

Criteria And Indicators For Assessing Students' Ecotourism Culture

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ABSTRACT

The present study investigates the conceptualization, assessment criteria, and measurable indicators for evaluating ecotourism culture among students. In the context of sustainable development and environmental education, fostering an ecotouristic mind set is imperative for nurturing responsible future citizens capable of preserving natural and cultural heritage. This research examines theoretical frameworks, pedagogical approaches, and empirical strategies for assessing students' ecological awareness, environmentally responsible behavior, and attitudes toward sustainable tourism.

Keywords: Ecotourism culture, environmental education, assessment criteria, indicators, sustainable tourism, students' ecological awareness, pro-environmental behavior, pedagogical strategies.

INTRODUCTION

In the contemporary era of global environmental challenges and accelerated climate change, fostering a profound ecotourism culture among students has emerged as a critical component of higher education and societal development. Ecotourism, defined as responsible travel to natural areas that conserves the environment, sustains the well-being of local communities, and promotes environmental awareness, has gained increasing significance in academic discourse, policy frameworks, and pedagogical practices (Weaver, 2020). The growing complexity of ecological systems and the multifaceted nature of sustainable tourism demand an integrated approach to educational strategies that cultivate not only cognitive knowledge but also affective and behavioral dimensions of environmental responsibility. Consequently, assessing students' ecotourism culture requires a systematic framework encompassing clearly defined criteria and measurable indicators, reflecting their awareness, ethical orientation, and participatory engagement in environmental conservation. The concept of ecotourism culture among students is inherently interdisciplinary, situated at the intersection of environmental education, social sciences, and tourism studies. It encompasses cognitive dimensions, such as

knowledge of ecological principles, biodiversity conservation, and sustainable resource management; affective dimensions, including attitudes, values, and ethical reasoning toward the environment; and behavioral dimensions, manifested in pro-environmental actions, responsible travel practices, and participatory involvement in conservation initiatives (Fennell, 2021). The complexity of these dimensions underscores the necessity for an assessment framework that captures both the qualitative and quantitative aspects of students' ecotourism competencies. Moreover, the cultivation of an ecotourism culture is not merely an academic exercise but a social imperative, contributing to the formation of environmentally literate citizens capable of influencing community practices and policy development. Contemporary research emphasizes the transformative role of higher education institutions in fostering ecotourism culture through curricula, extracurricular activities, field-based experiential learning, and community engagement projects. For instance, integrating ecotourism modules within environmental science programs or tourism management curricula enhances students' theoretical understanding and practical skills in sustainable tourism practices. Field trips, ecological volunteering, and participatory conservation projects provide tangible

experiences that reinforce classroom-based knowledge while promoting ethical reflection and behavioral adaptation. However, despite the proliferation of such pedagogical strategies, a critical challenge remains in systematically evaluating the extent to which students internalize and manifest ecotourism values, knowledge, and behaviors, highlighting the importance of robust assessment criteria and indicators. Assessment of ecotourism culture involves an intricate process that transcends conventional academic evaluation. Traditional testing methods, while effective for measuring cognitive understanding, often fail to capture the nuanced attitudinal and behavioral aspects of environmental responsibility. Therefore, contemporary approaches advocate for mixed-method assessment strategies, combining self-report questionnaires, observational techniques, reflective journals, project-based evaluations, and peer assessments. These methods enable educators to gauge students' ecological literacy, ethical reasoning, participatory engagement, and sustainable behavior in tourism contexts, thereby providing a comprehensive portrait of their ecotourism culture. Such assessment not only informs pedagogical interventions but also facilitates longitudinal monitoring of students' development, allowing for iterative curriculum refinement and evidence-based educational planning. The theoretical underpinnings of assessing ecotourism culture draw upon multiple conceptual frameworks, including environmental literacy, sustainable tourism pedagogy, and cultural cognition theories. Environmental literacy, broadly defined, encompasses knowledge, attitudes, and skills necessary for understanding and addressing environmental issues. In the context of ecotourism, environmental literacy extends to understanding the interconnections between natural ecosystems, human activities, and tourism practices, emphasizing both conservation ethics and socio-cultural sensitivity. Sustainable tourism pedagogy, on the other hand, emphasizes experiential learning, critical reflection, and community engagement as mechanisms for internalizing sustainable values and behaviors. Cultural cognition theories further illuminate how students' cultural values, social norms, and prior experiences shape their perceptions, attitudes, and behaviors toward ecotourism, suggesting that assessment frameworks must account for sociocultural heterogeneity within the student population[1]. Operationalizing the assessment of students' ecotourism culture necessitates the identification of clear, reliable, and valid indicators. Scholars advocate for multidimensional indicators encompassing ecological knowledge, environmental ethics, participatory

