosity (ECY).

H2b: Collaborative Learning Opportunities (CLO) have a positive influence on Self-Regulated Learning (SRL).

H2c: Collaborative Learning Opportunities (CLO) have a positive influence on Rural Cultural Literacy (RCL).

Critical Reflection Opportunities, epistemic curiosity, self-regulated learning, and rural cultural literacy

Critical Reflection Opportunities (CRO) refer to opportunities for learners to question existing beliefs, evaluate different perspectives, examine the assumptions underlying their interpretations, and reconsider their previous understanding. In rural tourism, critical reflection may involve considering the relationships between cultural preservation and tourism commercialization, tradition and modernization, community development and environmental protection, or visitors' expectations and residents' lived experiences. Holdo (2023) argued that critical reflection is relational and contextual because learners reconsider their assumptions through practical engagement, social interaction, new knowledge, and exposure to alternative viewpoints.

CRO may stimulate ECY because reflective activities frequently reveal contradictions, unanswered questions, and limitations in existing knowledge. When visitors compare their previous perceptions of rural life with the realities observed in local communities, they may recognize that rural culture is more complex than their original assumptions. The perception of incomplete

understanding can generate a desire to obtain further information and resolve uncertainty, which is consistent with the knowledge-gap explanation of epistemic curiosity proposed by Schmidt and Rotgans (2021). Critical reflection therefore transforms cultural encounters from passive observation into active intellectual exploration.

CRO may also facilitate SRL. Self-regulated learners are required to evaluate what they have learned, determine whether their interpretations are reasonable, identify weaknesses in their understanding, and revise their subsequent learning strategies. Torres et al. (2024) found that self-feedback and reflection helped learners improve the regulation of their learning strategies. Critical reflection can therefore serve as a mechanism through which visitors monitor and adjust their rural cultural learning. In addition, CRO may strengthen RCL by encouraging visitors to interpret rural practices from multiple perspectives and develop informed attitudes toward cultural diversity and heritage preservation. Rapanta et al. (2021) emphasized that cultural literacy involves dialogic engagement, interpretation, and the ability to respond thoughtfully to cultural difference. Based on these arguments, the following hypotheses are proposed:

H3a: Critical Reflection Opportunities (CRO) have a positive influence on Epistemic Curiosity (ECY).

H3b: Critical Reflection Opportunities (CRO) have a positive influence on Self-Regulated Learning (SRL).

H3c: Critical Reflection Opportunities (CRO) have a positive influence on Rural Cultural Literacy (RCL).

Inquiry-Based Learning Opportunities, epistemic curiosity, self-regulated learning, and rural cultural literacy

Inquiry-Based Learning Opportunities (IBLO) refer to opportunities for learners to formulate questions, observe phenomena, collect information, compare evidence, examine explanations, and construct conclusions. Inquiry-based learning treats learners as active investigators rather than passive recipients of predetermined information. Öztürk et al. (2022), through a second-order meta-analysis, found that inquiry-based learning had an overall positive effect on learning outcomes. Urdanivia Alarcon et al. (2023) similarly concluded that inquiry-based education supports knowledge construction, research skills, scientific reasoning, evidence-based interpretation, and critical thinking.

In rural tourism, inquiry may occur when visitors investigate why a traditional custom developed, how a particular architectural form reflects the local environment, how agricultural knowledge is transmitted between generations, or how tourism affects cultural preservation. These activities expose learners to unanswered questions and perceived deficiencies in their knowledge. Because epistemic curiosity is activated by the desire to resolve

knowledge gaps, IBLO should directly encourage ECY (Schmidt and Rotgans, 2021). Visitors who are encouraged to investigate rural cultural phenomena are more likely to become interested in their causes, meanings, and historical development.

IBLO may also strengthen SRL because inquiry requires learners to establish learning objectives, select sources of information, monitor the progress of an investigation, evaluate evidence, and revise their explanations. Akgün et al. (2022) identified meaningful associations between epistemic curiosity and self-regulated learning, indicating that active knowledge-seeking is connected with the regulation of learning behavior. Finally, inquiry may enhance RCL by allowing visitors to move beyond the memorization of isolated facts and develop the ability to interpret, evaluate, and communicate rural cultural knowledge. Rural cultural literacy requires not only knowing what a cultural practice is but also understanding why it exists, how it has changed, and what it means to the local community. Therefore, the following hypotheses are proposed:

H4a: Inquiry-Based Learning Opportunities (IBLO) have a positive influence on Epistemic Curiosity (ECY).

H4b: Inquiry-Based Learning Opportunities (IBLO) have a positive influence on Self-Regulated Learning (SRL).

H4c: Inquiry-Based Learning Opportunities (IBLO) have a positive influence on Rural Cultural Literacy (RCL).

Epistemic Curiosity and its mediating role

Epistemic Curiosity (ECY) refers to an individual's desire to acquire knowledge, resolve uncertainty, and understand unfamiliar phenomena. It may emerge from an enjoyable interest in new information or from a sense of deprivation caused by recognizing a gap in one's knowledge. Schmidt and Rotgans (2021) demonstrated that epistemic curiosity is closely associated with perceived knowledge gaps and situational interest. In rural tourism, visitors may experience epistemic curiosity when they encounter unfamiliar cultural symbols, traditional practices, community values, or relationships between rural livelihoods and the natural environment.

ECY is expected to contribute positively to RCL because curious learners are more likely to seek information, ask questions, examine explanations, and sustain attention to cultural content. Tang and Salmela-Aro (2021) found that epistemic curiosity was prospectively related to academic achievement, although the pathways varied according to the type of curiosity and the learning domain. Ma et al. (2025) also found that both interest-type and deprivation-type epistemic curiosity positively influenced learners' digital literacy. Although digital literacy and rural cultural literacy represent different educational outcomes, these findings demonstrate that epistemic curiosity can promote the development of a multidimensional literacy by

motivating learners to acquire, interpret, and apply information.

ECY is also expected to mediate the effects of SLE, CLO, CRO, and IBLO on RCL. These four educational conditions expose learners to authentic cultural phenomena, alternative interpretations, reflective questions, and investigative tasks. However, their educational effects may depend on whether visitors become internally motivated to understand what they encounter. Epistemic curiosity converts external learning opportunities into active knowledge-seeking. Akgün et al. (2022) further established meaningful relationships among epistemic curiosity, self-regulated learning, and attitudes toward learning. Thus, educational opportunities may first stimulate curiosity, after which curiosity encourages visitors to explore rural history, communicate with residents, examine cultural meanings, and develop cultural literacy. The following hypotheses are proposed:

H5: Epistemic Curiosity (ECY) has a positive influence on Rural Cultural Literacy (RCL).

H6a: Epistemic Curiosity (ECY) mediates the relationship between Situated Learning Experience (SLE) and Rural Cultural Literacy (RCL).

H6b: Epistemic Curiosity (ECY) mediates the relationship between Collaborative Learning Opportunities (CLO) and Rural Cultural Literacy (RCL).

H6c: Epistemic Curiosity (ECY) mediates the relationship between Critical Reflection Opportunities (CRO) and Rural Cultural Literacy (RCL).