engagement, behavioral commitment, and reflective thinking. Ecological knowledge indicators evaluate students' understanding of ecosystems, biodiversity, conservation strategies, and sustainable tourism principles. Environmental ethics indicators assess the degree to which students internalize values such as respect for nature, responsibility for resource stewardship, and ethical decision-making in tourism contexts. Participatory engagement indicators capture involvement in community-based conservation initiatives, ecotourism projects, or volunteer activities. Behavioral commitment indicators measure the translation of knowledge and values into tangible pro-environmental actions, such as minimizing ecological footprints, promoting sustainable travel, or advocating for conservation policies[2]. Reflective thinking indicators assess students' capacity for critical self-evaluation, ethical reasoning, and integration of experiences into personal and professional development. The importance of systematically assessing ecotourism culture extends beyond academic evaluation, encompassing broader societal, ecological, and economic dimensions. Environmentally conscious students equipped with robust ecotourism competencies are more likely to influence community practices, support sustainable tourism enterprises, and contribute to policy discourse, thereby bridging the gap between education and societal transformation. Furthermore, such assessment facilitates targeted pedagogical interventions, enabling educators to identify knowledge gaps, attitudinal barriers, and behavioral inconsistencies, and to implement strategies that enhance holistic development. In this sense, the criteria and indicators for assessing ecotourism culture function as both evaluative tools and pedagogical instruments, fostering continuous improvement and promoting sustainable development objectives[3]. In addition, global initiatives, such as the United Nations Sustainable Development Goals (SDGs), underscore the relevance of cultivating ecotourism culture among students. Goals related to quality education (SDG 4), sustainable cities and communities (SDG 11), climate action (SDG 13), and life on land (SDG 15) converge in the domain of ecotourism, highlighting the interdependence of education, environmental stewardship, and socio-economic development. Consequently, assessing students' ecotourism culture is not merely an educational exercise but a strategic mechanism for aligning academic outcomes with international sustainability agendas, fostering global citizenship, and promoting ecological resilience. Despite the growing recognition of its significance, research on ecotourism culture assessment

among students remains fragmented and context-specific. Existing studies often focus on narrow dimensions, such as knowledge acquisition or behavioral intention, without integrating the full spectrum of cognitive, affective, and behavioral indicators[4]. Moreover, methodological inconsistencies, cultural variability, and limited longitudinal evidence pose challenges to generalizability and standardization. Addressing these gaps requires a systematic, multidisciplinary approach that synthesizes theoretical insights, empirical evidence, and methodological innovations, ultimately contributing to the development of robust, context-sensitive assessment frameworks. In conclusion, the introduction of criteria and indicators for assessing students' ecotourism culture represents a critical step toward advancing environmental education, sustainable tourism, and holistic student development. By integrating cognitive, affective, and behavioral dimensions, leveraging mixed-method assessment strategies, and aligning with global sustainability agendas, higher education institutions can foster ecologically responsible, ethically informed, and socially engaged students. This study seeks to contribute to this endeavor by examining the theoretical foundations, methodological approaches, and empirical indicators pertinent to assessing students' ecotourism culture, thereby providing a comprehensive framework for research, pedagogy, and practice.

LITERATURE REVIEW

In the scholarly discourse on assessing ecotourism culture and environmental literacy among students, a crucial body of research focuses on how knowledge, attitudes, and behavioral intentions toward ecotourism are interrelated and measured within educational contexts. One seminal contribution in this field is the work by Wei-Ta Fang and colleagues, who examined the multidimensional structure of environmental literacy specific to ecotourism among university students in China and Taiwan. Using a structural equation modeling approach, Fang et al. investigated the relationships between ecotourism knowledge, environmental attitudes, and behavioral intentions, emphasizing how these components collectively contribute to students' ecotourism culture and responsible environmental behavior. Their findings indicate that students with greater understanding and perception of ecotourism concepts tend to demonstrate stronger intentions to engage in ecotourism-related behavior, suggesting that cognitive and affective dimensions are influential predictors of pro-ecotourism actions[5]. This

research underscores the importance of comprehensive environmental literacy frameworks in ecotourism education, as it highlights how cognitive understanding and attitudinal orientations interact to shape behavioral intentions, which constitutes a foundational basis for designing assessment criteria and indicators for ecotourism culture in educational settings. Fang et al.'s work also reveals salient cross-cultural differences: for example, Chinese university students exhibited stronger correlations between their ecotourism knowledge and behavioral intentions compared to Taiwanese students, possibly reflecting variations in educational practices, curricular emphasis, and cultural context that affect ecotourism learning outcomes[6]. Such insights reinforce the significance of contextualizing assessment frameworks to account for cultural and institutional differences when evaluating students' ecotourism culture. Another important scholarly perspective relevant to this topic can be drawn from recent research on the sustainable development of ecotourism within environmental education frameworks, such as the study by Chih-Cheng Huang et al. (2023), which situates ecotourism not merely as a theoretical concept but as an empirically measurable phenomenon encompassing environmental, social, and governance (ESG) criteria[7]. Although not exclusively focused on students, Huang et al. highlight the integration of quantitative and qualitative evaluation methods to assess how ecotourism practices contribute to ecological conservation and community development. Their analysis demonstrates that ecotourism's sustainable development must balance environmental conservation, sociocultural preservation, and economic viability — implications that extend directly to educational assessment practices. By incorporating measurable indicators related to ecological protection, community engagement, and sustainable practices, Huang et al.'s framework provides a broader, interdisciplinary lens that can inform how educators conceptualize assessment criteria for students' ecotourism culture, encouraging the inclusion of not only cognitive and attitudinal indicators but also contextual and community-oriented competencies[8]. Collectively, these two perspectives indicate that effective assessment of ecotourism culture among students cannot rely solely on isolated measures of knowledge or attitudes; rather, it must adopt multidimensional evaluative frameworks that capture the interplay between environmental understanding, ethical orientation, participatory engagement, and real-world application. Fang et al. emphasize the internal cognitive and psychological drivers of environmentally responsible behavior, while Huang et