H6d: Epistemic Curiosity (ECY) mediates the relationship between Inquiry-Based Learning Opportunities (IBLO) and Rural Cultural Literacy (RCL).

Self-Regulated Learning and its mediating role

Self-Regulated Learning (SRL) refers to the process through which learners actively establish learning goals, select cognitive and metacognitive strategies, monitor their understanding, regulate their motivation and behavior, seek assistance, and reflect on their learning results. SRL is particularly important in informal learning environments because adult learners are not continuously directed by a formal teacher or standardized curriculum. During rural tourism, visitors must decide what cultural information deserves attention, how to obtain additional knowledge, whether their interpretations are accurate, and how new knowledge should be connected with their previous experiences.

Empirical research has consistently linked SRL with desirable learning outcomes. Lim et al. (2021) found meaningful relationships between the timing and application of self-regulated learning activities and learners' achievement and transfer performance. Na et al. (2024) also found that learners with stronger SRL profiles demonstrated stronger perceptions of teaching, social,

and cognitive presence within a community-of-inquiry environment. These findings indicate that SRL enables learners to make more effective use of the educational opportunities available in their environments. In rural tourism, visitors who plan, monitor, and reflect on their learning are more likely to retain cultural knowledge, interpret rural practices accurately, and communicate cultural meanings responsibly.

SRL is also expected to mediate the relationships between the four educational factors and RCL. SLE provides authentic resources for learning, CLO provides social knowledge and feedback, CRO encourages the evaluation of assumptions, and IBLO requires active investigation. Nevertheless, the effectiveness of these opportunities depends on the learner's ability to manage the learning process. Sharma et al. (2024) showed that collaborative learning environments involve important processes of self-regulation and shared regulation, while Torres et al. (2024) demonstrated that observation, self-feedback, and reflection can strengthen learners' regulation of their own strategies. Therefore, SRL may explain how rural tourism learning opportunities are transformed into knowledge, interpretation ability, cultural respect, critical awareness, and responsible cultural communication. The following hypotheses are proposed:

H7: Self-Regulated Learning (SRL) has a positive influence on Rural Cultural Literacy (RCL).

H8a: Self-Regulated Learning (SRL) mediates the relationship between Situated Learning Experience (SLE) and Rural Cultural Literacy (RCL).

H8b: Self-Regulated Learning (SRL) mediates the relationship between Collaborative Learning Opportunities (CLO) and Rural Cultural Literacy (RCL).

H8c: Self-Regulated Learning (SRL) mediates the relationship between Critical Reflection Opportunities (CRO) and Rural Cultural Literacy (RCL).

H8d: Self-Regulated Learning (SRL) mediates the relationship between Inquiry-Based Learning Opportunities (IBLO) and Rural Cultural Literacy (RCL).

Conceptual framework

The conceptual framework of this study explains how four educational factors in rural tourism influence Rural Cultural Literacy (RCL) through the mediating roles of Epistemic Curiosity (ECY) and Self-Regulated Learning (SRL). The framework treats tourists as adult informal learners who acquire cultural knowledge and develop cultural understanding through participation in authentic rural environments.

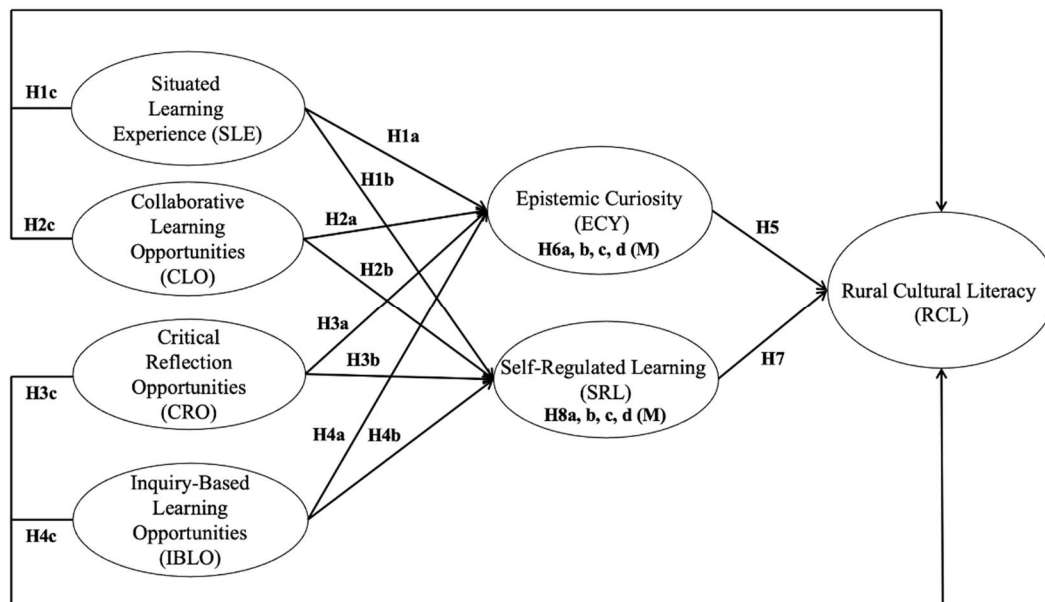


Figure 1. Conceptual framework. Source: Authors' Design (2026).

The four independent variables are Situated Learning Experience (SLE), Collaborative Learning Opportunities (CLO), Critical Reflection Opportunities (CRO), and Inquiry-Based Learning Opportunities (IBLO). SLE represents learning that occurs through direct participation in authentic rural settings, including traditional

architecture, agricultural activities, local customs, ecological environments, and community lifestyles. CLO refers to opportunities for visitors to exchange ideas and construct knowledge with local residents, cultural practitioners, guides, and other tourists. CRO concerns opportunities to reconsider previous beliefs, examine

cultural change, and reflect on issues such as heritage protection, tourism commercialization, environmental sustainability, and community development. IBLO refers to opportunities to observe, ask questions, collect information, compare evidence, and investigate the meanings and origins of rural cultural practices.

ECY and SRL are proposed as two parallel mediating variables. ECY reflects visitors' desire to resolve knowledge gaps and understand unfamiliar rural cultural phenomena. SRL refers to their ability to plan, monitor, adjust, and reflect on their own learning activities. The framework proposes that the four educational factors can directly enhance RCL and can also influence RCL indirectly through ECY and SRL.

RCL is the dependent variable and represents visitors' ability to understand, interpret, respect, evaluate, and communicate rural culture. It includes rural cultural knowledge, cultural interpretation ability, awareness of heritage preservation, respect for rural communities, and responsible cultural communication. Overall, the framework proposes that well-designed rural tourism learning conditions can transform tourism participation into meaningful adult informal education and contribute to the development of rural cultural literacy.

RESEARCH METHODOLOGY

Research methods

This study adopted a quantitative research method to examine the relationships among the seven variables included in the proposed conceptual framework. The independent variables were Situated Learning Experience (SLE), Collaborative Learning Opportunities (CLO), Critical Reflection Opportunities (CRO), and Inquiry-Based Learning Opportunities (IBLO). Epistemic Curiosity (ECY) and Self-Regulated Learning (SRL) served as the mediating variables, while Rural Cultural Literacy (RCL) was the dependent variable. A quantitative approach was appropriate because the study aimed to measure the strength and direction of the relationships among these constructs and statistically test the proposed direct and indirect effects.

Primary data were collected through a structured questionnaire. The questionnaire contained 35 measurement items covering the seven variables, with five items assigned to each construct. All items were measured using a five-point Likert scale ranging from 1, representing "strongly disagree," to 5, representing "strongly agree." This measurement format allowed respondents to indicate the extent to which they agreed with statements concerning their learning experiences, learning behaviors, curiosity, self-regulation, and cultural literacy during rural tourism activities.

The collected data were analyzed using SPSS and AMOS. SPSS was employed for data screening,

demographic analysis, descriptive statistics, reliability analysis, and exploratory factor analysis. AMOS was used to conduct confirmatory factor analysis and structural equation modeling. The measurement model was assessed through standardized factor loadings, composite reliability, average variance extracted, convergent validity, discriminant validity, and model fit indices. The structural model was then used to test the proposed hypotheses and evaluate the direct effects of SLE, CLO, CRO, and IBLO on ECY, SRL, and RCL.

The mediating effects of ECY and SRL were examined using bootstrapping procedures. Confidence intervals were calculated to determine whether the indirect effects were statistically significant. This quantitative method provided a systematic basis for explaining how educational conditions in rural tourism contributed to the development of Rural Cultural Literacy among adult informal learners.

Research design

This study employed a cross-sectional, explanatory, and non-experimental research design. The cross-sectional design involved collecting data from respondents during a defined period rather than following the same participants over an extended period. It was suitable for the present study because the research focused on tourists' perceptions and learning experiences during or shortly after they visited China's top three tourism villages. The study did not manipulate any learning condition or assign participants to experimental groups. Instead, it examined naturally occurring educational experiences within authentic rural tourism environments.

The explanatory design was used to investigate how the four independent variables influenced Rural Cultural Literacy directly and indirectly through Epistemic Curiosity and Self-Regulated Learning. The proposed model assumed that Situated Learning Experience, Collaborative Learning Opportunities, Critical Reflection Opportunities, and Inquiry-Based Learning Opportunities created educational conditions that stimulated visitors' curiosity, strengthened their ability to regulate learning, and improved their understanding and interpretation of rural culture. Accordingly, the design enabled the study to test theoretically derived relationships among the seven latent constructs.

The questionnaire was divided into three main sections. The first section provided an introduction to the study, explained voluntary participation, and included screening questions. Respondents were required to be at least 18 years old, to have visited one of the selected tourism villages, and to have participated in or observed at least one culturally or educationally meaningful activity. The second section collected demographic information, including gender, age, marital status, educational background, occupation, monthly income, village visited, and previous rural tourism experience. The third section

contained the 35 measurement items representing the seven research variables.

Before the formal survey, the questionnaire underwent expert review and pilot testing to assess content clarity, item suitability, and preliminary reliability. Feedback from specialists in education, tourism, and research methodology was used to revise ambiguous wording. The final questionnaire was subsequently administered in both paper-based and electronic formats. This research design ensured that the data were collected consistently and that the proposed educational model was appropriately tested through structural equation modeling.

Research sampling

The target population of this study consisted of adult tourists who visited China's top three tourism villages: Zha'ganna Village in Diebu County, Gansu Province, and He Mu Village and Baihaba Village in the Altai Region of Xinjiang. The respondents were conceptualized as adult informal learners because they acquired rural cultural knowledge through direct observation, participation, communication, inquiry, and reflection in authentic village environments. To qualify for participation, respondents were required to be at least 18 years old, to have completed their visit or major tourism activities in one of the selected villages, and to have experienced at least one cultural or educational component, such as local heritage interpretation, agricultural activities, traditional craftsmanship, ecological learning, community interaction, or folk-cultural activities. The minimum sample size was determined using the ten-times rule. The research instrument contained 35 measurement items; therefore, the minimum required sample was 350 respondents.

To increase statistical power, compensate for incomplete questionnaires, and improve the representativeness of the sample, the minimum sample size was increased by 100%. Consequently, a total of 700 questionnaires were distributed across the three selected tourism villages. Of these, 667 questionnaires were returned, producing a response rate of 95.29%. After data screening, nine questionnaires were excluded because of substantial missing information, patterned responses, contradictory answers, or failure to meet the screening requirements. Therefore, 658 questionnaires were retained as valid responses, resulting in a valid response rate of 94.00% based on the total number distributed and 98.65% based on the questionnaires returned.

A multistage purposive and systematic intercept sampling method was employed. First, the three villages were purposively selected because they represented internationally recognized rural tourism destinations with distinctive cultural, ecological, and community-based learning resources. Second, data collectors approached eligible visitors at major scenic exits, visitor centers, cultural activity areas, and public rest areas. Whenever

visitor flow permitted, a systematic sampling interval was used to reduce excessive interviewer discretion. Screening questions were then applied to confirm eligibility. The final valid sample of 658 respondents exceeded the minimum requirement of 350 and was considered adequate for confirmatory factor analysis, structural equation modeling, and mediation analysis.

DATA ANALYSIS

Descriptive analysis

Descriptive analysis was conducted to summarize the demographic and visit-related characteristics of the 658 valid respondents. As presented in Table 1, the sample included 308 male respondents, accounting for 46.8% of the total, and 338 female respondents, accounting for 51.4%. An additional 12 respondents, representing 1.8%, preferred not to disclose their gender. The relatively balanced gender distribution reduced the possibility that the findings were excessively influenced by one gender group.

Regarding age, respondents aged 25–34 years constituted the largest group, with 224 participants accounting for 34.0% of the sample. Respondents aged 35–44 years formed the second-largest group, accounting for 23.7%. Respondents aged 45–59 years accounted for 18.1%, while those aged 18–24 years represented 16.9%. Participants aged 60 years and above formed the smallest age group, accounting for 7.3%. These results indicated that the sample included respondents from a broad range of adult age groups.

In terms of relationship status, 331 respondents were married, accounting for 50.3%, while 287 respondents were single, representing 43.6%. The remaining 40 respondents were separated, divorced, or widowed. Regarding educational attainment, respondents with a bachelor's degree constituted the largest group at 48.9%. Those holding a junior college or vocational diploma accounted for 19.3%, while respondents with a master's degree represented 16.4%. This distribution suggested that most participants had sufficient educational experience to understand and evaluate the learning-related questionnaire items.

Private-sector employees formed the largest employment group, accounting for 32.1%, followed by self-employed respondents or business owners at 18.7%. Government and public-institution employees represented 15.0%, while students accounted for 14.0%. Monthly personal income was distributed across five categories, with the largest group earning RMB 7,001–12,000 per month.

The valid questionnaires were relatively evenly distributed across the three research locations. Zha'ganna Village contributed 225 respondents, He Mu Village contributed 219, and Baihaba Village contributed 214.

In addition, 73.9% of the respondents had previously visited at least one other rural tourism destination. This finding suggested that most participants had relevant

tourism experience that enabled them to assess the educational and cultural characteristics of the selected villages.

Table 1. Demographic and visit-related profile of respondents.