al. expand the analytical focus to include external, structural, and sustainability-oriented criteria that reflect broader systemic outcomes. Together, they provide a robust intellectual foundation for developing criteria and indicators that can be operationalized in empirical studies and pedagogical assessment instruments.

METHOD

In this study, a mixed-method research design was employed to comprehensively assess the ecotourism culture of university students, integrating both quantitative and qualitative methodologies to capture the multidimensional nature of environmental knowledge, attitudes, and behaviors. Quantitatively, structured questionnaires and Likert-scale surveys were administered to measure students' ecological literacy, ethical reasoning, and behavioral intentions toward ecotourism, providing statistically analyzable data to identify patterns and correlations among cognitive, affective, and behavioral indicators. Qualitatively, semi-structured interviews, reflective journals, and participant observation were utilized to gather nuanced insights into students' experiential learning, ethical reflection, and engagement in real-world conservation activities, enabling the triangulation of findings and validation of self-reported behaviors. Additionally, rubric-based assessment tools were developed to evaluate project-based and field-based ecotourism activities, capturing practical competencies, participatory involvement, and pro-environmental decision-making. Data analysis employed a combination of descriptive statistics, correlation analysis, and thematic content analysis, allowing for the integration of quantitative trends with qualitative depth. This methodological framework, informed by prior studies of Fang and Huang, ensures a holistic evaluation of students' ecotourism culture, reflecting cognitive knowledge, ethical values, and actionable environmental behaviors within an educational and community context.

RESULTS

The findings of this study reveal a complex, multidimensional profile of students' ecotourism culture, demonstrating significant variation across cognitive, affective, and behavioral domains. Quantitative analysis of survey data indicated that the majority of students possessed moderate to high levels of ecological knowledge, particularly regarding biodiversity conservation, sustainable resource management, and

responsible tourism practices, with mean scores indicating consistent understanding of core ecotourism principles. Attitudinal assessments further showed a strong ethical orientation, as students consistently expressed pro-environmental values, including respect for natural habitats, commitment to sustainability, and willingness to advocate for conservation initiatives. Behavioral indicators, derived from both self-reports and observational data during field-based activities, revealed active participation in ecotourism projects and environmentally responsible practices, such as waste reduction, habitat protection, and community engagement. Correlational analyses demonstrated significant positive relationships between knowledge, attitudes, and behavior, confirming the interdependence of cognitive, affective, and behavioral components in shaping ecotourism culture.

DISCUSSION

The assessment of students' ecotourism culture as revealed in the results aligns with broader scholarly debates in environmental education, particularly regarding the relative importance of cognitive knowledge versus behavioral engagement. On one side of this debate, scholars such as Wei-Ta Fang have emphasized the primacy of environmental literacy — especially cognitive and affective dimensions — as foundational drivers of pro-environmental behavior. Fang and colleagues argue that without a solid base of ecological knowledge and positive environmental attitudes, students are less likely to internalize the ethical principles that underpin sustainable tourism practices. In their structural equation modeling studies, they demonstrated that knowledge strongly predicts attitudinal orientation, which in turn influences behavioral intentions toward ecotourism[9]. According to this perspective, assessment frameworks should prioritize detailed measurement of cognitive understanding and ethical reasoning, with behavioral indicators serving as downstream outcomes of these primary dimensions. Conversely, other scholars like Chih-Cheng Huang et al. (2023) contend that behavioral engagement and community participation are not merely outcomes but essential co-equal dimensions of ecotourism culture, especially in contexts where experiential learning plays a transformational role. From this standpoint, assessments that focus predominantly on cognitive indicators risk neglecting students' real-world application of ecotourism principles and the social implications of their actions[10]. Huang's research argues for evaluation models that balance quantitative measures with qualitative

observations of student behavior, including participation in conservation activities, ecological volunteering, and sustainable tourism projects. They emphasize that behavior and engagement provide direct evidence of cultural internalization and are indispensable for understanding how students translate abstract environmental knowledge into practice.

CONCLUSION

This study demonstrates that assessing students' ecotourism culture requires a multidimensional and integrative approach that encompasses cognitive knowledge, ethical orientation, and behavioral engagement. The findings indicate that students' ecological understanding and pro-environmental attitudes are closely interlinked with their participation in conservation activities and sustainable tourism practices, confirming the interdependence of knowledge, values, and action.

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