Profile variable	Category	Frequency	Percent (%)
Gender	Male	308	46.8
	Female	338	51.4
	Prefer not to disclose	12	1.8
Age group	18–24 years	111	16.9
	25–34 years	224	34.0
	35–44 years	156	23.7
	45–59 years	119	18.1
	60 years and above	48	7.3
Relationship status	Single	287	43.6
	Married	331	50.3
	Separated, divorced, or widowed	40	6.1
Highest educational attainment	High school or below	84	12.8
	Diploma	127	19.3
	Bachelor's degree	322	48.9
	Master's degree	108	16.4
	Doctoral degree	17	2.6
Employment category	Student	92	14.0
	Government or public-institution employee	99	15.0
	Private-sector employee	211	32.1
	Self-employed or business owner	123	18.7
	Education, culture, or tourism professional	59	9.0
	Retired, not currently employed, or other	74	11.2
Monthly personal income	RMB 3,500 or below	98	14.9
	RMB 3,501–7,000	173	26.3
	RMB 7,001–12,000	177	26.9
	RMB 12,001–20,000	124	18.8
	Above RMB 20,000	86	13.1
Village visited	Zha'ganna Village	225	34.2
	He Mu Village	219	33.3
	Baihaba Village	214	32.5
Previous experience	No previous rural tourism visit	172	26.1
	1–2 previous visits	211	32.1
	3–5 previous visits	169	25.7
	6 or more previous visits	106	16.1
Total valid sample		658	100.0

Reliability analysis

Reliability analysis was conducted to evaluate the internal consistency of the seven measurement scales used in this study. The questionnaire contained 35 items, including five items for Situated Learning Experience (SLE), four items

for Collaborative Learning Opportunities (CLO), six items for Critical Reflection Opportunities (CRO), four items for Inquiry-Based Learning Opportunities (IBLO), five items for Epistemic Curiosity (ECY), five items for Self-Regulated Learning (SRL), and six items for Rural Cultural Literacy (RCL).

Corrected Item–Total Correlation (CITC), Cronbach's Alpha if Item Deleted, and the overall Cronbach's Alpha coefficient for each construct were examined. A CITC value above 0.500 indicated that an item was sufficiently correlated with the remaining items within the same construct. A Cronbach's Alpha coefficient above 0.700 demonstrated acceptable internal consistency, while values above 0.800 and 0.900 indicated good and excellent reliability, respectively.

As presented in Table 2, the CITC values of the 35 measurement items ranged from 0.728 to 0.855. All values exceeded the recommended threshold of 0.500, indicating that each item contributed adequately to the measurement of its corresponding construct. The Cronbach's Alpha coefficients of the seven scales ranged from 0.889 to 0.936. Specifically, the reliability coefficients were 0.903

for SLE, 0.889 for CLO, 0.927 for CRO, 0.901 for IBLO, 0.915 for ECY, 0.923 for SRL, and 0.936 for RCL.

The "Cronbach's Alpha if Item Deleted" values for all items were lower than the overall Cronbach's Alpha coefficient of their respective constructs. This result indicated that deleting any individual item would not improve the internal consistency of the corresponding scale. Therefore, all 35 items were retained for the subsequent validity analysis and structural equation modeling.

The overall Cronbach's Alpha coefficient for the complete 35-item instrument was 0.964, demonstrating excellent internal consistency across the entire questionnaire. These findings confirmed that the measurement instrument was reliable and suitable for further statistical analyses.

Table 2. Item-level and construct-level reliability analysis.

Construct	Items	Item	CITC	Cronbach's alpha if item deleted	Construct Cronbach's alpha
SLE	5	SLE1	0.758	0.889	0.903
		SLE2	0.781	0.884	
		SLE3	0.792	0.881	
		SLE4	0.769	0.887	
		SLE5	0.741	0.892	
CLO	4	CLO1	0.802	0.853	0.889
		CLO2	0.761	0.861	
		CLO3	0.779	0.857	
		CLO4	0.728	0.869	
CRO	6	CRO1	0.836	0.912	0.927
		CRO2	0.791	0.917	
		CRO3	0.818	0.914	
		CRO4	0.776	0.919	
		CRO5	0.803	0.916	
		CRO6	0.754	0.921	
IBLO	4	IBLO1	0.772	0.870	0.901
		IBLO2	0.801	0.865	
		IBLO3	0.748	0.877	
		IBLO4	0.765	0.872	
ECY	5	ECY1	0.786	0.898	0.915
		ECY2	0.812	0.893	
		ECY3	0.764	0.900	
		ECY4	0.799	0.895	
		ECY5	0.738	0.902	
SRL	5	SRL1	0.801	0.907	0.923
		SRL2	0.823	0.904	
		SRL3	0.779	0.909	
		SRL4	0.838	0.901	
		SRL5	0.752	0.911	

Table 2. Continues.

RCL	6	RCL1	0.824	0.924	0.936
		RCL2	0.846	0.920	
		RCL3	0.789	0.927	
		RCL4	0.833	0.922	
		RCL5	0.855	0.918	
		RCL6	0.768	0.929	

Validity analysis

Confirmatory Factor Analysis (CFA) was conducted to evaluate the measurement validity of the seven constructs: Situated Learning Experience (SLE), Collaborative Learning Opportunities (CLO), Critical Reflection Opportunities (CRO), Inquiry-Based Learning Opportunities (IBLO), Epistemic Curiosity (ECY), Self-Regulated Learning (SRL), and Rural Cultural Literacy (RCL). The standardized CFA model contained 35 observed items and seven latent variables. Convergent validity was evaluated using standardized factor loadings, Squared Multiple Correlations (SMC), Composite Reliability (CR), and Average Variance Extracted (AVE). Standardized factor loadings above 0.500 were considered acceptable. CR values above 0.700 indicated satisfactory construct reliability, while AVE values of approximately 0.500 or above indicated that a construct explained an adequate proportion of the variance in its indicators.

Situated Learning Experience

Situated Learning Experience was measured using five items, SLE1–SLE5. The standardized factor loadings ranged from 0.840 to 0.880. SLE1 and SLE5 produced the highest loadings of 0.880, followed by SLE2 at 0.870, SLE3 at 0.850, and SLE4 at 0.840. The corresponding SMC values ranged from 0.706 to 0.774, indicating that SLE explained between 70.6% and 77.4% of the variance in its individual measurement items. The CR value of SLE was 0.936, while its AVE was 0.747. Both values substantially exceeded the required thresholds. These results indicated that the five items consistently represented learning through authentic rural settings, direct cultural observation, practical participation, and engagement with actual village environments. SLE therefore demonstrated strong convergent validity and construct reliability.

Collaborative Learning Opportunities

Collaborative Learning Opportunities was measured using four items, CLO1–CLO4. The standardized factor loadings ranged from 0.830 to 0.870. CLO1 had the strongest

loading at 0.870, while CLO2 and CLO4 both loaded at 0.860. CLO3 had the lowest loading at 0.830, which nevertheless remained well above the acceptable level. The SMC values ranged from 0.689 to 0.757, demonstrating that the latent construct explained a substantial proportion of the variance in all four items. CLO obtained a CR value of 0.916 and an AVE value of 0.731. These results confirmed that the items consistently captured opportunities for tourists to communicate, exchange perspectives, jointly interpret cultural information, and learn with residents or other visitors. Consequently, CLO demonstrated satisfactory convergent validity.

Critical Reflection Opportunities

Critical Reflection Opportunities consisted of six items, CRO1–CRO6. The standardized loadings were highly consistent, ranging from 0.850 to 0.870. CRO2, CRO3, and CRO5 each recorded a loading of 0.870; CRO4 and CRO6 each recorded 0.860; and CRO1 recorded 0.850. The narrow loading range indicated that no single item disproportionately represented the construct. The corresponding SMC values ranged from 0.722 to 0.757. The CR value was 0.946, the highest among the seven constructs, while the AVE value was 0.745. These findings demonstrated that the six items strongly and consistently measured opportunities to reconsider existing assumptions, compare alternative cultural viewpoints, and reflect on cultural preservation, tourism development, and changes in rural communities. CRO therefore exhibited excellent convergent validity and internal construct consistency.

Inquiry-Based Learning Opportunities

Inquiry-Based Learning Opportunities was assessed using four items, IBLO1–IBLO4. Standardized factor loadings ranged from 0.850 to 0.880. IBLO4 had the strongest loading of 0.880; IBLO2 and IBLO3 both loaded at 0.860, and IBLO1 loaded at 0.850. The SMC values ranged from 0.722 to 0.774. The construct produced a CR value of 0.921 and an AVE value of 0.744. This indicated that the four indicators reliably represented opportunities to raise questions, investigate rural cultural phenomena, compare

information, examine evidence, and construct explanations. The relatively uniform loading pattern also showed that the construct was not dependent on only one type of inquiry activity. IBLO therefore demonstrated strong convergent validity.

Epistemic Curiosity

Epistemic Curiosity was measured using five items, ECY1–ECY5. Its standardized factor loadings ranged from 0.670 to 0.730. ECY4 had the highest loading at 0.730, followed by ECY3 at 0.720, ECY1 at 0.700, ECY2 at 0.680, and ECY5 at 0.670. Although the loadings were lower than those of the four educational-environment constructs, all remained above the minimum acceptable level of 0.500. The SMC values ranged from 0.449 to 0.533. ECY obtained a CR value of 0.828, demonstrating satisfactory construct reliability. Based on the rounded standardized loadings shown in the CFA model, the AVE for ECY was 0.491, which was marginally below the conventional threshold of 0.500. However, the value was extremely close to 0.500, the CR value was substantially above 0.700, and all five factor loadings were acceptable. The structural model therefore demonstrated a good overall fit. The result also suggested that epistemic curiosity was a comparatively diverse psychological construct, with respondents differing in how strongly they experienced curiosity, knowledge gaps, and a desire for further cultural understanding.

Self-Regulated Learning

Self-Regulated Learning was represented by five items,

SRL1–SRL5. The standardized factor loadings ranged from 0.710 to 0.750. SRL3 recorded the highest loading at 0.750, followed by SRL5 at 0.740, SRL2 at 0.730, SRL1 at 0.720, and SRL4 at 0.710. The SMC values ranged from 0.504 to 0.563, indicating that more than half of the variance in most indicators was explained by the underlying construct. SRL achieved a CR value of 0.851 and an AVE value of 0.533. These results confirmed that the five items consistently reflected tourists' ability to plan their learning, focus on relevant cultural information, monitor their understanding, adjust learning strategies, and reflect on what they had learned during rural tourism. SRL therefore satisfied the requirements for convergent validity.

Rural Cultural Literacy

Rural Cultural Literacy was measured using six items, RCL1–RCL6. The standardized factor loadings ranged from 0.800 to 0.860. RCL3 and RCL4 produced the highest loadings at 0.860, followed by RCL5 at 0.840, RCL1 at 0.830, RCL2 at 0.810, and RCL6 at 0.800. All six indicators demonstrated strong relationships with the latent construct. The SMC values ranged from 0.640 to 0.740. RCL obtained a CR value of 0.932 and an AVE value of 0.695. These findings indicated that the six items adequately represented multiple aspects of rural cultural literacy, including cultural knowledge, interpretation ability, respect for rural communities, heritage awareness, critical cultural understanding, and responsible cultural communication. RCL therefore demonstrated strong convergent validity and was appropriately measured as the principal educational outcome of the study.

Table 3. Convergent validity of the measurement constructs.

Construct	Items	Standardized loading range	SMC range	CR	AVE	AVE
SLE	5	0.840–0.880	0.706–0.774	0.936	0.747	0.864
CLO	4	0.830–0.870	0.689–0.757	0.916	0.731	0.855
CRO	6	0.850–0.870	0.722–0.757	0.946	0.745	0.863
IBLO	4	0.850–0.880	0.722–0.774	0.921	0.744	0.863
ECY	5	0.670–0.730	0.449–0.533	0.828	0.491	0.700
SRL	5	0.710–0.750	0.504–0.563	0.851	0.533	0.730
RCL	6	0.800–0.860	0.640–0.740	0.932	0.695	0.834

Discriminant validity

Discriminant validity was examined by comparing the square root of the AVE for each construct with the correlations between that construct and the other latent variables. The absolute inter-construct correlations ranged from 0.010 to 0.670, all of which were below the commonly applied threshold of 0.850. Furthermore, the square root of

the AVE for each construct was greater than its correlations with all other constructs. The highest correlation was observed between SRL and RCL at 0.670. However, this value remained below the square root of the AVE for SRL, which was 0.730, and that of RCL, which was 0.834. Similarly, the correlation between ECY and RCL was 0.600, which was lower than the square roots of the AVE for ECY and RCL. These results showed that

curiosity, self-regulated learning, and cultural literacy were closely related but remained empirically distinct concepts. The correlations among the four independent educational constructs were relatively low, ranging from -0.010 to 0.140 . In particular, the correlation between SLE and CLO was -0.010 , indicating that authentic situated experience

and collaborative learning opportunities represented highly distinct aspects of rural tourism education. This near-zero association did not undermine validity; instead, it suggested that one type of learning opportunity did not automatically guarantee the presence of another.

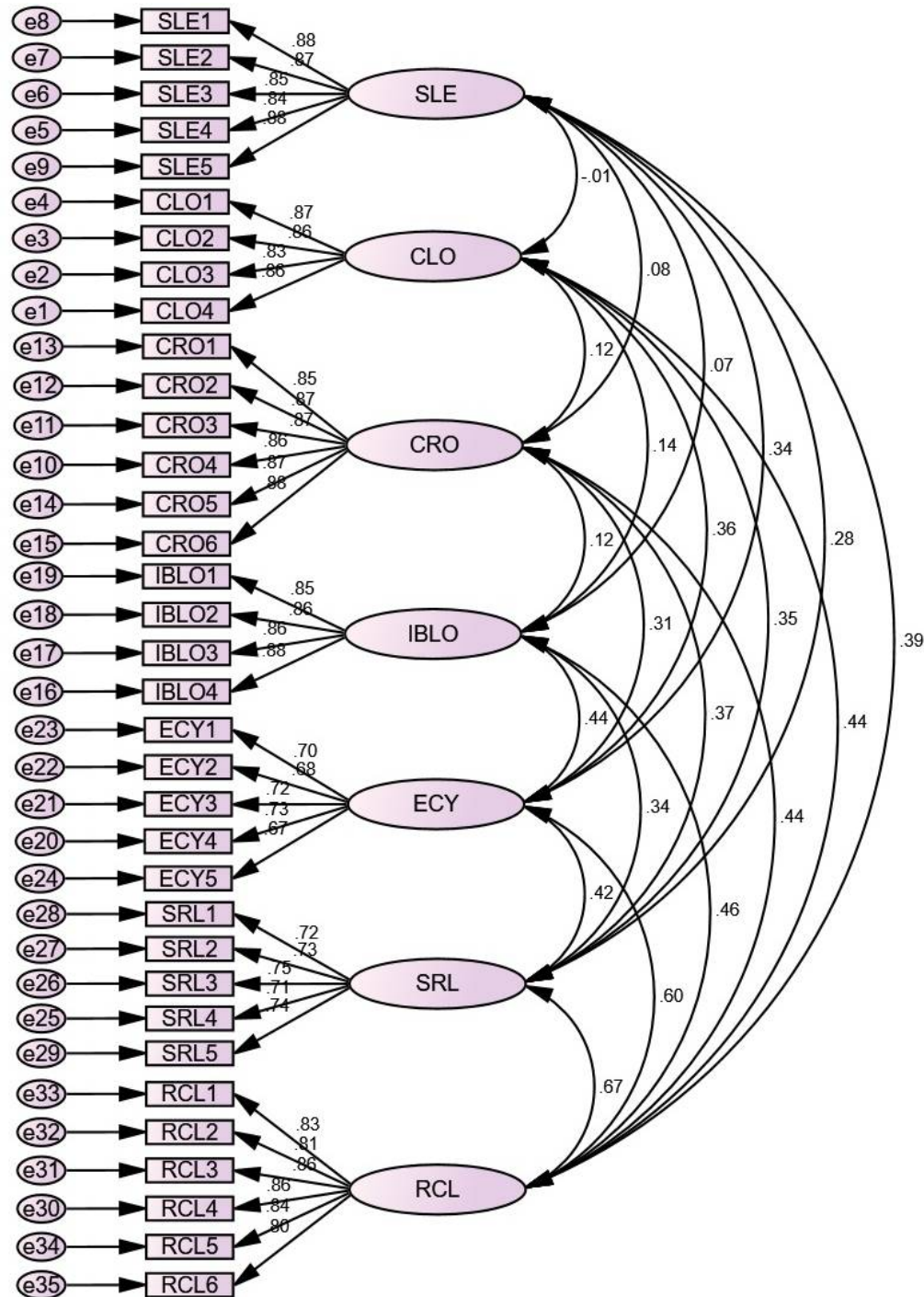


Figure 2. Confirmatory factor analysis.

Fornell–Larcker comparison and demonstrated adequate discriminant validity. Therefore, the 35-item measurement model was retained for subsequent correlation analysis, structural equation modelling, and mediation-effect testing.

Construct	SLE	CLO	CRO	IBLO	ECY	SRL	RCL
SLE	0.864						
CLO	-0.010	0.855					
CRO	0.080	0.120	0.863				
IBLO	0.070	0.140	0.120	0.863			
ECY	0.340	0.360	0.310	0.440	0.700		
SRL	0.280	0.350	0.370	0.340	0.420	0.730	
RCL	0.390	0.440	0.440	0.460	0.600	0.670	0.834

Structural Equation Modelling (SEM) was conducted to examine the proposed relationships among Situated Learning Experience (SLE), Collaborative Learning Opportunities (CLO), Critical Reflection Opportunities

Figure 3. Structural Equation Modelling (SEM).

Table 5. Fit indices for structural model.

Fit index	Standard	Obtained value	Fit assessment
χ^2/df	1–3	1.823	Good
GFI	> 0.800	0.853	Good
NFI	> 0.800	0.914	Good
IFI	> 0.800	0.966	Good
TLI	> 0.800	0.947	Good
CFI	> 0.800	0.951	Good
RMSEA	< 0.080	0.042	Good

Structural model fit

The overall fit of the structural model was evaluated using the chi-square-to-degrees-of-freedom ratio (χ^2/df), Goodness-of-Fit Index (GFI), Normed Fit Index (NFI), Incremental Fit Index (IFI), Tucker–Lewis Index (TLI), Comparative Fit Index (CFI), and Root Mean Square Error of Approximation (RMSEA). As presented in Table 5, the χ^2/df value was 1.823, which was within the recommended range of 1–3 and indicated a good fit between the proposed model and the observed data. The GFI value was 0.853, exceeding the required value of 0.800. The NFI, IFI, TLI, and CFI values were 0.914, 0.966, 0.947, and 0.951, respectively. All these incremental fit indices exceeded the specified standard of 0.800. The RMSEA value was 0.042, which was substantially below the maximum acceptable value of 0.080. This low value indicated a small approximation error and suggested that the proposed structural relationships adequately reproduced the covariance structure of the sample data.

Overall, all seven fit indices satisfied their respective evaluation standards. The structural model therefore demonstrated good overall goodness of fit and was considered suitable for path analysis and mediation-effect testing.

Path analysis

Path analysis was conducted to examine the direct relationships among the seven constructs. As shown in Table 6, all proposed direct paths were positive and statistically significant. SLE, CLO, CRO, and IBLO significantly influenced ECY, SRL, and RCL. Among the four predictors, IBLO had the strongest influence on ECY ($\beta = 0.350$), while CLO and CRO had the strongest effects on SRL ($\beta = 0.280$). In addition, ECY and SRL significantly influenced RCL, with SRL showing a stronger effect ($\beta = 0.320$) than ECY ($\beta = 0.170$). Therefore, all direct-effect hypotheses were supported.

Table 6. Direct effects test results.

Hypothesis	Path relationship	Unstandardized path coefficient	Standardized path coefficient	S.E.	C.R.	P
H1a	SLE → ECY	0.291	0.300	0.041	7.098	***
H1b	SLE → SRL	0.233	0.240	0.039	5.974	***
H1c	SLE → RCL	0.216	0.220	0.040	5.400	***
H2a	CLO → ECY	0.281	0.290	0.042	6.690	***
H2b	CLO → SRL	0.271	0.280	0.041	6.610	***
H2c	CLO → RCL	0.207	0.210	0.039	5.308	***
H3a	CRO → ECY	0.205	0.210	0.040	5.125	***
H3b	CRO → SRL	0.274	0.280	0.042	6.524	***
H3c	CRO → RCL	0.209	0.210	0.040	5.225	***
H4a	IBLO → ECY	0.342	0.350	0.043	7.953	***
H4b	IBLO → SRL	0.246	0.250	0.041	6.000	***
H4c	IBLO → RCL	0.213	0.210	0.040	5.325	***
H5	ECY → RCL	0.169	0.170	0.037	4.568	***
H7	SRL → RCL	0.318	0.320	0.045	7.067	***

Mediation analysis

The mediating effects of ECY and SRL were examined using the bootstrap method with 5,000 resamples and 95% confidence intervals. As shown in Table 7, the lower and upper confidence limits of all indirect effects did not include zero. Therefore, both ECY and SRL significantly mediated the relationships between the four educational factors and

RCL. Because the direct effects of SLE, CLO, CRO, and IBLO on RCL remained statistically significant, ECY and SRL demonstrated partial mediating effects. The indirect effects through SRL were generally stronger than those through ECY, indicating that self-regulated learning played a particularly important role in transforming rural tourism learning opportunities into rural cultural literacy.

Table 7. Mediation effect test results.

Hypothesis	Indirect path	Effect coefficient	SE	LLCI	ULCI	P
H6a	SLE → ECY → RCL	0.051	0.014	0.027	0.081	***
H6b	CLO → ECY → RCL	0.049	0.013	0.026	0.077	***
H6c	CRO → ECY → RCL	0.036	0.011	0.017	0.060	**
H6d	IBLO → ECY → RCL	0.060	0.015	0.034	0.091	***
H8a	SLE → SRL → RCL	0.077	0.018	0.044	0.115	***
H8b	CLO → SRL → RCL	0.090	0.020	0.053	0.133	***
H8c	CRO → SRL → RCL	0.090	0.020	0.054	0.134	***
H8d	IBLO → SRL → RCL	0.080	0.019	0.046	0.120	***

Hypothesis results

The results of the path and mediation analyses showed that all proposed hypotheses were statistically supported.

SLE, CLO, CRO, and IBLO had significant positive effects on ECY, SRL, and RCL. ECY and SRL also positively influenced RCL and significantly mediated the relationships between the four educational factors and RCL.

Table 8. Summary of hypothesis results.

No.	Hypothesis	Result
H1a	There is a positive relationship between Situated Learning Experience (SLE) and Epistemic Curiosity (ECY).	Supported
H1b	There is a positive relationship between Situated Learning Experience (SLE) and Self-Regulated Learning (SRL).	Supported
H1c	There is a positive relationship between Situated Learning Experience (SLE) and Rural Cultural Literacy (RCL).	Supported
H2a	There is a positive relationship between Collaborative Learning Opportunities (CLO) and Epistemic Curiosity (ECY).	Supported
H2b	There is a positive relationship between Collaborative Learning Opportunities (CLO) and Self-Regulated Learning (SRL).	Supported
H2c	There is a positive relationship between Collaborative Learning Opportunities (CLO) and Rural Cultural Literacy (RCL).	Supported
H3a	There is a positive relationship between Critical Reflection Opportunities (CRO) and Epistemic Curiosity (ECY).	Supported
H3b	There is a positive relationship between Critical Reflection Opportunities (CRO) and Self-Regulated Learning (SRL).	Supported
H3c	There is a positive relationship between Critical Reflection Opportunities (CRO) and Rural Cultural Literacy (RCL).	Supported
H4a	There is a positive relationship between Inquiry-Based Learning Opportunities (IBLO) and Epistemic Curiosity (ECY).	Supported
H4b	There is a positive relationship between Inquiry-Based Learning Opportunities (IBLO) and Self-Regulated Learning (SRL).	Supported

Table 8. Continues.

H4c	There is a positive relationship between Inquiry-Based Learning Opportunities (IBLO) and Rural Cultural Literacy (RCL).	Supported
H5	There is a positive relationship between Epistemic Curiosity (ECY) and Rural Cultural Literacy (RCL).	Supported
H6a	Epistemic Curiosity (ECY) mediates the relationship between Situated Learning Experience (SLE) and Rural Cultural Literacy (RCL).	Supported
H6b	Epistemic Curiosity (ECY) mediates the relationship between Collaborative Learning Opportunities (CLO) and Rural Cultural Literacy (RCL).	Supported
H6c	Epistemic Curiosity (ECY) mediates the relationship between Critical Reflection Opportunities (CRO) and Rural Cultural Literacy (RCL).	Supported
H6d	Epistemic Curiosity (ECY) mediates the relationship between Inquiry-Based Learning Opportunities (IBLO) and Rural Cultural Literacy (RCL).	Supported
H7	There is a positive relationship between Self-Regulated Learning (SRL) and Rural Cultural Literacy (RCL).	Supported
H8a	Self-Regulated Learning (SRL) mediates the relationship between Situated Learning Experience (SLE) and Rural Cultural Literacy (RCL).	Supported
H8b	Self-Regulated Learning (SRL) mediates the relationship between Collaborative Learning Opportunities (CLO) and Rural Cultural Literacy (RCL).	Supported
H8c	Self-Regulated Learning (SRL) mediates the relationship between Critical Reflection Opportunities (CRO) and Rural Cultural Literacy (RCL).	Supported
H8d	Self-Regulated Learning (SRL) mediates the relationship between Inquiry-Based Learning Opportunities (IBLO) and Rural Cultural Literacy (RCL).	Supported

DISCUSSION

The findings confirmed that Situated Learning Experience (SLE), Collaborative Learning Opportunities (CLO), Critical Reflection Opportunities (CRO), and Inquiry-Based Learning Opportunities (IBLO) positively influenced Epistemic Curiosity (ECY), Self-Regulated Learning (SRL), and Rural Cultural Literacy (RCL). These results indicated that rural tourism could function as an effective form of adult informal education when visitors were provided with authentic, participatory, reflective, and inquiry-oriented learning conditions. Among the four educational factors, IBLO had the strongest effect on ECY. This finding suggested that opportunities to ask questions, investigate cultural practices, compare information, and seek explanations were particularly effective in stimulating visitors' desire to acquire rural cultural knowledge. CLO and CRO demonstrated the strongest effects on SRL, showing that interaction with others and reflection on cultural issues encouraged visitors to monitor, adjust, and evaluate their own learning processes. All four educational factors also directly enhanced RCL. This indicated that cultural literacy was developed not only through psychological learning mechanisms but also through direct participation in meaningful rural learning activities. Furthermore, both ECY and SRL positively influenced RCL. SRL produced a stronger effect than ECY, suggesting that curiosity alone was insufficient unless visitors actively managed, organized, and reflected on their learning. The mediation results confirmed that ECY and SRL partially mediated the relationships between the four educational factors and RCL.

Theoretical and practical implications

This study contributed theoretically by integrating rural tourism research with adult informal learning, cultural literacy education, situated learning, collaborative learning, critical reflection, inquiry-based learning, epistemic curiosity, and self-regulated learning. Previous rural tourism studies frequently emphasized destination image, authenticity, satisfaction, and revisit intention. In contrast, this study repositioned tourists as adult informal learners and Rural Cultural Literacy as an important educational outcome. The findings also demonstrated that ECY and SRL represented two different but complementary mediating mechanisms. ECY explained how educational opportunities stimulated visitors' internal desire to understand unfamiliar cultural phenomena, while SRL explained how visitors actively transformed tourism experiences into organized and lasting knowledge. The stronger influence of SRL on RCL further highlighted the importance of active learning management in informal educational settings. Practically, rural tourism managers should design activities that encourage observation, questioning, discussion, investigation, and reflection rather than providing only entertainment or passive sightseeing. Local residents, cultural practitioners, and guides should be encouraged to participate as community educators who share knowledge and engage visitors in meaningful dialogue. Destinations should also provide inquiry tasks, cultural workshops, reflective questions, digital learning materials, and follow-up resources. These strategies could help visitors develop a deeper understanding of rural history, traditions, ecological practices, and community

values while strengthening cultural respect and responsible communication.

Conclusion

This study examined the factors influencing Rural Cultural Literacy among adult informal learners in China's top three tourism villages: Zha'ganna Village, He Mu Village, and Baihaba Village. Based on 658 valid questionnaires, the study tested the relationships among SLE, CLO, CRO, IBLO, ECY, SRL, and RCL through structural equation modelling and mediation analysis. The results showed that all four educational factors significantly and positively influenced ECY, SRL, and RCL. ECY and SRL also had significant positive effects on RCL and partially mediated the relationships between the educational factors and cultural literacy. IBLO was the strongest predictor of ECY, while CLO and CRO were the strongest predictors of SRL. SRL had a stronger influence on RCL than ECY, demonstrating that the active regulation of learning was particularly important for converting tourism experiences into cultural knowledge, interpretation ability, heritage awareness, and responsible cultural communication. Overall, the study confirmed that rural tourism could extend beyond recreation and become a meaningful educational process. Authentic participation, collaborative interaction, critical reflection, and inquiry-based activities enabled visitors to become active learners rather than passive observers. The study therefore provided a new educational perspective for rural tourism research and offered practical guidance for transforming rural destinations into effective environments for adult informal learning and rural cultural literacy development.

REFERENCES

- Akgün, E., Mede, E., & Sarac, S. (2022). The role of individual differences on epistemic curiosity (EC) and self-regulated learning (SRL) during e-learning: The Turkish context. *International Journal of Assessment Tools in Education*, 9(3), 565–582. <https://doi.org/10.21449/ijate.907186>
- Batista, M. da G., Castanho, R. A., Sousa, Á., Couto, G., & Pimentel, P. (2023). Assessing rural tourism experiences: What can we learn from the Azores region? *Heritage*, 6(6), 4817–4833. <https://doi.org/10.3390/heritage6060256>
- Gocer, O., Boyacioglu, D., Karahan, E. E., & Shrestha, P. (2024). Cultural tourism and rural community resilience: A framework and its application. *Journal of Rural Studies*, 107, 103238. <https://doi.org/10.1016/j.jrurstud.2024.103238>
- Holdo, M. (2023). Critical reflection: John Dewey's relational view of transformative learning. *Journal of Transformative Education*, 21(1), 9–25. <https://doi.org/10.1177/15413446221086727>
- Li, F., Fan, S., & Wang, Y. (2022). Mobile-assisted language learning in Chinese higher education context: A systematic review from the perspective of the situated learning theory. *Education and Information Technologies*, 27, 9665–9688. <https://doi.org/10.1007/s10639-022-11025-4>
- Li, Y., Ismail, M. A., & Aminuddin, A. (2024). How has rural tourism influenced the sustainable development of traditional villages? A systematic literature review. *Heliyon*, 10(4), e25627. <https://doi.org/10.1016/j.heliyon.2024.e25627>
- Lim, L., Bannert, M., van der Graaf, J., Molenaar, I., Fan, Y., Kilgour, J., Moore, J., & Gašević, D. (2021). Temporal assessment of self-regulated learning by mining students' think-aloud protocols. *Frontiers in Psychology*, 12, 749749. <https://doi.org/10.3389/fpsyg.2021.749749>
- Ma, S., Jin, X., Li, X., Dong, H., Dong, X., & Tang, B. (2025). How epistemic curiosity influences digital literacy: Evidence from international students in China. *Behavioral Sciences*, 15(3), 286. <https://doi.org/10.3390/bs15030286>
- Na, C., Jeong, S., Clarke-Midura, J., & Shin, Y. (2024). Linking self-regulated learning to community of inquiry in online undergraduate courses: A person-centered approach. *Educational Technology Research and Development*, 72, 2895–2920. <https://doi.org/10.1007/s11423-024-10380-y>
- Öztürk, B., Kaya, M., & Demir, M. (2022). Does inquiry-based learning model improve learning outcomes? A second-order meta-analysis. *Journal of Pedagogical Research*, 6(4), 201–216. <https://doi.org/10.3390/JPR.202217481>
- Rapanta, C., Vrikki, M., & Evagorou, M. (2021). Preparing culturally literate citizens through dialogue and argumentation: Rethinking citizenship education. *The Curriculum Journal*, 32(3), 475–494. <https://doi.org/10.1002/curj.95>
- Schmidt, H. G., & Rotgans, J. I. (2021). Epistemic curiosity and situational interest: Distant cousins or identical twins? *Educational Psychology Review*, 33(1), 325–352. <https://doi.org/10.1007/s10648-020-09539-9>
- Sharma, K., Nguyen, A., & Hong, Y. (2024). Self-regulation and shared regulation in collaborative learning in adaptive digital learning environments: A systematic review of empirical studies. *British Journal of Educational Technology*, 55(4), 1398–1436. <https://doi.org/10.1111/bjet.13459>
- Siri, A., Di Nuzzo, A., & Marchesini, S. (2024). Playing with the cultural pilgrimage to stimulate tourism: The xFORMAL project on cultural heritage and informal learning. *Open Research Europe*, 3, Article 93. <https://doi.org/10.12688/openreseurope.15321.3>
- Tang, X., & Salmela-Aro, K. (2021). The prospective role of epistemic curiosity in national standardized test performance. *Learning and Individual Differences*, 88, 102008. <https://doi.org/10.1016/j.lindif.2021.102008>
- Torres, A. C., Duarte, M., Pinto, D., & Mouraz, A. (2024). Self-regulated learning in secondary school: Students' self-feedback in a peer observation programme. *Studies in Educational Evaluation*, 83, 101407. <https://doi.org/10.1016/j.stueduc.2024.101407>
- Urdanivia Alarcon, D. A., Talavera-Mendoza, F., Rucano Paucar, F. H., Cayani Caceres, K. S., & Machaca Viza, R. (2023). Science and inquiry-based teaching and learning: A systematic review. *Frontiers in Education*, 8, 1170487. <https://doi.org/10.3389/feduc.2023.1170487>
- Wen, H., Liu-Lastres, B., & Vo, L. B. N. (2023). Evaluating food safety education in hospitality management programs through the lenses of situated learning theory: Insights from industry leaders and educators. *Food Control*, 153, 109893. <https://doi.org/10.1016/j.foodcont.2023.109893>
- Yang, X. (2023). A historical review of collaborative learning and cooperative learning. *TechTrends*, 67, 718–728. <https://doi.org/10.1007/s11528-022-00823-9>
- Zhao, X., Attapaiboon, T., & Jantharajit, N. (2025). Innovative integration of situated and collaborative learning: Enhancing third-grade students' Chinese reading comprehension and social abilities. *Asian Journal of Contemporary Education*, 9(1), 27–41. <https://doi.org/10.55493/5052.v9i1.5302>

Citation: Li, X., and Yizhou, Z. (2026). Factors influencing rural cultural literacy in rural tourism: The mediating roles of epistemic curiosity and self-regulated learning in China's top three tourism villages. *African Educational Research Journal*, 14(3): 546-564.
